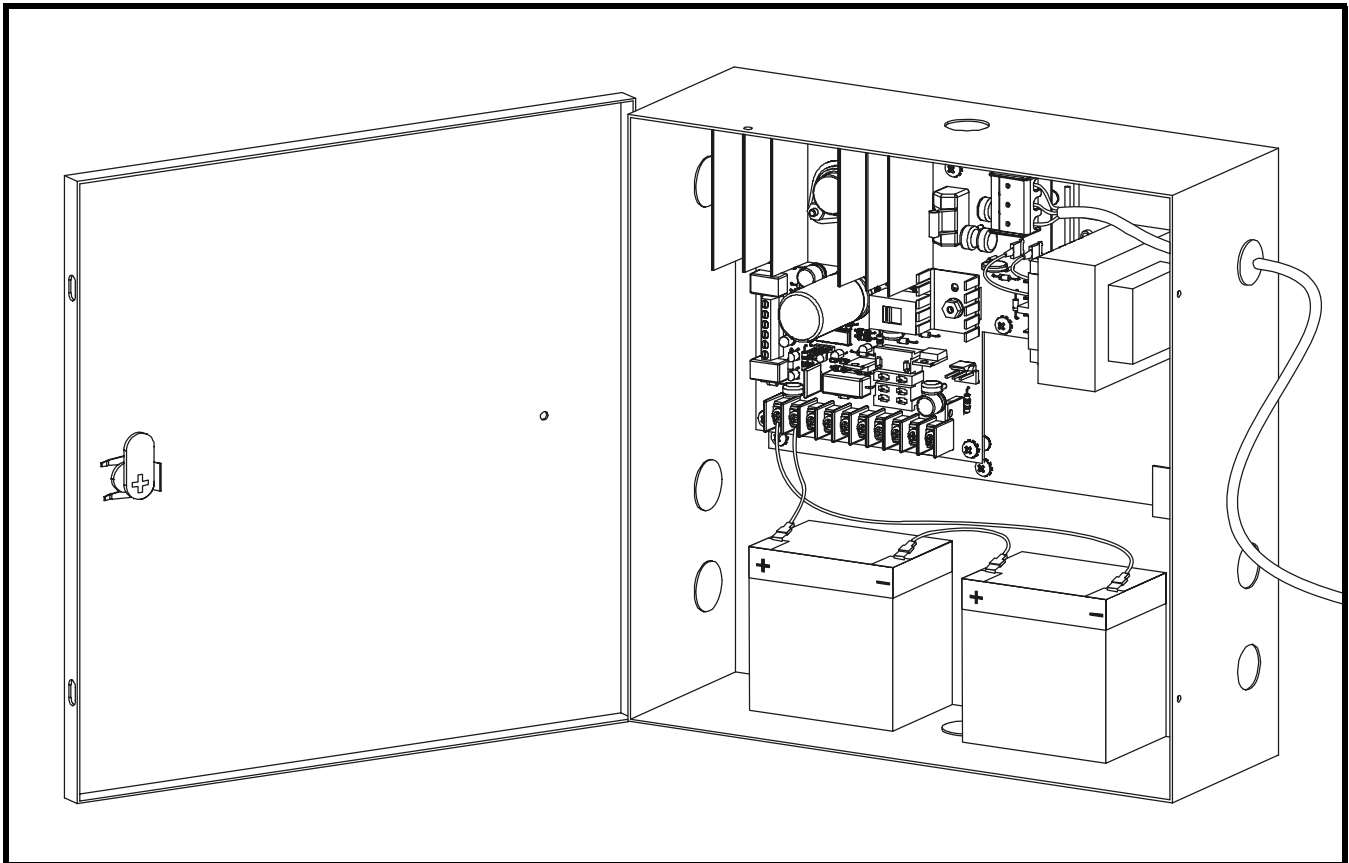




510 SERIES POWER SUPPLY

INSTALLATION MANUAL

510ULAC



Schlage Lock Company
575 Birch Street
Forrestville, CT 06010
technical support: 866-322-1237
email: SESupport@irco.com
web: www.irsupport.net



510ULAC Installation Instructions

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510ULAC Installation Instructions

Description of Operation / BoM / Enclosure Features / UL

Description of Operation

The 510ULAC power supply converts an 110VAC/60 Hz input to a power limited DC output. Output voltage is field selectable for either 13.8 VDC @ 3.0A or 27.6 VDC @ 2.0A nominal. There are three indicator LED's present on power supply to monitor the status of the unit. A red LED is illuminated when there is a DC output on the DC+ and DC- terminals. There are two green led's present near the supervision terminal block. One LED indicates when a battery is connected, the other indicates the presence of A.C. line voltage. The supervision terminal block has connections for two relays each consisting of a Common, N.O., and N.C. contact. The contacts are rated 1A @ 28VDC.

The 510ULAC 12/24VDC Power Supply is intended for operation in a controlled environment.

Bill of Materials

- Metal enclosure
- 510ULAC Printed Circuit Board
- Lid screw pack

The following are optional items:

- ♦ 12VDC Batteries
- ♦ Battery cables
- ♦ Cam lock with keys
- ♦ EIR

The following are optional items not evaluated by UL:

- ♦ CMR
- ♦ DCM
- ♦ TDM
- ♦ RCM

Enclosure Features

- Painted metal, with hinged, painted metal door
- Dimensions: 12" x 12" x 4"
- Extra "knockouts" on the top, bottom and sides.
- Mounting holes on the back surface.

The following is an optional feature:

- ♦ Door can be fitted with a cam lock.

UL

- UL File Number: BP9350
- All interconnected devices must be UL listed.

510ULAC Installation Instructions

Product Specifications

Product Specifications

Table 1: Product Specifications

Electrical	Specification
Input Voltage	110VAC, 60Hz, 1.25 Amp
Output Voltage	13.8VDC (+/- 5%) or 27.6VDC (+/- 5%) (field selectable) Filtered & Regulated
Output Current	3.0A @ 13.8VDC or 2.0A @ 27.6VDC
Primary Fuse Size	1.25A, Slo-Blo, 250V, 5x20mm
Battery Fuse Size	4.0A, Resettable
Secondary Protection	Output overload protected by the regulator circuit
Charging Circuit	Built-in Standard
Supervision Circuit	
AC Monitor	Power Limited. Form "C" Contacts.
Battery Monitor	Power Limited. Form "C" Contacts.
Mechanical	
Enclosure	12" x 12" x 4" Approx. Steel NEMA Grade 1 with conduit knockouts and hinged cover with lock down screws.
Color/Finish	Gray, Baked Enamel
Input Terminals	Barrier strip with (3) #6 screw terminals and protective cover,
Output Terminals	Barrier strip with (2) #6 screw terminals labeled DC(+), DC(-) Barrier strip with (2) #6 screw terminals labeled BAT(+), BAT(-) Barrier strip (7) #6 screw terminal labeled EIR
Optional	
Stand-by Battery Pack (1)	4.0A/Hour @ 12VDC (Rechargeable, Sealed, Lead Acid, Gel Cell)
Stand-by Battery Pack (2)	8.0A/Hour @ 12VDC or 4.0A/Hour @ 24VDC (Rechargeable, Sealed, Lead Acid, Gel Cell)
EIR	Contact rating: 3.0A @ 30VDC
Key Lock Cover	Optional with 2 keys.
Warranty	
Warranty	1 Year Limited
Shipping Weight	
Power Supply	12 Pounds
Each Battery	4 Pounds
Environmental Conditions	
Operating Temperature & Relative Humidity	Indoor - 0°C and 49°C (32°F and 120°F) 85%, +/- 5%

510ULAC Installation Instructions

Installing the 510ULAC

1) Installation Procedure

The 510ULAC must be installed in accordance with article 760 of the National Electrical Code or NFPA 72 as well as all applicable local codes.

NOTE: Install the 510ULAC indoors within the protected premises.

A.) Mounting holes are provided on the back surface of enclosure. Firmly mount the 510ULAC to a solid surface using hardware suitable for the surface.

NOTE: Check national and local codes for installation requirements.

B.) Output voltage selection is set at the factory for 12VDC. If required, change SW1 to 24VDC as shown in (**See Installation Diagram on page 6**).

C.) Connect AC power (110VAC, 50/60Hz) to terminals marked: LINE, GROUND (symbol), and NEUTRAL (**See Installation Diagram on page 6**).

D.) Connect devices to be powered to terminals marked: DC (+) and DC (-) (**See Installation Diagram on page 6**).

NOTE: To avoid potential damage, measure output voltage before connecting devices.

E.) For Access Control applications, stand-by batteries are optional.

- When stand-by batteries are not used, a loss of AC will result in the loss of output voltage.
- When stand-by batteries are used, they must be lead acid or gel type.

2) Wiring

- Wiring methods shall be in accordance with the National Electrical Code (ANSI/NFPA70), local codes, and the authorities having jurisdiction.
- Use metallic conduit for connection of the branch circuit to maintain grounding and bonding of the enclosure.
- Cabling and wire must be UL Listed and/or recognized wire suitable for the application.
- Only use stranded, multi-conductor, color coded wire, without splices.
 - ♦ Use 18AWG or larger for all low power connections (Battery, DC output, AC input).
 - ♦ Use 22AWG or larger for all power limited circuits (Battery Fail, AC Fail).
- Recommended minimum of two (2) spare conductors.

WARNING: Keep power limited wiring separate from non-power limited wiring (110VAC / 60Hz Input, Battery Wires). Minimum 0.25" spacing must be provided.

Table 2: Wire Selection Table

Total Length of One Wire Run (Feet)	Load Current @ 12VDC				Load Current @ 24VDC			
	1/4A	1/2A	3/4A	1A	1/4A	1/2A	3/4A	1A
100	24	18	16	14	24	20	18	18
200	16	14	12	12	20	18	16	14
300	16	12	12	10	18	16	14	12
400	14	12	10	--	18	14	12	12
500	14	10	10	--	16	14	12	10

3) Tamper Switch

A tamper switch is required to be installed on the 505ULAC/510ULAC that will monitor the enclosure for unauthorized access. The tamper switch should be attached to a UL Listed burglar alarm system or a Listed local siren/annunciator. This will allow for compliance to UL294 Section 32.1.4.

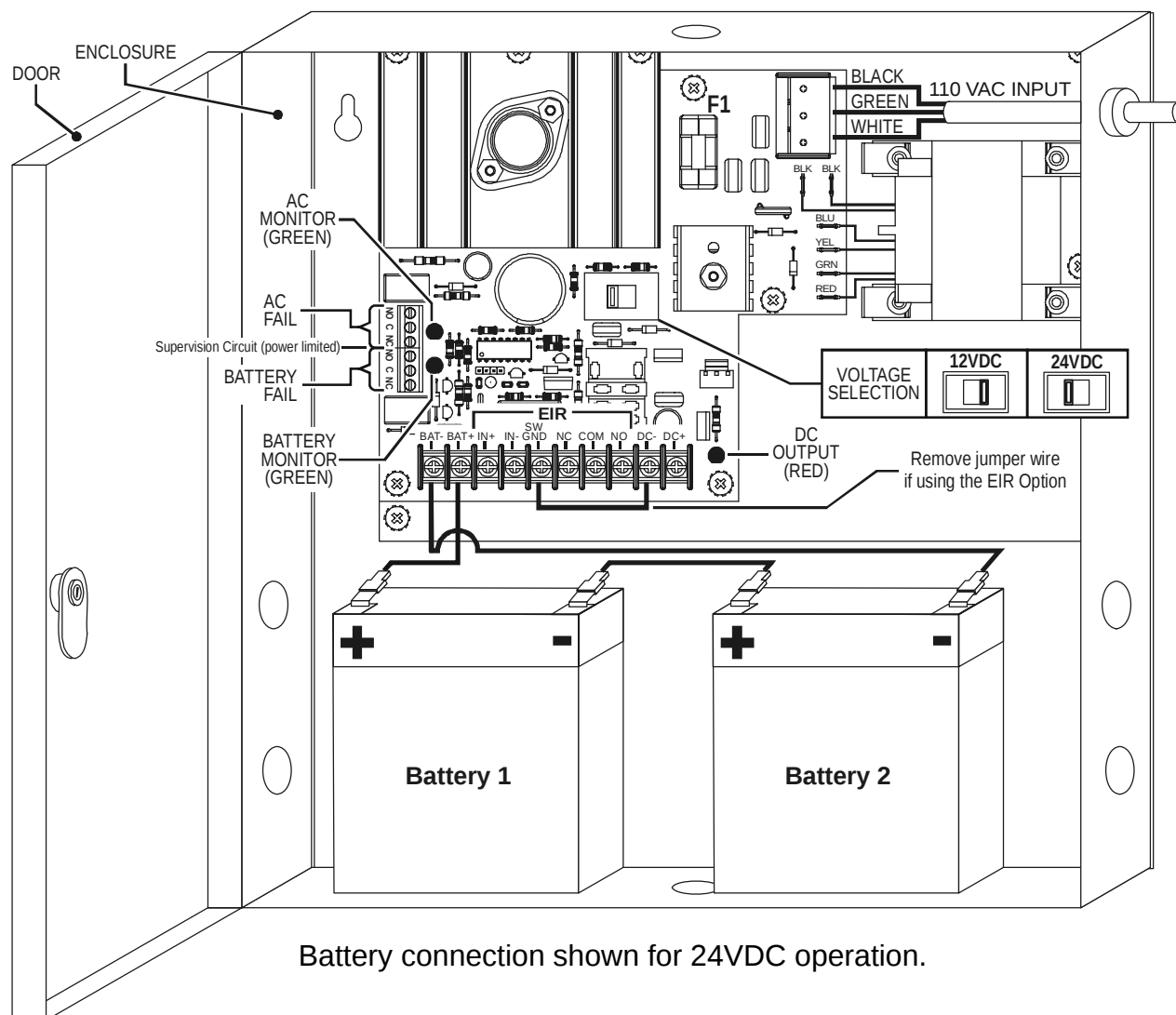
510ULAC Installation Instructions

Installing the 510ULAC

Installation Diagram

Refer to the diagram below when wiring the 510ULAC Power Supply. Stand-by batteries shown for 24VDC operation and are wired in series.

Figure: 1. Installation Diagram



WARNING: De-energize unit prior to servicing. For continued protection against fire hazard, replace fuse (F1) with the same type and rating (1.25A, Slo-Blo, 250V). Replace fuse cover before energizing.

510ULAC Installation Instructions

Stand-by Battery Installation / Terminal Identification

Stand-by Battery Installation

- 1.) Verify field wiring is complete.
- 2.) Place batteries upright in bottom of enclosure (See *Installation Diagram* on page 6).
- 3.) Using the provided cables, connect batteries (See *Installation Diagram* on page 6).
- 4.) Turn on VAC line power input to power supply.

Table 3: Stand-by Battery Power Selection Chart

Current Load Draw (Amps)	12VDC SYSTEM		24VDC SYSTEM	
	Hours	Hours	Hours	Hours
3	2.5	5	n/a	n/a
2	4	8	2	4
1	8	16	4	8
0.5	16	32	8	16
0.33	24	48	12	24
0.22	36	72	18	36
0.16	50	100	25	50
Number of batteries required	2	4	2	4

Battery capacity for emergency standby with 2 batteries at least 2.5 hours at 12VDC @ 3A.

Battery capacity for emergency standby with 2 batteries at least 2 hours at 24VDC @ 2A.

NOTE: Charging time is approxiamtely 48 hours from deep discharge.

Terminal Identification

Table 4: Terminal Identification

Terminal Legend	Function / Description
Line, Ground, Neutral	110VAC, 50/60Hz input
DC (-), DC (+)	12VDC @ 3A continuous power limited output 24VDC @ 2A continuous power limited output
AC Fail NC C NO	Indicates loss of AC power, e.g. connect to alarm panel. Relay normally energized when AC power is present. Contact rating: 1A @ 28VDC
Battery Fail NO C NC	Indicates low battery voltage, e.g. connect to alarm panel. Relay normally energized when DC power is present. Contact rating: 1A @ 28VDC
BAT (-), BAT (+)	Stand-by battery connections

510ULAC Installation Instructions

EIR Connection / LED Diagnostics / Maintenance

EIR Connection (optional)

The purpose of the EIR circuit is to cut power to fail safe locks in an emergency situation. When using the EIR relay circuit to supply power to fail safe locks, such as electromagnetic locks, power must come from connector J4, terminals: **DC- & DC+** as shown below. Be sure to test all circuits for proper function after installation.

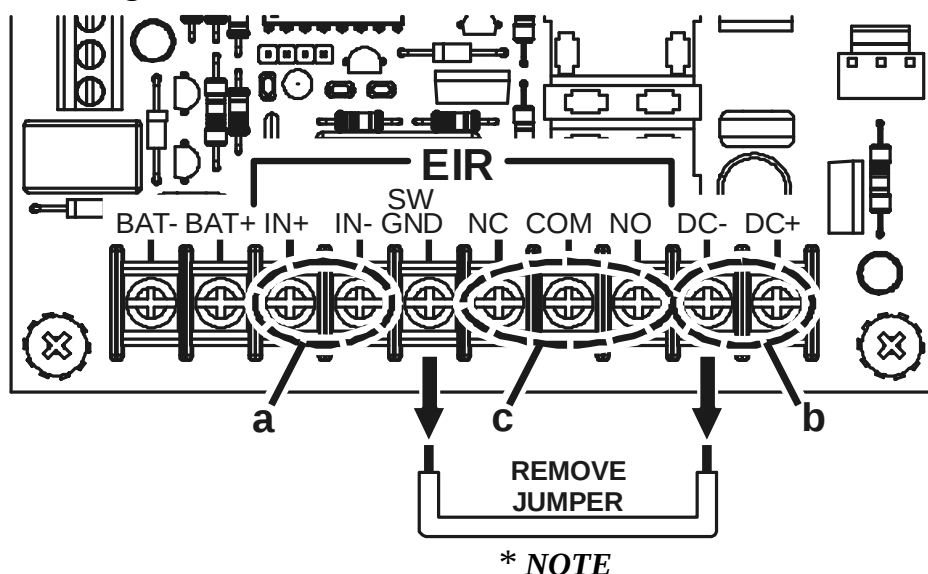
*** NOTE:** Jumper from **SW GND** to **DC-** must be removed when using EIR.

Figure: 2. EIR Connection

(a) NORMALL CLOSED DRY CONTACT FROM FIRE PANEL (BY OTHERS). CONTACT MUST OPEN UPON EMERGENCY.

(b) OUTPUT POWER TO LOCKING SYSTEM WILL HAVE GROUND CONNECTION (-) REMOVED WHEN FIRE ALARM CONTACT OPENS ON TERMINALS: **IN+ & IN-**.

(c) RELAY OUTPUT REFLECTS CONDITION OF EIR RELAY FOR SIGNAL OR CONTROL. RATED 3.0A @ 30VDC.



LED Diagnostics

Table 5: LED Diagnostics

DC OUTPUT (RED)	AC MONITOR (GREEN)	BATTERY MONITOR (GREEN)	POWER SUPPLY STATUS
ON	ON	ON	Normal Operation.
ON	ON	OFF	Batteries Disconnected or Discharged.
ON	OFF	ON	Unit on Back-up Battery.
OFF	ON	OFF	DC Output Shorted.
OFF	OFF	OFF	Unit De-energized.

Maintenance

Unit should be tested at least once a year for proper operation. Perform test as follows:

Output Voltage Test - Under normal load conditions, the DC output voltage should be checked for proper voltage level (see power supply voltage output in the Product Specifications Chart).

Battery Test - Under normal load conditions, check the following

- Battery is fully charged.
- Specified voltage at all battery terminals and PCB terminals marked BAT (+) & BAT (-). This ensures there are no breaks in the battery cables.

NOTE: Expected battery life is 5 years. Change batteries every 4 years, or less if necessary.