



RLH Industries, Inc.

USER GUIDE

The leader in rugged fiber optic technology.

✓ Unconditional Lifetime Warranty

2011A-0225

48V 75W AC/DC Wall Mount Low Density Power Supply

48VDC POWER WITH BATTERY CHARGE CONTROLLER AND BATTERY BACKUP

Description

The RLH 48V 75W AC/DC Low Density, wall mount power supply is a compact switching supply designed to convert AC or DC power (110/240VAC, 120~370VDC) to regulated 48VDC power for a wide range of industrial equipment.

It comes with a power supply, battery charge controller, and optional internal 1.2AH backup batteries to provide uninterruptible power, all mounted inside a rugged thermoplastic wall mount housing.

For redundant power options, please refer to the RLH 48V AC/DC wall mount power supplies with redundant power.

Features include convenient 12 position screw-down terminals for connecting industrial equipment, status LEDs for quick operational assessment, and depending on the model, user replaceable, sealed gel batteries. They have low output ripple along with short circuit, overvoltage and overload protection. AC mains cords are preinstalled, and may be easily removed for direct connection to source power.



RLH Low Density 48V 75W AC/DC Power Supply

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Standard Features

Auto sensing AC and DC input	Short circuit, overload, over voltage and over temperature protection
Cooling by free air convection	Power supplies are UL 508 (industrial control equipment) approved
LED indicator for power on, DC OK, Batt Discharge and Batt Fail	100% full load burn-in test
Fix switching frequency at 50KHz	Convenient screw down terminals accept up to 8AWG wiring
Durable, vented plastic wall mount housing with padlock hasp	Exclusive unconditional lifetime warranty

Specifications subject to change without notice.

General Safety Practices

The equipment discussed in this document may require tools designed for the activity 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.
- This equipment uses high AC and DC voltages and current, do not touch terminals when power is applied.
- Use caution when handling copper wiring and follow appropriate safety regulations.
- An external Surge Protective Device (SPD) is not required.

Mounting Information

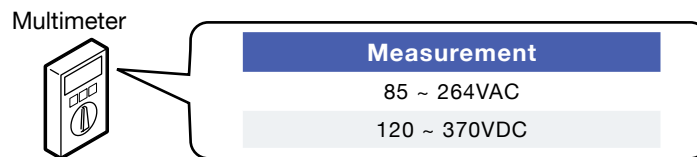
The power converter is intended to be wall mounted using the supplied hardware. Use a wall surface or backboard sufficiently strong enough to support the converter. This unit is not weatherproof, and must be mounted indoors or in a weather proof enclosure if used outdoors.

Installation

Prior to installation:

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

Measure the voltage of the source power and ensure it is within the acceptable range to avoid damage when power is applied. Set the input power switch on the power supply to match the AC voltage range.



Note: When installing into an environment with a circuit breaker before the converter, it must be rated at 1.5 times (minimum) the output current rating of the converter. For example, use a 25A circuit breaker for a 16A output converter ($1.5 \times 16 = 24$). Refer to the [General Specifications](#) to obtain the output rating for this power supply.

Do not connect power to the converter at this point.

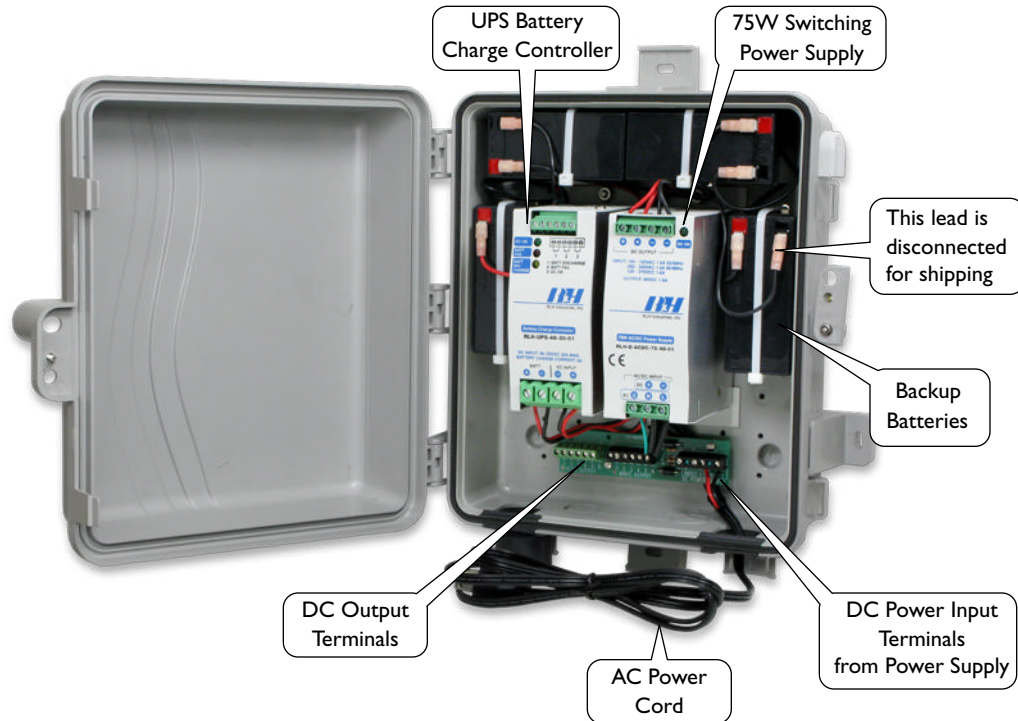
Install onto wall surface

Mount the power converter to a wall surface using the mounting tab holes at the top and bottom of the housing.

Connect equipment

Connect industrial equipment to their respective + POS and – NEG DC OUTPUT terminals. The + POS terminals are green, and the – NEG terminals are black. Route the wiring as necessary through the self sealing grommets on the bottom of the housing.

Note: Always make sure the power is removed before making connections to the output terminals.



Power Supply with Backup Batteries shown

Connect input terminals

Turn OFF and lock out the circuit breaker at the source panel for incoming power. Ensure that power is removed from the source wiring prior to making any connections. Output power is energized when input power is supplied and the batteries connected.

For AC power source, use the preinstalled AC cord(s) and plug into a standard 3 prong AC power mains outlet. The AC power outlet must include a ground.

For DC input power source, remove the AC power cord and connect the primary DC source power directly to the AC/DC INPUT terminals at bottom of the internal power supply. Note the polarity, ensuring that the positive input wire attaches to the + positive terminal. If using dual redundant power modules, connect each DC input to an internal power supply unit.

Apply input power

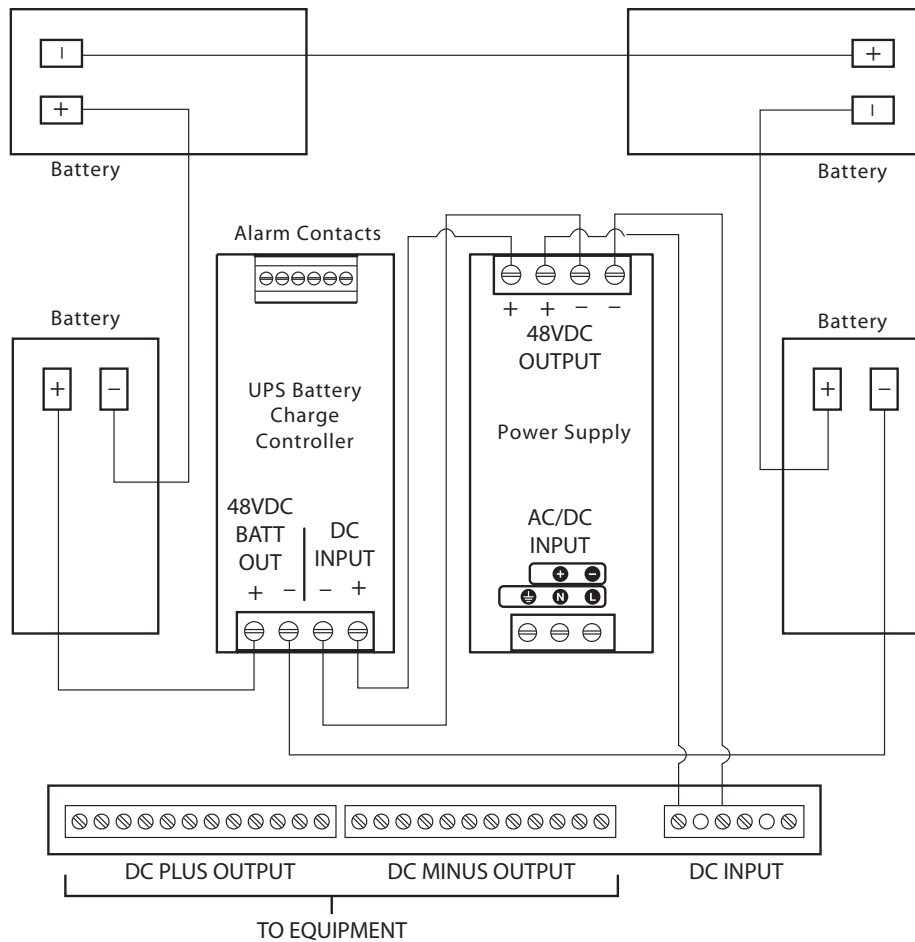
Double check all connections. Apply power to the input wiring by turning on the source power breaker back at the panel or mains switch.

Once the AC/DC input power is applied, the output terminals are energized. Double check output power at the DC OUTPUT terminals with a multimeter.

Connect Backup Batteries

To connect the batteries to the charge system and make them available for backup use, connect the loose jumper wire to the battery spade lug. This completes the battery circuit.

Note: The batteries are shipped with the connection wire removed. Once the wire is connected, battery output power is energized. Allow 24 hours for the batteries to achieve a full charge after connecting for the first time.



Connection Diagram

Specifications

Input / Output Terminals



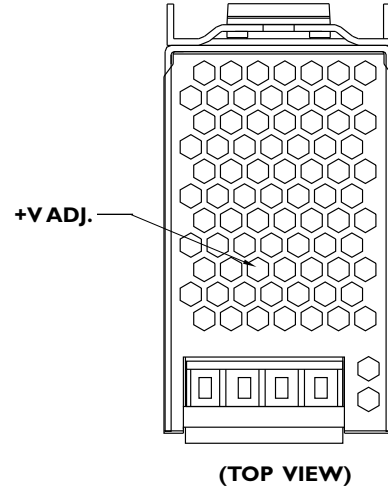
DC TERMINAL (OUTPUT)

No.	Description
1, 2	DC Output +V
3, 4	DC Output -V

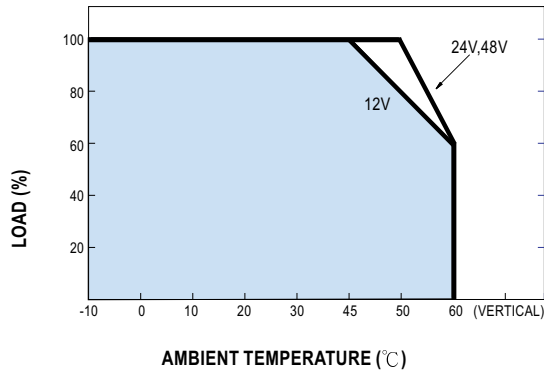
AC/DC TERMINAL (INPUT)

No.	Description	
	AC	DC
1	FG \oplus	~
2	N	V+
3	L	V-

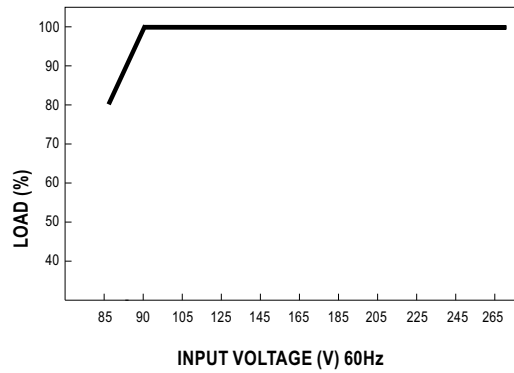
Output Voltage Adjustment



Derating Curve



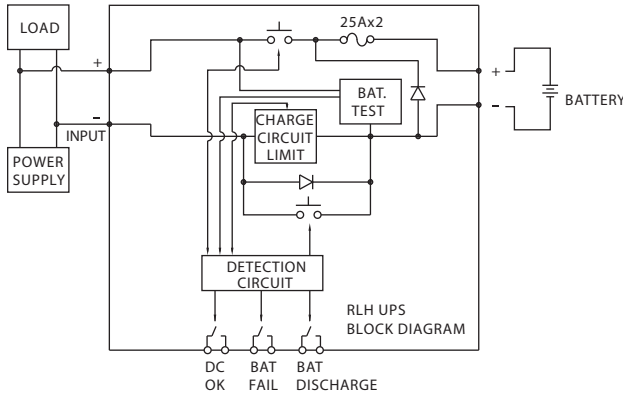
Output Derating vs. Input Voltage



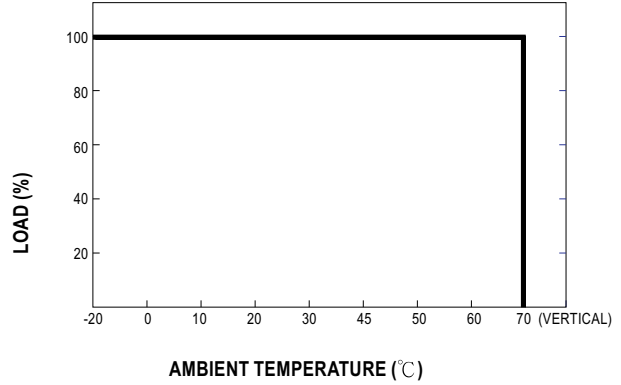
Specifications subject to change without notice.

UPS Battery Charge Controller

UPS Block Diagram

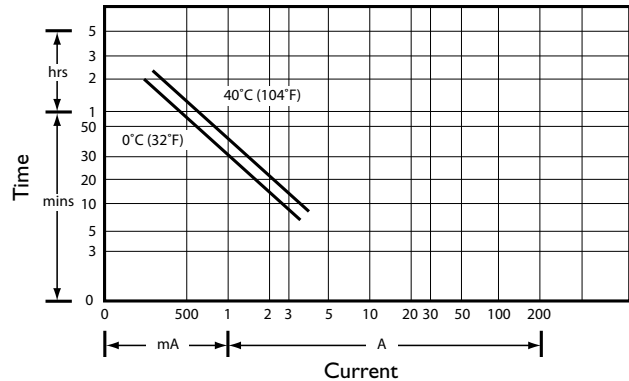
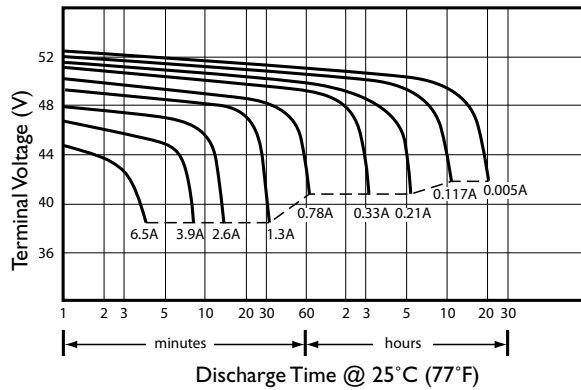


Charge Controller Derating Curve



Backup Batteries

Backup Battery Characteristics



Ordering Information

Part Number	Part Number	Input	Output	Current	Battery Backup
8806-1204-01D (CLEI: NPPSSW0CRA)	48VDC 75W Wall Mount Switching Power Supply with UPS Battery Charge Controller and Battery Backup	110-240AC/ 250-370VDC	48VDC	1.6A	1.2AH
8806-1204-01D-NB	48VDC 75W Wall Mount Switching Power Supply with UPS Charge Controller	110-240AC/ 250-370VDC	48VDC	1.6A	N/A

Specifications subject to change without notice.

Spares Information

Description	Qty. Required	Part Number
75W 48V Power Supply	1	RLH-D-ACDC-75-48-01
48V UPS Battery Charge Controller	1	RLH-UPS-48-30-01
1.2AH 48V Replacement Batteries (Set of 4)	1	8806-1204-01RB

Specifications

Power Supply Module

DC OUTPUT	DC VOLTAGE	48V
	RATED CURRENT	1.6A
	CURRENT RANGE	0 ~ 1.6A
	RATED POWER	76.8W
	RIPPLE & NOISE (max.) Note 2	240mVp-p
	VOLTAGE ADJ. RANGE	48 ~ 53V
	VOLTAGE TOLERANCE Note 3	±1.0%
	LINE REGULATION	±0.5%
	LOAD REGULATION	±1%
	SETUP, RISE TIME	1000ms, 60ms/230VAC, 1800ms, 60ms/115VAC at full load
	HOLD UP TIME (Typ.)	60ms/230VAC, 12ms/115VAC at full load
INPUT	VOLTAGE RANGE	85 ~ 264VAC, 120 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz
	EFFICIENCY (Typ.)	81%
	AC CURRENT (Typ.)	1.6A/115V, 0.96A/230V
	INRUSH CURRENT (Typ.)	Cold Start 20A/115VAC, 40A/230VAC
	LEAKAGE CURRENT	<1mA / 240VAC
PROTECTION	OVERLOAD	105 ~ 150% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed
	OVER VOLTAGE	58 ~ 65V Protection type : Shut down o/p voltage, re-power on to recover
	OVER TEMPERATURE	85°C ±5°C (TSW1) Protection type : Shut down o/p voltage, recovers automatically after temperature goes down
ENVIRON- MENT	WORKING TEMP.	-10°C~ +60°C (Refer to output load derating curve)
	WORKING HUMIDITY	20 ~ 90% RH non-condensing
	STORAGE TEMP., HUMIDITY	-20°C ~ +85°C, 10 ~ 95% RH
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6

Specifications subject to change without notice.

Specifications

Power Supply Module

SAFETY & EMC	SAFETY STANDARDS	UL508, CE, TUV EN60950-1 approved
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC
	EMI CONDUCTION & RADIATION	Compliance to EN55011,EN55022 (CISPR22) Class B
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, ENV50204, EN55024, EN61000-6-2 (EN50082-2), heavy industry level, criteria A
OTHER	MTBF	123.1K hrs min. MIL-HDBK-217F (25°C)
	DIMENSIONS	55.5*125.2*100mm (W*H*D)
	PACKING	0.6Kg; 20pcs/13Kg/1.29CUFT
NOTE	<ol style="list-style-type: none"> All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. Tolerance: includes set up tolerance, line regulation and load regulation. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. 	

UPS Charge Controller

DC INPUT / DC BUS	DC VOLTAGE (Typ.)	48 ~ 55V	
	RATED CURRENT	30A	
BATTERY INPUT / OUTPUT	VOLTAGE RANGE (Typ.)	48 ~ 55V	
	CURRENT RANGE	0 ~ 30A	
	CHARGE CURRENT (Typ.)	1A ~ 2A auto sensing	
	EXTERNAL BATTERY (Typ.)	1.2 / 4.5 / 7AH / 48V	
FUNCTION	RELAY CONTACT RATING	30VDC, 1A (max.)	
	DC BUS OK	Relay contact : Short when DC voltage between 41~55V(3%), relay contacts LED (Green) ON : DC BUS OK; LED (Green) OFF : DC BUS failure	
	BATTERY FAIL See Note 2	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 <2.0A	
	ENVIRONMENT	WORKING TEMP.	-20 ~ +70
		WORKING HUMIDITY	20 ~ 90% RH
STORAGE TEMP, HUMIDITY		-20 ~ +85° C, 10 ~ 95% RH	
VIBRATION		Component : 10 ~ 500Hz, 2G 10min./1cycle, 60min. each X, Y, Z axes ; Mounting : Compliance to IEC600068-2-6	

Specifications subject to change without notice.

Specifications

UPS Charge Controller

SAFETY & EMC	WITHSTAND VOLTAGE	Terminal-Chassis :0.5KVAC, Relay Contacts-Terminal :0.5KVAC	
	ISOLATION RESISTANCE	Terminal-Chassis :>100M Ohms/500VDC 25	70%RH
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B	
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8, ENV50204, heavy industry level, criteria A	
OTHER	MTBF	161.9Khrs min.	MIL-HDBK-217F (25° C)
	DIMENSIONS	55.5*125.2*100mm (W*H*D)	
NOTE	<p>All parameters NOT specially mentioned are measured at rated load and 25°C of ambient temperature.</p> <p>Every 25 seconds, unit will send out test signal through "Battery Fail" relay contact and LED indicator once the battery has failed.</p>		

Backup Batteries

Internal Batteries	Four 12V replaceable batteries used as a set	
Battery Type	Lead acid deep cycle, gel style, spill proof and maintenance free	
Combined Voltage	48VDC	
Capacity	1.2Ah @ 20hr-rate to 23V @25°C (77°F)	
Maximum Discharge Current	20A (5 sec)	
Operating Temperature Range	Discharge	-15°C ~ 50°C (5°F ~ 122°F)
	Charge	-15°C ~ 40°C (5°F ~ 104°F)
	Storage	-15°C ~ 40°C (5°F ~ 104°F)
Nominal Operating Range	25°C±3°C (77°C±5°C)	
Internal Resistance	Approx. 80mΩ @25°C (77°F)	
Charging Voltage (Each Battery)	Standby Use	13.65V ±0.15V @25°C (77°F)
	Cycle Use	14.7V ±0.3V @25°C (77°F)
Maximum Charging Current Limit	0.39A	
Equalization and Cycle Service	28.8 to 30VDC/unit average at 25°C	
Self Discharge	After 3 months	Approx. 90% @25°C (77°F)
	After 6 months	Approx. 82% @25°C (77°F)
	After 12 months	Approx. 70% @25°C (77°F)
	Higher temperatures will reduce storage time.	

Warranty

RLH is recognized throughout the U.S. and offers the only **UNCONDITIONAL LIFETIME WARRANTY** in the industry. We are very proud of our warranty which simply states that the product is warranted to be free of defects in material and workmanship for the **LIFE OF THE PRODUCT**. Batteries carry a 5- year unconditional warranty.

- We believe our customers shouldn't have to incur additional costs due to failure or damage
- We engineer our products with total confidence in our quality
- We understand how safety and reliability impact the total cost of ownership
- We know that customer support extends beyond the initial sale, so **we stand behind our products**

RLH will replace any product, or part thereof, that fails **FOR ANY REASON**, provided the defective part is returned to RLH Freight prepaid. This warranty is **UNCONDITIONAL** and valid even when RLH products have been abused or mishandled, or the product has been damaged as a result of a natural disaster. This warranty will reduce your costs and simplify your maintenance activities. Not all RLH products are covered by this warranty.

To make a warranty claim, or schedule repair or replacement of your RLH product, please contact us for an RMA number. You will be promptly assisted by one of our warranty specialists. All returns must have an RMA number before we can receive any items.

Technical Support

Normal technical support: (Mon - Fri 6am - 6pm PST)	Local (714) 532-1672 Toll Free (800) 877-1672 Toll Free (866) DO-FIBER
24/7 Technical support:	(714) 366-2503 (714) 457-5740

Contact Information

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Please contact your RLH sales representative for pricing and delivery information.

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