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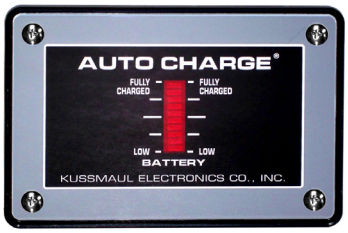
REVISED BY: THN
DATE: 09-17-2012

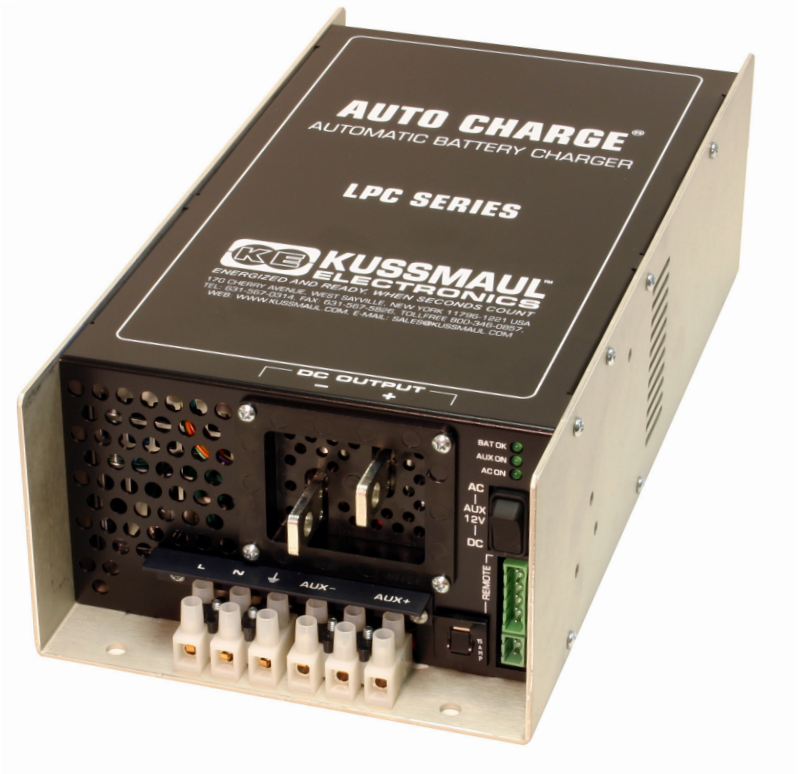
INSTRUCTION MANUAL

AUTO CHARGE
LPC SERIES

MODEL #091-206-12



LPC STANDARD DISPLAY



INPUT: 115 volt, 50/60 Hz, 13 amps

OUTPUT: 80 AMPERES

3 YEAR WARRANTY

170 Cherry Ave.
West Sayville, NY 11796

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KUSSMAUL™ ELECTRONICS
ENERGIZED AND READY, WHEN SECONDS COUNT

Phone: 631-567-0314
Fax: 631-567-5826

sales@kussmaul.com

IMPORTANT SAFETY INSTRUCTIONS

1. SAVE THESE INSTRUCTIONS - This manual contains important safety and operating instructions for battery charger model: 091-206-12.

2. Do not expose the charger to rain or snow.

3. Wire charger inaccordance with all: National, Local and/or Underwriter requirements for NEMA, 115VAC, 15 Ampere appliance.

4. Do not operate the charger if it has been dropped or otherwise damaged in any way; take it to a qualified serviceman.

5. Do not disassemble charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.

6. To reduce risk of electric shock, disconnect AC input power before attempting installation, maintenance or cleaning.

CAUTION:

CHARGING LEADS MUST BE DISCONNECTED FROM BATTERY PRIOR TO WORKING ON CHARGER

7. DC CONNECTION PRECAUTIONS:

a) When connecting DC output wires to the charger always connect to the charger first and then to the battery.

b) When disconnecting DC output wires to the charger always disconnect wires at the battery first and then disconnect wires at the charger.

8. Charger Location:

a) Locate charger as close to batteries as possible, but not inside the battery compartment.

b) Never place charger directly above battery or in battery compartment; gases from battery will corrode and damage charger.

c) Do not operate charger in a closed-in area or restrict ventilation in any way.

e) Do not set a battery on top of charger.

9. Always install high current circuit breaker, supplied with each charger, in-line with the charger DC output. The circuit breaker should be installed closest to the battery terminal.

10. Always install battery terminal insulators, supplied with each charger, at the charger DC output terminals.

INTRODUCTION

The AUTO CHARGE LPC SERIES is a low profile, completely automatic, single channel, battery float charger designed for vehicles with a single battery system. The LPC improves upon package size and parasitic systems. The charger is also ruggedized to withstand the shock and vibration encountered by vehicle mounted equipment.

FEATURES

- Charger controller
- Automatic current limiting
- Remote voltage sense
- Remote charger indicator display
- LED status indicators
- AUX output with AC or DC mode rocker switch and automatic fuse protection
- AC input circuit breaker protection
- Fan cooled
- Reverse polarity protected by external inline fuse

FUNCTIONALITY

Charger Controller:
The Auto Charge LPC contains a precision voltage controller to regulate the output voltage. Using high-frequency switching technology the output terminal voltage is compared to a reference voltage, any error detected is then used to control the charger output at the desired level. There is no “trickle charge” and therefore no danger of overcharging and water boil-off.

Automatic Current Limiting:
When batteries are severely discharged, some battery chargers can be overloaded due to the high charging current required. The Auto Charge LPC contains an automatic current limit circuit. The current limit feature limits the output current to 80 amperes when charging a deeply discharged battery, or if the starter cranks the engine while charging. The current limiter thus eliminates the need for an ignition interlock circuit.

Remote Battery Sense:
Adding sense leads from the charger to the battery compensates for voltage drop in the charging wires. The charger automatically compensates for this voltage drop and boosts the charger output voltage in order to maintain the voltage at the battery constant.

Remote Charger Indicator Display:
The standard indicator displays the charge condition of the battery in 10-levels from “LOW CHARGE” to “FULLY CHARGED”. This device indicates a defective battery when a bar graph does not rise to the “FULLY CHARGED” level after an extended period of charging. See option accessories for enhanced charger indicator displays. **Note**: If a battery is being charged with an external load of 4 to 10 amperes across its terminals, the bar graph may move down 1 or 2 levels. This does not indicate a defective battery.

LED Status Indicators:

- **BATTERY OK**: Indicates that a battery of proper polarity is connected to the charger output terminals.

- **AUX ON**: Indicates that power to the AUX output terminal is ON.

- **AC ON**: Indicates that AC input voltage is present. Note: Battery must be above 9VDC and of proper polarity.

AUX Output:
The output terminal strip provides an additional output to accomodate 12 volt accessories, such as: Kussmaul's 12VDC air pump. The AUX output works in conjunction with a front panel mounted rocker switch. For normal operation, the rocker switch should be left in AC mode, which means that the aux accessory works only when shoreline power is supplied to the charger. With the switch in DC mode the aux accessory will operate when AC power is ON or OFF. In either position the aux output operates from the vehicle's batteries, while the charger automatically recharges the batteries as required.

AUX Output Automatic Reset Fuse:
The LPC contains an internal automatic reset fuse. Should the AUX output fuse open, reset the fuse by cycling the AC input power (shore line). Note: the AUX rocker switch must be in AC mode.

AC Input Circuit Breaker Protection:
The charger AC input is circuit protected with a panel mounted manual reset circuit breaker.

Cooling Fan:
The LPC is fan cooled and turns on when the charger is on. Air is circulated from the rear panel and exhusted through the front panel.

Reverse Polarity Protected (only when externally fused):
A surface mounted high current manual reset circuit breaker is provided with each charger. The circuit breaker must be installed with every charger to provide reverse polarity protection. If the circuit breaker is not installed then the charger will not be reverse polarity protected.

OPERATION

Battery Charger Output:

1. A discharged battery is recharged to roughly 90% or until the current tapers down to less than 2 amps. The ouput voltage never exceeds the float voltage, which is regulated from 0 to 80 amps (current-limit).

2. The charger will continue to charge the battery until the voltage at the battery reaches float voltage level.

AUX Output:

1. The AUX output is current-limited to 15 amps via an internal automatic reset fuse. The AUX output shares current demand with the battery output. The combination of both outputs never exceeds 80 amps. If the AUX output demands 15 amps then the battery output will be limited to 65 amps.

2. The AUX output voltage follows the battery output voltage.

INSTALLATION

1. The Auto Charge LPC should be installed in a well ventilated area.
2. Mount the charger with the four holes provided.

WIRING

1. Refer to Installation Wiring Diagram.
2. **CAUTION: CONNECT DC WIRES TO CHARGER FIRST, THEN TO BATTERIES.**
2. Terminate #2AWG or larger cable wire using 5/16" ring lugs, included in hardware pack. Torque rating 15ft-lb max.
3. Install 100 amp circuit breaker using 5/16 ring lugs in line with BAT (+), included in hardware pack. **Note: Circuit breaker should be placed closest to battery terminal.** Torque rating 50in-lb max.
4. Double check all wiring before applying 115 AC volts to input terminal. Verify that the battery voltage appears at the charger output terminals. **Note:** A minimum of 9 volts is required to start the charger.
5. Apply 115 VAC (shoreline power) to input terminal and observe that the charger is operating. The Remote Bar Graph need not be connected for the charger to operate.

INSTALLATION WIRING DIAGRAM

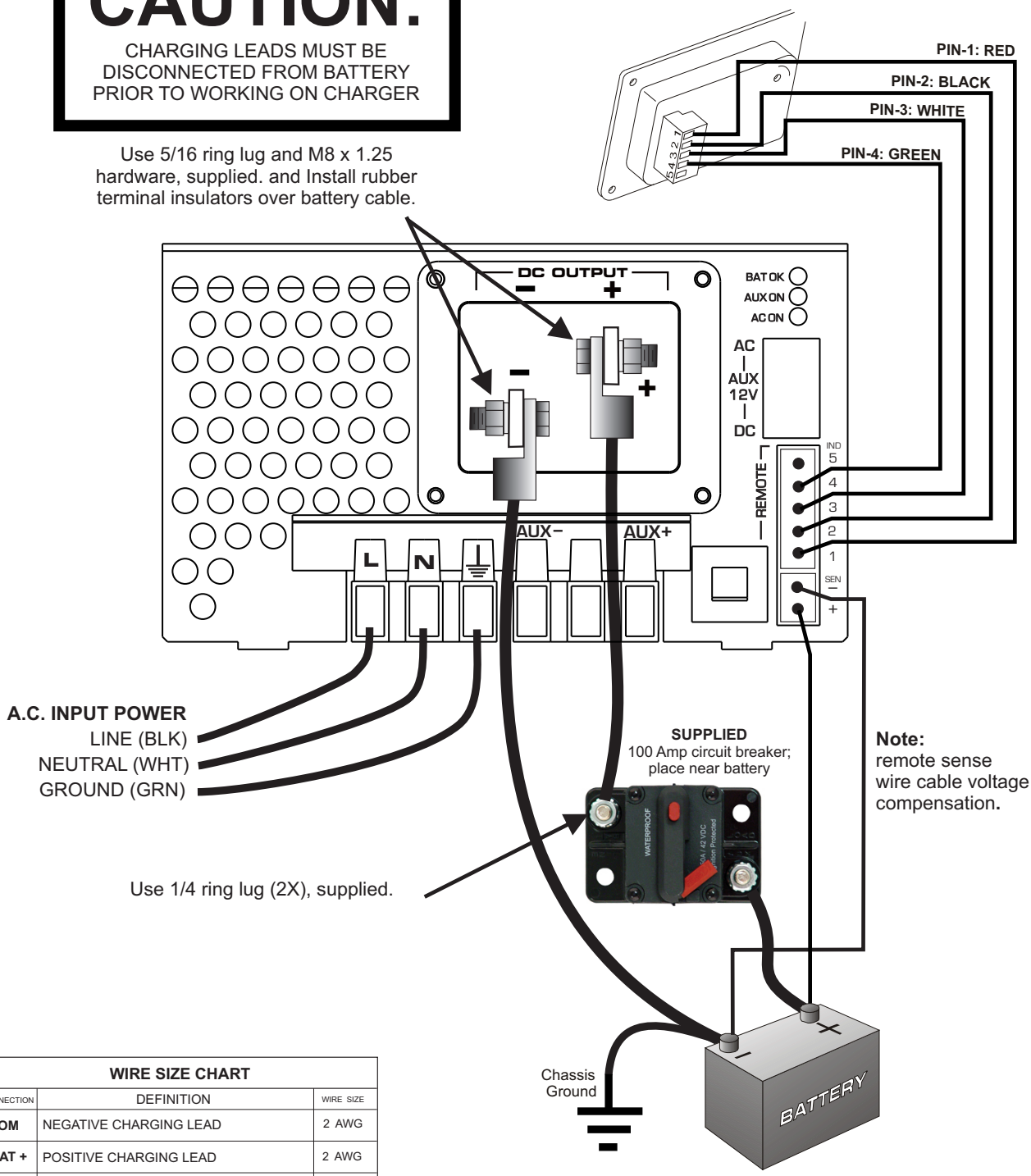
Wiring shown for standard bar graph (included)

Note: Pin 1 of indicator must go to Pin 1 of Remote Display on charger. Pin 2 of indicator must go to Pin 2 of Remote Display on charger, and so forth. Check connections and color of wires before plugging-in.

CAUTION:

CHARGING LEADS MUST BE DISCONNECTED FROM BATTERY PRIOR TO WORKING ON CHARGER

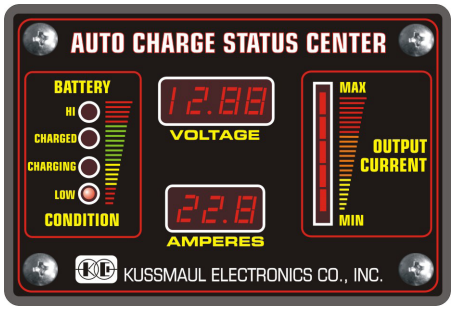
Use 5/16 ring lug and M8 x 1.25 hardware, supplied. and Install rubber terminal insulators over battery cable.



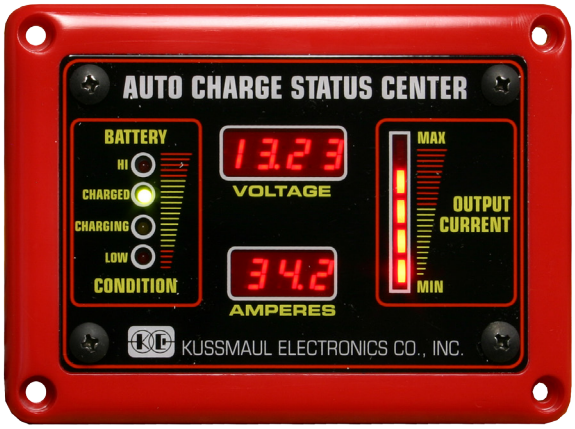
WIRE SIZE CHART		
CONNECTION	DEFINITION	WIRE SIZE
COM	NEGATIVE CHARGING LEAD	2 AWG
BAT +	POSITIVE CHARGING LEAD	2 AWG
AUX +	POSITIVE OUTPUT FOR AUX	14 AWG
AUX -	NEGATIVE OUTPUT FOR AUX	14 AWG
INPUT	AC INPUT POWER	14/3 AWG

NOTE: Minimum wire size on charger BAT (+) and COM is **#**2 **AWG**, for a length of 20 feet. Smaller gauge wire may cause overheating of terminal. Use 2S8R1 5/16” ring lug supplied with each charger to terminate DC wires to battery. Additional information is available upon request.

OPTIONAL ACCESSORIES



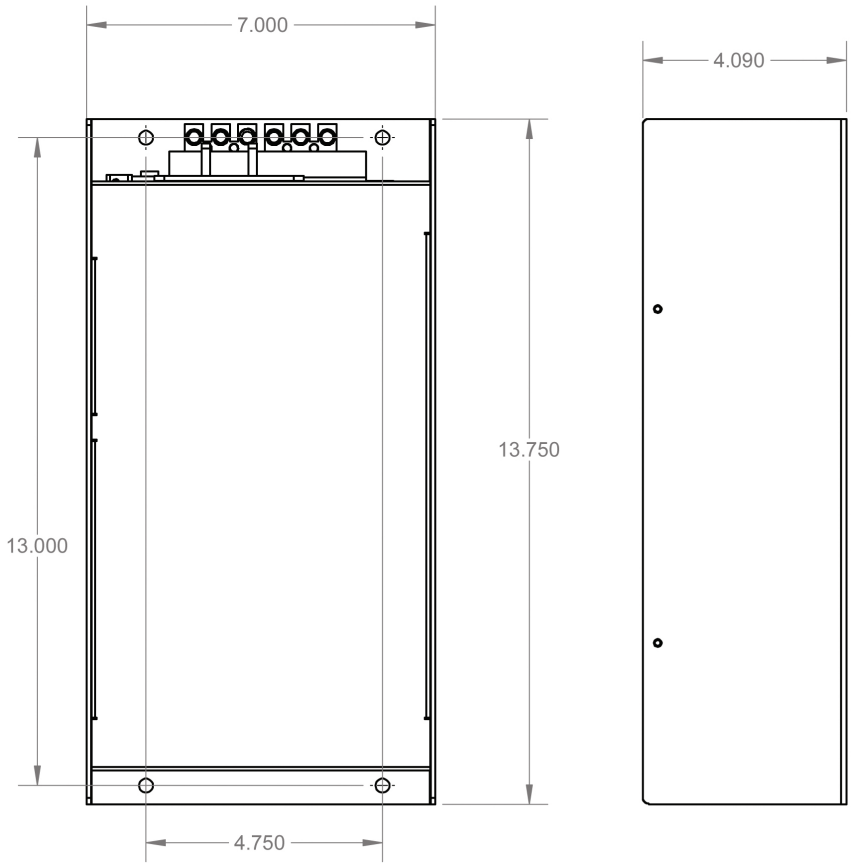
DELUXE STATUS CENTER
MODEL #: 091-194C-IND
(shipped with 16-foot 4-wire cable, connectors, and mounting screws)



DELUXE STATUS CENTER WATERTIGHT
MODEL #: 091-194C-IND-WT
(Bezel available in various colors: red, yellow, white, gray, blue, and black)

SPECIFICATIONS

Input Power:	115 volt, 50/60 Hz, 13 amperes
Input Fuse:	15 ampere, external, manual reset, circuit breaker
AUX Fuse:	15 ampere, internal, automatic, circuit breaker
Float Voltage:	13.25 volts (0 - 80 amps)
Output Current:	80 amperes max
Status Indicators:	Battery OK, AUX On, Power On
Charger Indicator:	091-200-IND: LPC Standard Remote Bar Graph indicator, included with charger
Hardware Pack:	Includes: (2) 5/16 ring lugs (p/n: 2S8R1) ; (2) 1/4 ring lugs (p/n: 2S6R1) (1) 5-pin plug; (1) 2-pin plug (2) M8 x 1.25 bolt, lockwasher, and nut (2) Rubber terminal insulators (1-black, 1-red) (1) 100amp Circuit Breaker (p/n: 090-0100-0)
Weight:	10 pounds



INSTALLATION RECORD & WARRANTY

Date Installed _____

Installed By _____

Vehicle Identification _____

Vehicle Owner _____

WARRANTY

All products of Kussmaul Electronics Company Inc. are warranted to be free of defects of material or workmanship. Liability is limited to repairing or replacing at our factory, without charge, any material or defects which become apparent in normal use within 3 years from the date the equipment was shipped. Equipment is to be returned, shipping charges prepaid and will be returned, after repair, shipping charges paid.

Kussmaul Electronics Company, Inc. shall have no liability for damages of any kind to associated equipment arising from the installation and /or use of the Kussmaul Electronics Company, Inc. products. The purchaser, by the acceptance of the equipment, assumes all liability for any damages which may result from its installation, use or misuse, by the purchaser, his or its employees or others.