



Integrated 75W AC/DC UPS with Battery Backup

Regulated Power with UPS for Industrial Equipment

The RLH 75W AC/DC 24V power supply with integrated battery charger offers a complete power system designed for 24VDC UPS applications. The compact switching power supply has a built-in UPS charge controller, and is available with a 24V 1.2Ah or 24V 4.5Ah DIN mount backup battery pack. This system is designed to provide regulated 24V power for industrial equipment, while providing battery backup power in the event of a source power interruption.

The system features flexible AC or DC input, low output ripple, and built-in short-circuit, overload and overvoltage protection. Constant-current limiting automatically reduces output voltage during fault conditions, protecting connected control components from direct shorts and device failures.

The integrated charge controller continuously maintains the correct charge level on the battery and ensures a seamless power transition to battery power when needed for a complete UPS power supply solution.

The optional battery packs contain sealed batteries that are field replaceable. They include convenient screw terminals for wiring, and an externally replaceable fuse for protection.

This compact UPS system offers an excellent price/performance ratio, and provides tightly regulated output voltage for sensitive loads in industrial environments.

Key Features

- 75W 24V power supply accepts AC or DC input power
- Short circuit, overload, over voltage and over temperature protection
- Cooling by free air convection
- Standard DIN Rail T35 per IEC 60715 mounting
- LED status indicators
- 100% full load burn-in test
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output with LED indicators for DC Bus OK, Battery Fail and Battery Discharge
- Optional backup battery packs contain sealed batteries that are field replaceable
- Convenient screw down terminals
- Made in USA with domestic and imported components



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General Safety Practices

Intended Audience

This guide is intended for use by electrical technicians or knowledgeable telco/network installation, operation and repair personnel. Every effort has been made to ensure the accuracy of the information in this guide. However, due to constant product improvement, specifications and information contained in this document are subject to change without notice.

Conventions

The equipment discussed in this document may require tools designed for the purpose being described. RLH recommends that service personnel be familiar with the correct handling and use of any installation equipment used, and follow all safety precautions including the use of protective personal equipment as required.

Caution - Severe Shock Hazard

- Never install during a lightning storm or where unsafe high voltages are present
- Active copper lines may carry high voltages. Use caution when handling copper wiring
- Do not open the Integrated 75W AC/DC UPS, there are no user serviceable parts

Installation

Prior to Installation

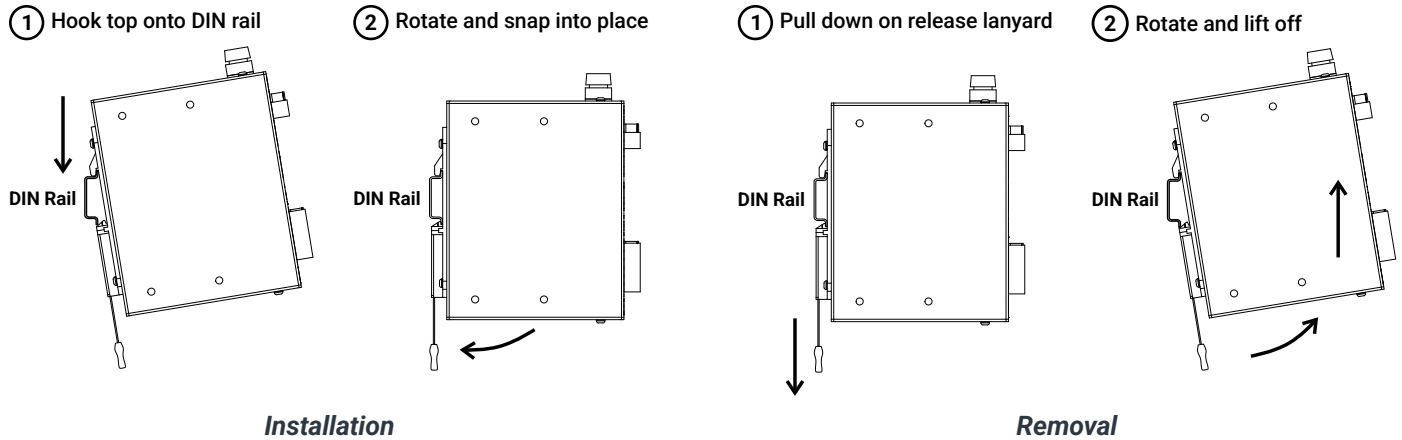
- Check for shipping damage
- Check the contents to ensure correct model and battery pack options
- Have a clean, dry installation environment ready

Required for installation

- DIN rail for DIN mounting
- Circuit breaker, terminal blocks and other wiring as necessary
- AC or DC power source

DIN Rail Mounting

The DIN clip for mounting the system is mounted onto the rear of the housing. Hook the DIN clip on the top flange of the DIN rail, press down and rotate to the locked position to install. To remove, pull down on DIN clip cord and rotate off of the DIN rail.



Circuit Breaker

For safety and ease of maintenance, use a 3 Amp circuit breaker to protect the power supply. It is preferable to locate the circuit breaker near the input side of the power supply.

- For AC input power, the circuit breaker should go between the AC LINE connection of the input power and the input terminal on the power supply
- When using DC input power, wire the breaker between the POSITIVE (+) wire of the DC power source and the input terminal on the power supply

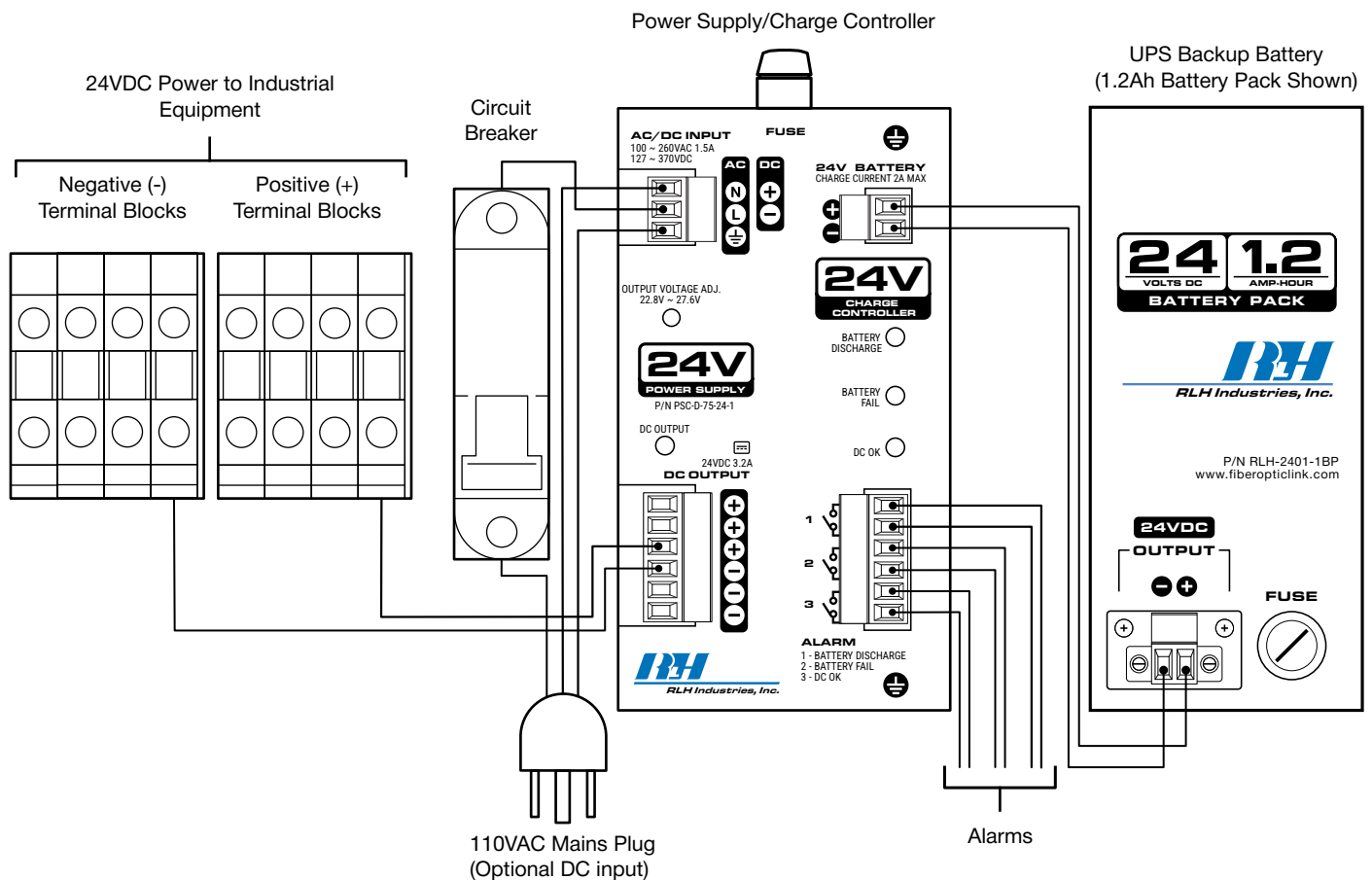
Use the DC OUTPUT terminal blocks to connect additional devices to the DC output of the power supply. If using DIN mount terminal blocks, install them onto the DIN rail prior to connecting wiring. It is recommended to use the RED terminal block for positive, and the BLACK terminal block for negative. Contact you RLH representative for a DIN mount kit with circuit breaker, terminal blocks and DIN rail section.

Connect Wiring

Connect all wiring prior to installing the fuses. Remove power from all input wiring prior to connection the UPS system. Check to make sure the circuit breaker is OFF, then attach the AC LINE source wire to the circuit breaker. When using DC input power, wire the breaker between the POSITIVE (+) wire of the DC power source and the input terminal on the power supply. The connectors on the power supply and battery may be pulled out for ease of wiring. Be sure to seat the connectors fully when reattaching.

Connect the DC OUTPUT wiring the terminal blocks or directly to the industrial equipment. Use any screw down terminal on the terminal blocks, they are all connected to the same bus. Observe the polarity markings next to the terminal block.

Connect the battery wiring to the screw down terminal on the front. Observe the polarity markings next to the terminal block. The terminal block itself may be removed from the battery pack for ease of installation by loosening the screws on both sides of the terminal block. Seat the connector fully when reinstalling and tighten the screws to ensure a good electrical connection.



Wiring Information

System Output	Recommended Circuit Breaker	Recommended Wire Gauge	Min Wire Gauge	Max Wire Gauge
3.2A	3A	12AWG	14AWG	8AWG

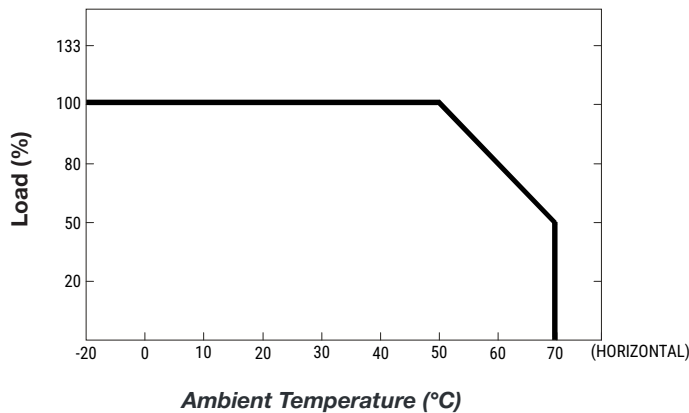
Install Replacement Fuse

The system includes a pre-installed fuse. In order to replace the fuse, remove the fuse holder cover on the top of the power supply and install the fuse. Refer to the specifications section for the replacement fuse rating.

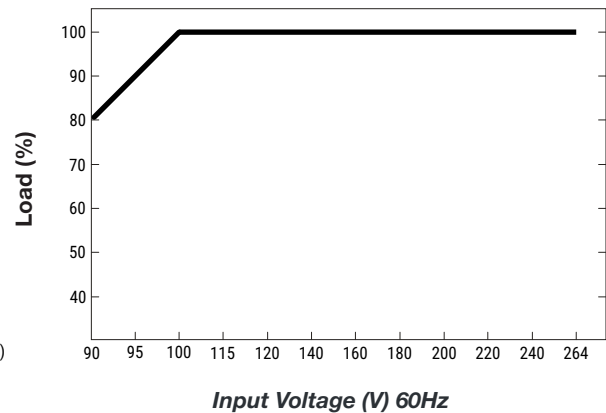
Apply power to the circuit breaker, and energize the power supply by switching the circuit breaker to ON.

Note: The 24VDC OUTPUT terminals are energized once input power is applied.

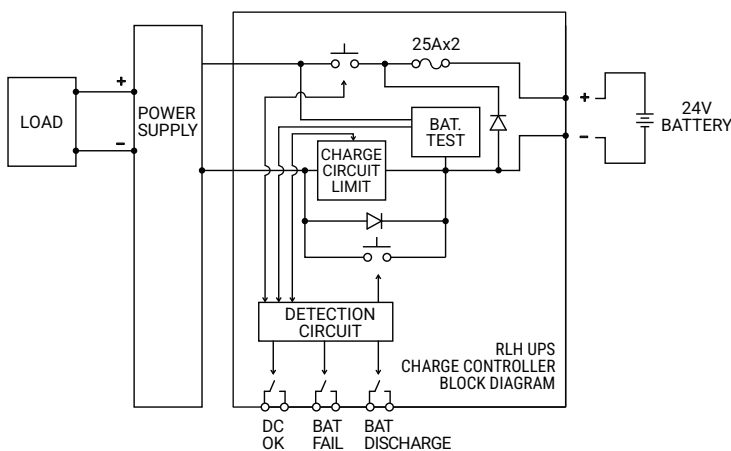
Power Supply Derating Curve



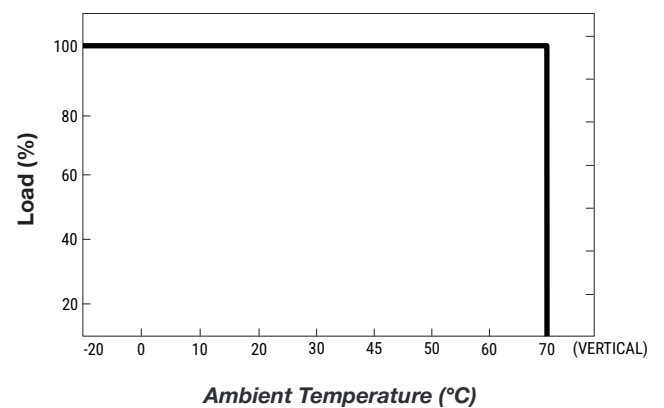
Output Derating vs. Input Voltage



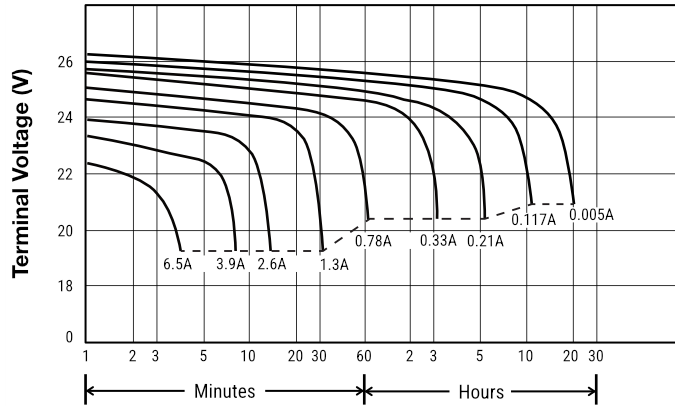
UPS Block Diagram



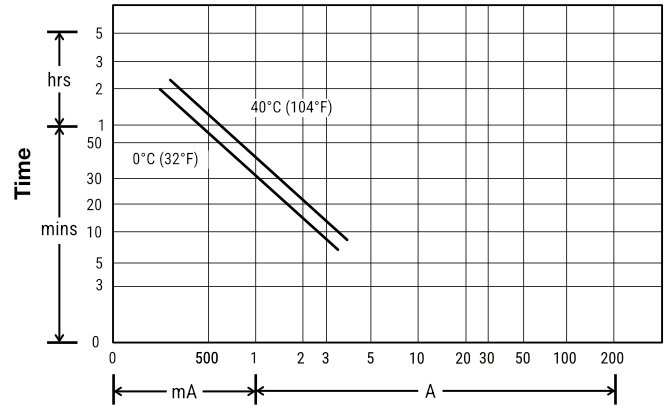
Charge Controller Derating Curve



Optional 24V 1.2Ah Backup Battery Characteristics

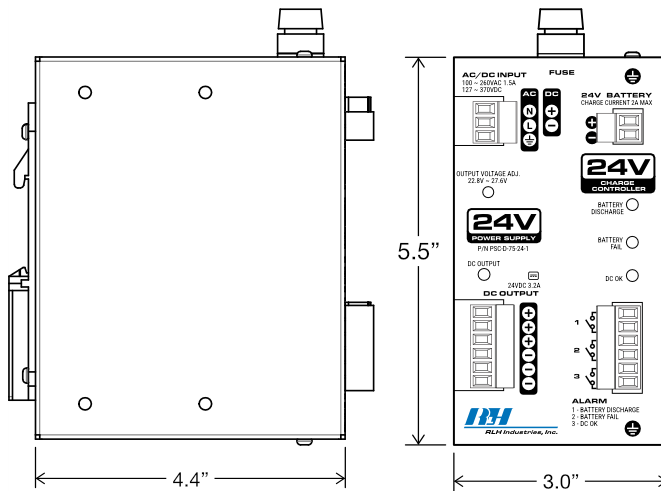


Discharge Time @ 25°C (77°F)

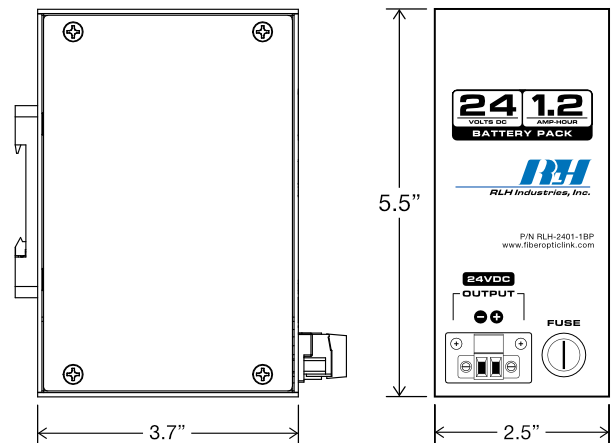


Current

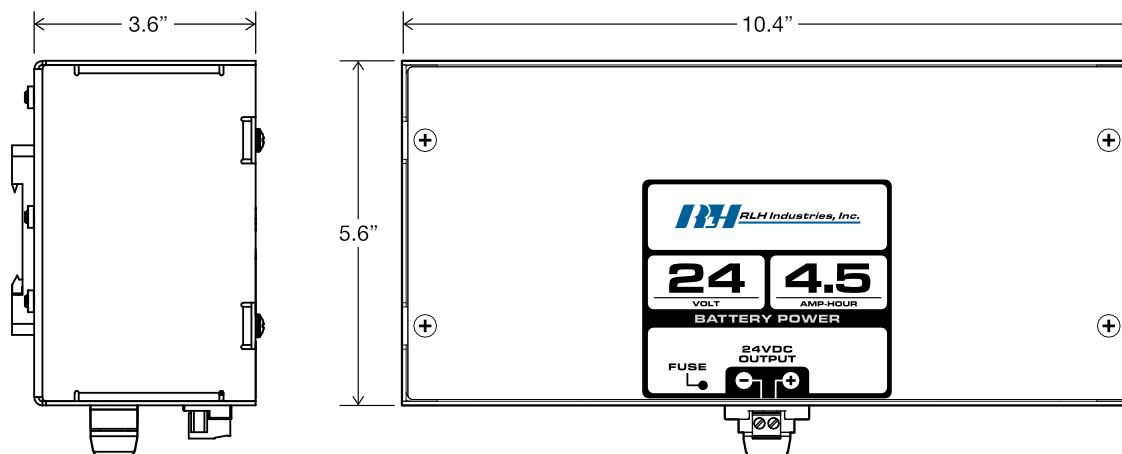
Dimensions



75W Power Supply with UPS Charge Controller



24V 1.2Ah Backup Battery Pack



24V 4.5Ah Backup Battery Pack

Ordering Information

Description	Battery Size	Part Number
75W 24VDC/3A Output Power Supply w/ Integrated Charge Controller, 110-240AC/120-370VDC Input	None	PSC-D-75-24-1
75W 24VDC Output Power Supply w/ Integrated Charge Controller w/ 1.2Ah Battery Pack, 110-240AC/120-370VDC Input	1.2Ah	PSC-D-75-24-UPS1-1
75W 24VDC Output Power Supply w/ Integrated Charge Controller w/ 4.5Ah Battery Pack, 110-240AC/120-370VDC Input	4.5Ah	PSC-D-75-24-UPS4-1

Battery Pack Ordering Information

Description	Part Number
24V 1.2AH UPS Backup Battery Pack w/fuse and DIN mount	RLH-2401-1BP
1.2AH 24V Replacement Batteries (Set)	RLH-2401-1RB
24V 4.5AH UPS Backup Battery Pack w/fuse and DIN mount	RLH-2404-2BP
4.5AH 24V Replacement Batteries (Set)	RLH-2404-1RB

- See Battery Pack Data Sheet for specifications

Power Supply Specifications

DC Output	DC Voltage	24V
	Rated Current	3.2A
	Current Range	0 - 4.2A
	Rated Power	76.8W
	Peak Load (23.5CFM)	100.8W
	Ripple & Noise (max)	240mVp-p
	Voltage Adjustment Range	22.8 - 27.6V
	Voltage Tolerance	±1.0%
	Line Regulation	±0.5%
	Load Regulation	±1%
	Setup, Rise Time	500ms, 30ms/230VAC, 500ms, 30ms/115VAC at full load
	Hold Up Time (typical)	80ms/230VAC, 20ms/115VAC at full load
Input	Voltage Range	90 - 264VAC, 127 - 370VDC
	Frequency Range	47 - 63Hz
	Efficiency (typical)	85%
	AC Current (typical)	1.5A/115V, 1A/230V
	Inrush Current (typical)	Cold Start 25A/115VAC, 50A/230VAC
	Leakage Current	Earth leakage current <1µA / 264VAC, Touch current <100µA / 264VAC
Protection	Included Fuse	6A (slow blow), user replaceable
	Overload	140 - 180% rated output power
	Over Voltage	Protection type: Hiccup mode, recovers automatically after fault condition is removed
		27.6 - 32.4V
Environment	Working Temperature	Protection type: Shut down o/p voltage, re-power on to recover
		27.6 - 32.4V
	Working Humidity	20 ~ 90% RH non-condensing
	Storage Temperature	-40°C ~ +85°C (-40 °F ~ 185°F)
	Storage Humidity	10 ~ 95% RH non-condensing
MTBF	Temperature Coefficient	±0.03%/ °C (0 - 45°C)
	446.8K hrs min. MIL-HDBK-217F (25°C)	
Construction	Durable Powder Coated Aluminum Alloy	
Dimensions	3.0" (W) x 4.4" (D) x 5.5" (H), (77mm x 112mm x 140mm)*	
	*Housing Only	
Mounting	DIN Rail T35 per IEC 60715	
Weight	1.5 lbs. (0.7kg)	



Charge Controller Specifications

Battery Output	Voltage Range (typical)		21 ~ 29V
	Current Range		0 ~ 15A
	Charge Current (typical)		2A
	External Battery (typical)		4 / 7 / 12 / 20AH / 24V
	Relay Contact Rating		30VDC, 10A (max)
Function	DC BUS OK	Relay contact	Short when DC voltage between 21-29(3%), relay contacts
		LED (Green) ON	DC BUS OK
		LED (Green) OFF	DC BUS failure
	Battery Fail	Relay contact	Short when battery failure is observed through the battery test function, relay contacts
		LED (Red) ON	Battery over-discharge warning or battery malfunction
		LED (Red) OFF	Battery OK
	Battery Discharge	Relay contact	Short when battery in discharge condition, relay contacts
		LED (Yellow) ON	Battery discharging
		LED (Yellow) OFF	Battery is not discharging or discharging current <400mA

Contact

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