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 optional DIN mount 24V 1.2AH 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, with low output ripple along with short circuit, overvoltage and overload protection.

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 pack contains sealed batteries that are field replaceable. The battery pack has a convenient screw terminal for wiring, and an external 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. The constant-current, short-circuit protection limits the output current as the voltage is reduced, to safely protect the control components from direct shorts and device failures.

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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
- UPS and battery pack use standard DIN Rail T35 per IEC 60715
- LED status indicators
- 100% full load burn-in test
- Built-in battery test function
- Battery polarity protection
- Relay contact signal output and LED indicators for DC Bus OK, Battery Fail and Battery Discharge
- Sealed batteries are field replaceable
- Battery pack is 1.2AH, 24V, includes front panel fuse
- Convenient screw down terminals
- Made in USA

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 is accurate. However, due to constant product improvement, specifications and information contained in this document are subject to change without notice.

Conventions

Symbols for notes, attention, and caution are used throughout this manual to provide readers with additional information, advice when special attention is needed, and caution to prevent injury or equipment damage.

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 HAZZARD

- Never install during a lightning storm or where unsafe high voltages are present
- This device uses high AC or DC voltages to operate. Use caution when handling copper wiring

Installation

Prior to installation:

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

Required for installation:

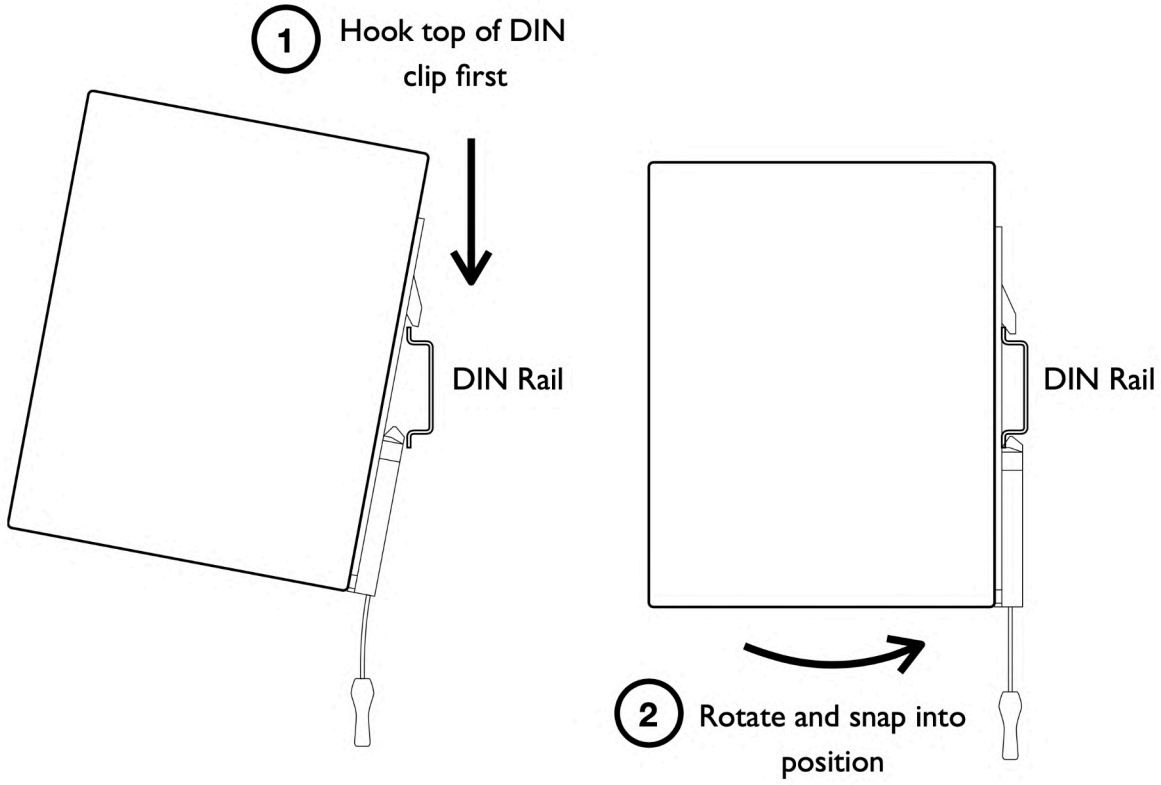
- DIN rail for DIN mounting
- Circuit breaker, terminal blocks, AC cord and other wiring as necessary

DIN Rail Mounting

Attach the power supply and battery pack to the DIN rail by engaging the upper part of the DIN clip onto the rail first, then rotate down and snap the bottom onto the rail. Check to make sure that the housing is securely mounted onto the DIN rail.

Installation (cont'd)

To remove, pull down on the release lanyard to unclip the units from the DIN rail.



Mounting on to 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. 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 terminal blocks allow to connect additional devices to the DC output of the power supply. If using terminal DIN mount blocks, install the terminal blocks onto the DIN rail prior to connecting any 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.

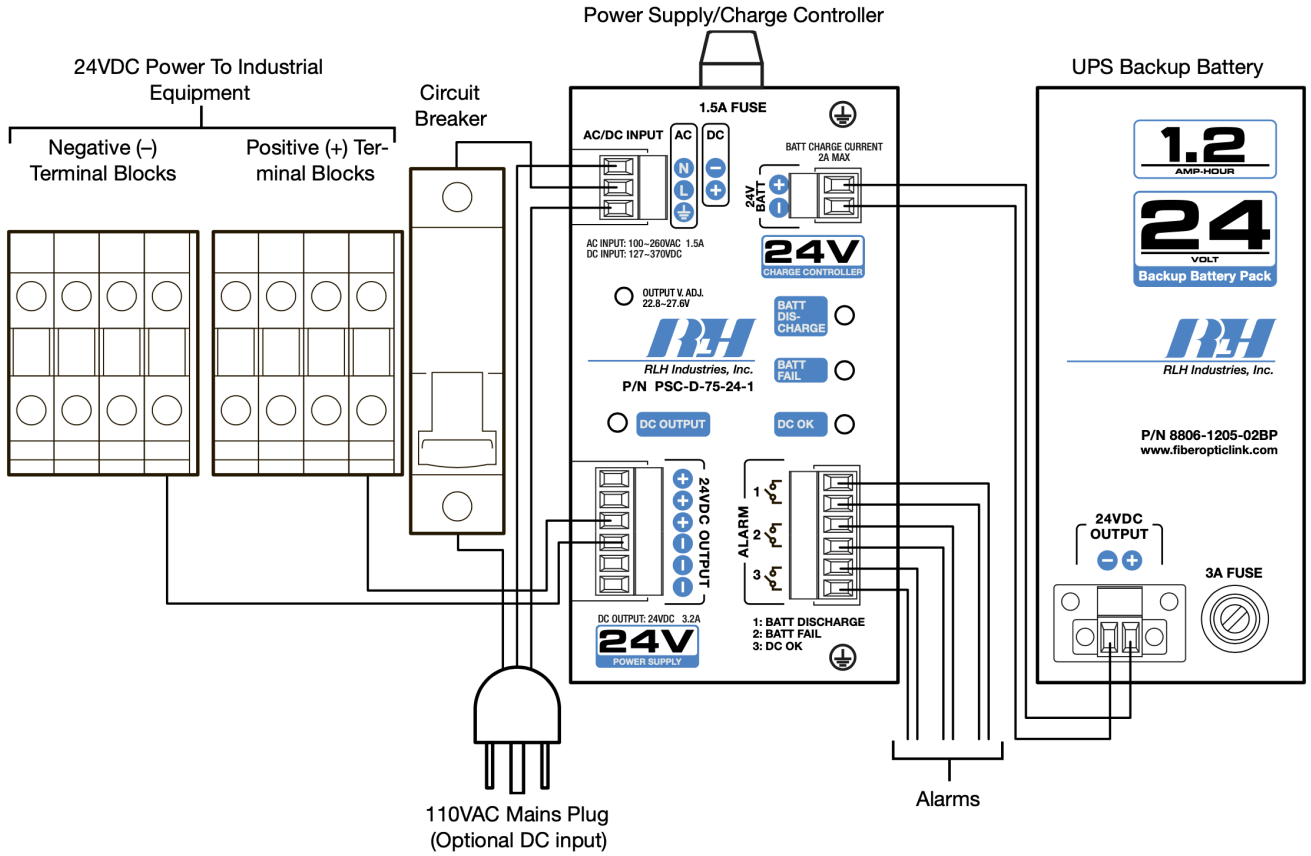
Installation (cont'd)

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.

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.



Installation (cont'd)

Wiring Information

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

Install Fuses

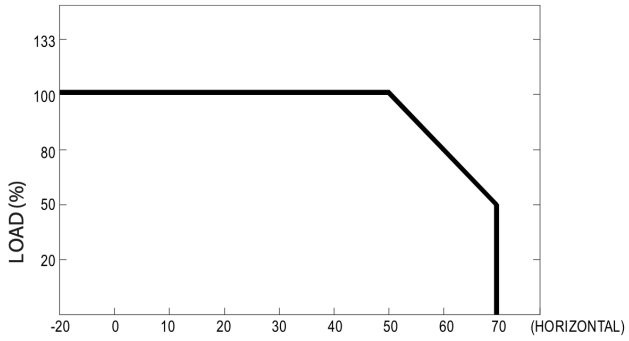
Remove the fuse holder cover on the top of the power supply and install the included fuse. Refer to the specifications section for the replacement fuse rating.

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

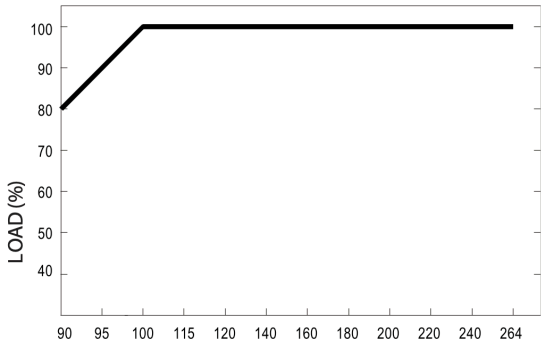
Note: The 24VDC OUTPUT terminals are energized once input power is applied.

Remove the fuse holder cover on the backup battery pack and install the included fuse. Refer to the specifications section for the replacement fuse rating. Allow 24 hours for the battery to charge fully.

Power Supply Derating Curve

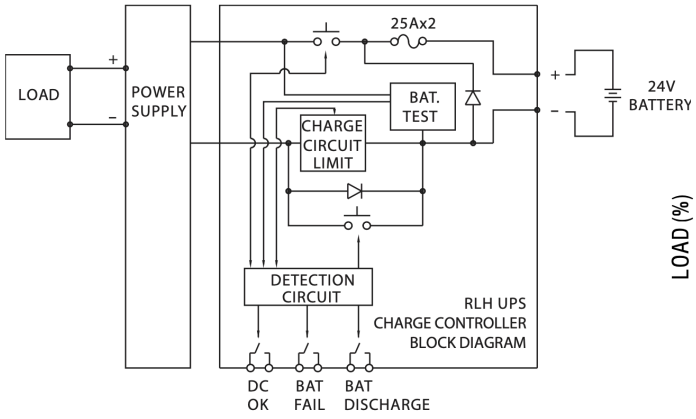


Output Derating vs. Input Voltage

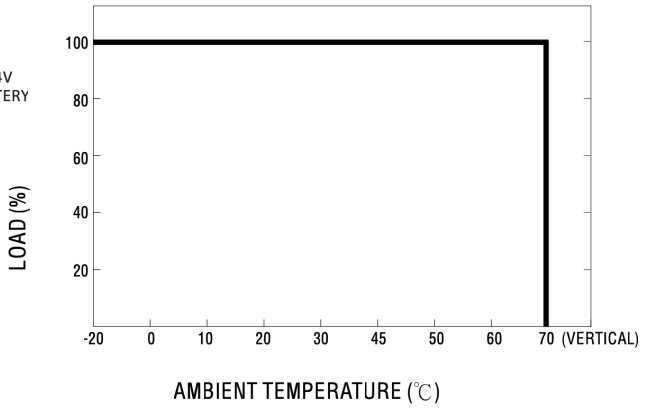


Installation (cont'd)

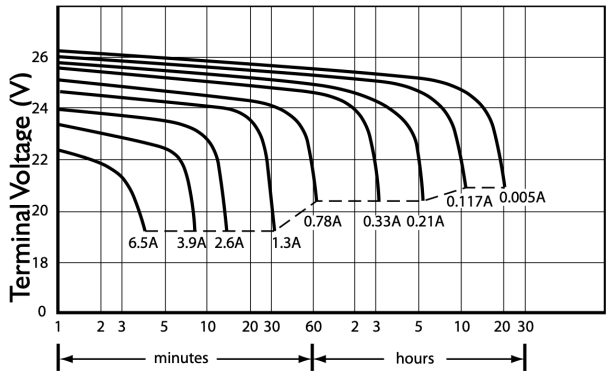
UPS Block Diagram



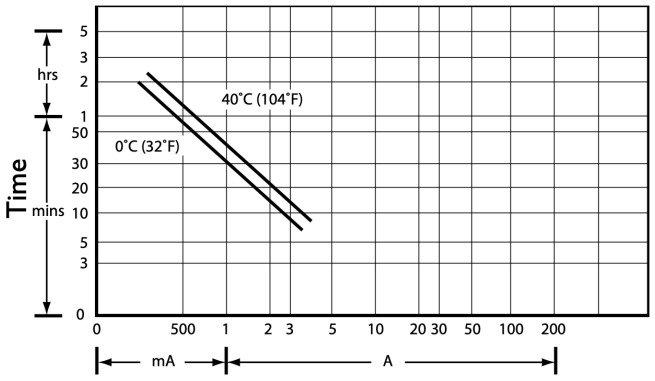
Charge Controller Derating Curve



Optional 24V 1.2Ah Backup Battery Characteristics

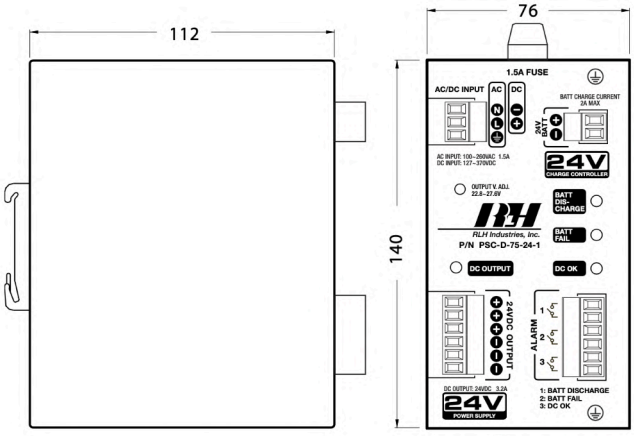


Discharge Time @ 25°C (77°F)

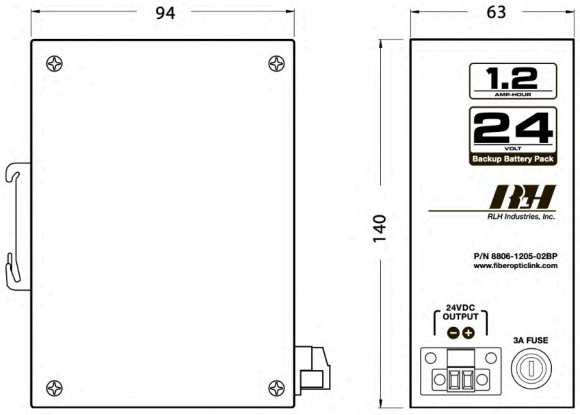


Current

Dimensions



75W Power Supply with UPS Charge Controller



24V 1.2Ah Backup Battery Pack

Ordering Information

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

Battery Pack & Replacement 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:	Overload	140 - 180% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed
	Over Voltage	27.6 - 32.4V Protection type : Shut down o/p voltage, re-power on to recover
Environment:	Working Temperature	-20°C - +70°C (Refer to derating curve)
	Working Humidity	20 - 90% RH non-condensing
	Storage Temperature	-40°C - +85°C
	Storage Humidity	10 - 95% RH
	Temperature Coefficient	±0.03%/ °C (0 - 45°C)
Other:	MTBF	446.8K hrs min. MIL-HDBK-217F (25°C)

Power Supply Specifications (cont'd)

Construction:	Durable Powder Coated Aluminum Alloy
Dimensions:	3" (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
Function:	Relay Contact Rating	30VDC, 10A (max)
	DC BUS OK	Relay contact : Short when DC voltage between 21-29V(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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