

INSTRUCTION MANUAL

AUTO CHARGE LPC SERIES LOW PROFILE BATTERY CHARGER

MODEL # 091-200-12



STANDARD DISPLAY

INPUT: 115 volt, 50/60 Hz, 7 amps

OUTPUT: 40 AMPERES

3 YEAR WARRANTY



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INTRODUCTION

The AUTO CHARGE LPC SERIES is a low profile, completely automatic, 2-stage, single channel battery charger designed for vehicles with a single battery system. The LPC improves upon package size and loaded systems. The charger is also ruggedized to withstand the shock and vibration encountered by vehicle mounted equipment.

FEATURES

- Boost voltage to compensate for cable voltage drop - great for loaded situations
- Automatic current limiting
- Remote Battery charge/condition indicator display
- LED status indicators
- AUX output with AC or DC mode rocker switch and automatic fuse protection
- Reverse polarity protected
- Dual AC input fuse protection

FUNCTIONALITY

Charge Controls & Electronic Remote Sensing:

The Auto Charge LPC contains a precision voltage controller to maintain the battery's charge. The output terminal is voltage regulated and internal circuitry provides for boost voltage during loaded situations. Output voltage regulation and boost voltage compensate for cable voltage drop. 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. The current limit feature limits the output current to 40 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.

Battery Selector Switch (Lead-Acid/AGM or Gel-Cell):

Applicable to 3-step charger (unloaded systems only) - model: 091-200-12-3S

Remote Battery Charge Condition Indicator:

This indicator shows 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. **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.**

AUX Output:

The output terminal strip provides an additional output to accommodate 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 (shoreline).

LED Status Indicators:

- **AUX ON:** Indicates that power to the AUX output terminal is ON.
- **AC ON:** Indicates that AC voltage is present. Note: Battery must be above 9VDC and of proper polarity.
- **BATTERY OK:** Indicates that a battery of proper polarity is connected to the charger output terminals.

Cooling Fan:

The LPC is fan cooled and automatically adjusts circulation depending on the current output and internal component temperature. Air is circulated through the front panel and exhausted through the rear panel. When the load current increases or the internal component temperature increases, the fan speed increases to allow greater air movement through the unit.

OPERATION

Battery Output Unloaded situations:

1. A discharged battery is recharged to roughly 90% or until the current tapers down to less than 4 amps. From current-limit (40 amps) to 4 amps, the LPC output terminal is voltage regulated at the boost voltage level, which is factory set to 13.6 volts
2. Once the current decreases to less than 4 amps, the output terminal is set to float voltage level, which is factory set to 13.23 volts.

Battery output loaded situations:

1. During loaded situations, when output current demand exceeds 4 amps, the output terminal increases from float voltage (13.23) to boost voltage (13.6). The output terminal is regulated at boost voltage level any time the output current exceeds 4 amps.

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. Combination of both outputs never exceeds 40 amps. If the AUX output demands 15 amps then the battery output will be limited to 25 amps.
2. The AUX output voltage follows the battery output voltage. If the battery output is regulated at float voltage then the AUX output is also at float voltage. Similarly, if the battery output is regulated at boost voltage then the AUX output is also at boost voltage level.
3. It is also possible for the battery output to follow the AUX output. If the AUX output demands greater than 4 amps then the battery output and AUX output voltage will both increase to boost voltage level (13.6 volts).

INSTALLATION

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

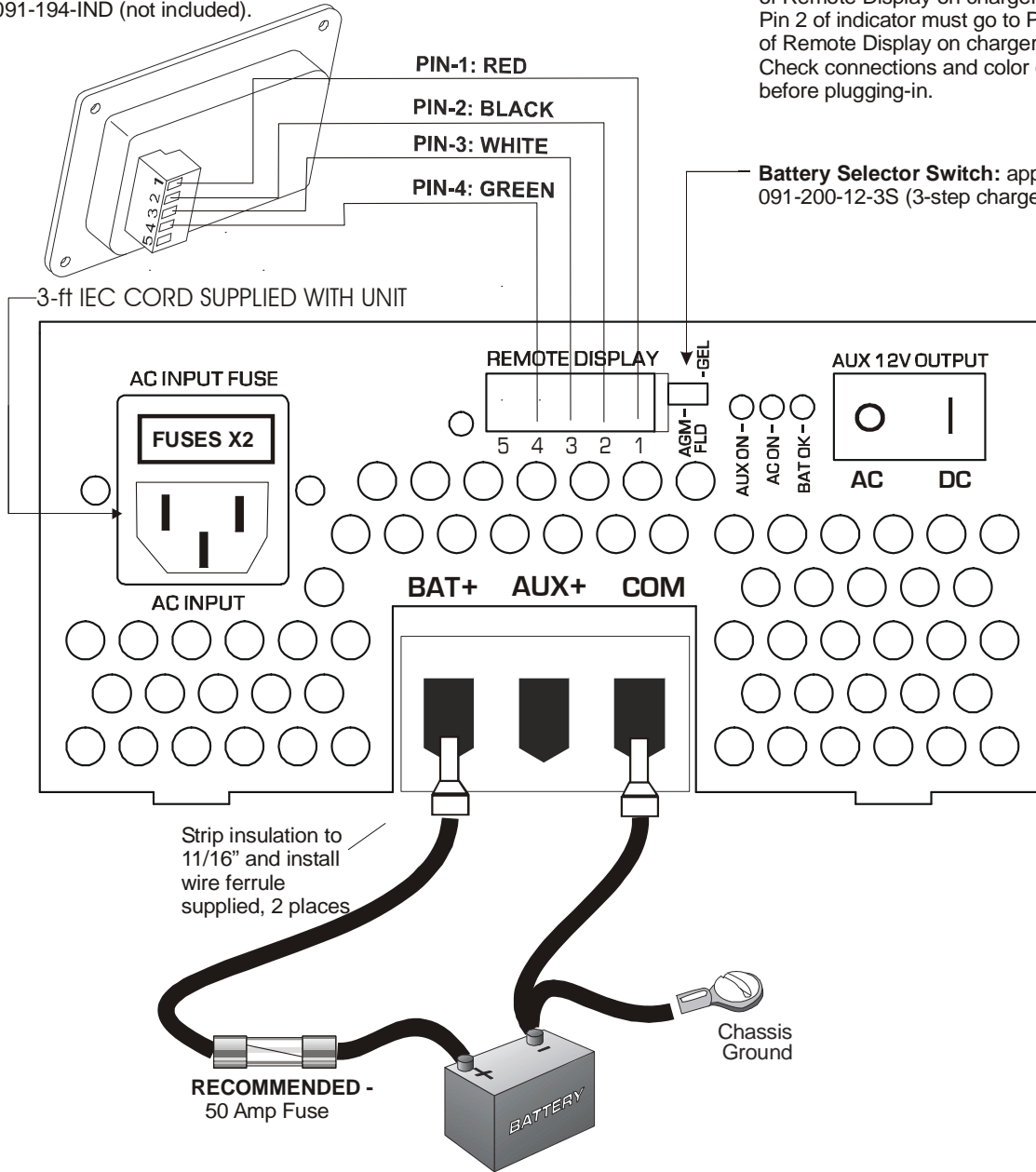
WIRING

1. Refer to Installation Wiring Diagram.
2. Kussmaul Electronics recommends installing a 50 amp fuse or circuit breaker protection in line with the battery output. **Note: Fuse or circuit breaker protection should be placed near battery output terminal.**
3. 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.**
4. 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

Note: Wiring shown for standard bar-graph (included) or optional Deluxe Status Center, model #: 091-194-IND (not included).

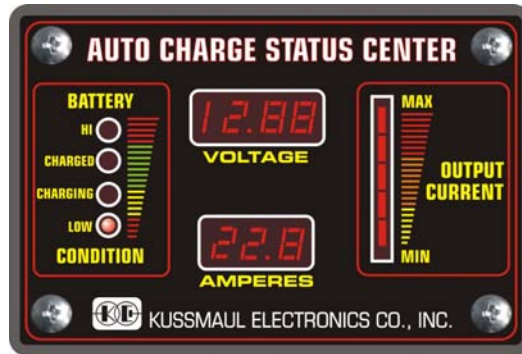
Note: Pin 1 of indicator must go to Pin 1 of Remote Display on charger. Pin 2 of indicator must go to Pin 2 of Remote Display on charger, and so forth. Check connections and color of wires before plugging-in.



WIRE SIZE CHART		
CONNECTION	DEFINITION	WIRE SIZE
COM	NEGATIVE CHARGING LEAD	8 AWG
BAT +	POSITIVE CHARGING LEAD	8 AWG
AUX +	POSITIVE OUTPUT FOR AUX	14 AWG
INPUT	AC INPUT POWER IEC CORD (SHORELINE)	16/3 AWG

NOTE: Minimum wire size on charger output and ground is **#8 AWG**. For a length of 10 feet or longer **#6 AWG** is required. Smaller gauge wire may cause overheating of terminal. Use 2-966067 wire ferrule over wire to simplify insertion of wire into terminal strip and to improve connection. Additional information is available upon request.

OPTIONAL ACCESSORIES



DELUXE STATUS CENTER
MODEL #: 091-194-IND



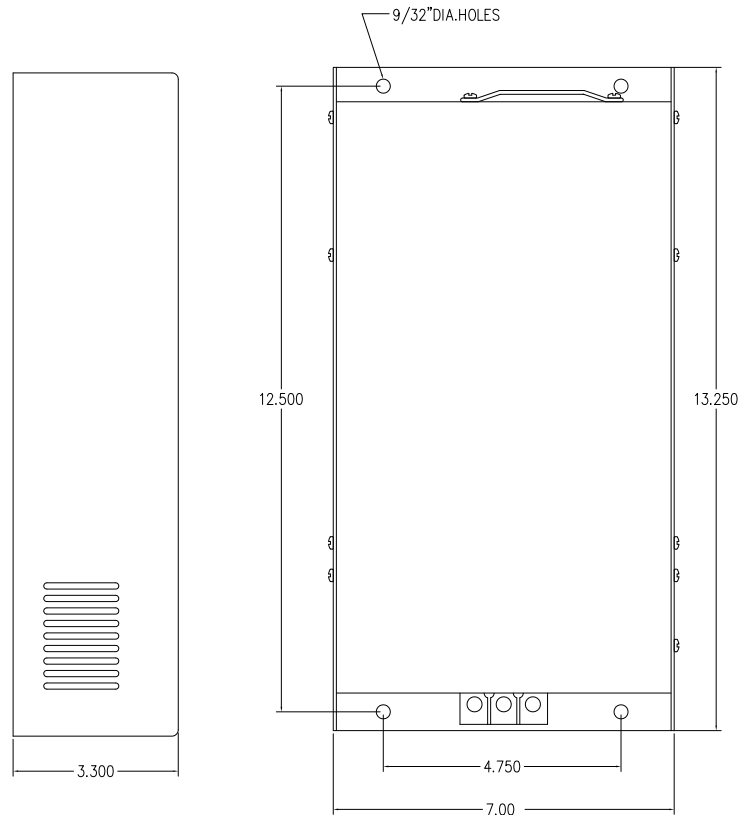
DELUXE STATUS CENTER WATERTIGHT
MODEL #: 091-194-IND-WT
(Bezel available in various colors: red, yellow, white, gray, blue, and black)
(shipped with cable assembly: 091-194-007)



E-Z SLIDE MOUNTING PLATE
MODEL #: 091-200-EZM

SPECIFICATIONS

Input Power:	115 volt, 50/60 Hz, 7 amperes
Input Fuse:	(2) - 8 amp, fast acting, 5X20mm, Littlefuse p/n: 217008
AUX Fuse:	15 ampere, automatic, circuit breaker
Boost Voltage:	13.60 volts DC
Float Voltage:	13.23 volts DC
Output Current:	40 amperes max
Remote Sensing:	Output terminal voltage boost compensated
Status Indicators:	AUX On, Power On, and Battery OK
Charger Indicators:	Remote Bar Graph indicator
Weight:	7 pounds



Outline Dimensions: AUTO CHARGE LPC SERIES

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.