

**CHARGER
TROUBLESHOOTING
GUIDE**



TABLE OF CONTENTS

Troubleshooting Questionnaire	1
General Questions	2
Troubleshooting Steps - 1st Generation Charger	
Step 1: Checking The Charger Wiring	3
Step 2: Checking AC Input Voltage	4
Step 3: Checking DC Output Voltage	5
Step 4: Checking Charger Output	6
Step 5: Checking Charger Indicators	8
Troubleshooting Steps - New Generation Charger	
Step 1: Checking The Charger Wiring	9
Step 2: Checking AC Input Voltage	9
Step 3: Checking DC Output Voltage	10
Step 4: Checking Charger Output	11
Step 5: Checking Charger Indicators	12
Troubleshooting Steps - Chief Charger	
Step 1: Checking The Charger Wiring	13
Step 2: Checking AC Input Voltage	14
Step 3: Checking DC Output Voltage	16
Step 4: Checking Charger Output	18
Step 5: Checking Charger Indicators	19
Bar Graph Troubleshooting Guide	20
Deluxe Indicator	20
Contact Us	21

TROUBLESHOOTING QUESTIONNAIRE

All Measurements with Charger "ON" (Shore Power Applied)

Is Charger "ON" (shore power applied)? Yes No

VDC at Charger Output Connector "ON" _____

Is charger connected to battery? Yes No

VDC at Battery Terminals "ON" _____

Remote Indicator Pin 2 to 1 (VDC) _____

Remote Indicator Pin 2 to 3 (VDC) _____

Remote Indicator Pin 2 to 4 (VDC) _____

Remote Indicator Pin 2 to 5 (VDC) _____

All Measurements with Charger "OFF" (Shore Power Disconnected)

Is Charger "OFF" (shore power removed)? Yes No

VDC at Charger Output Connector "OFF" _____

VDC at Battery Terminals "OFF" _____

General Questions

New Installation or Replacement?

New Installation Replacement

Is the Power Light "ON"? Yes No

Is the System Light "ON"? (If applicable) Yes No

Is the charger warm? Yes No

How many batteries are in the system? _____

How are the batteries wired?

Parallel Series Series Parallel

What is the wire size (AWG)? _____

Bars lit on the Bar Graph Display? _____

Is the fuse blown? Yes No

Is the fan running? Yes No

Are the batteries isolated?

Yes - A, B Both switch installed
 Yes - Battery 1, Battery 2 switch installed No

What is the size of the batteries? _____

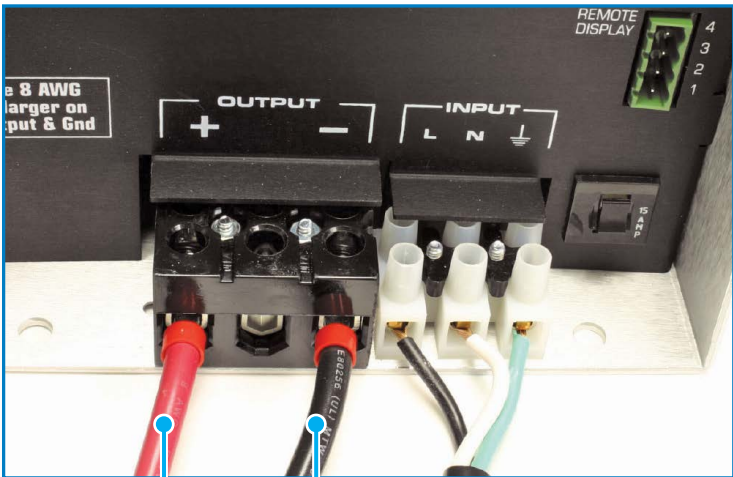
What is the wire length (feet)? _____

Troubleshooting Steps

- 1 Checking the Charger Wiring
- 2 Checking AC Input Voltage
- 3 Checking DC Output Voltage
- 4 Checking Charger Output
- 5 Checking Charger Indicators

1ST GENERATION CHARGER

- 1 Checking the Charger Wiring



Battery Positive

Battery Negative

AC Connections:

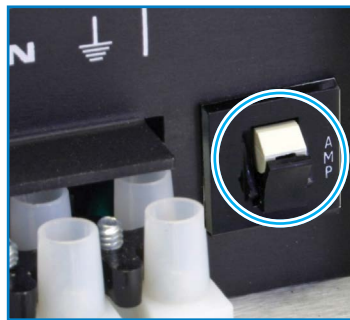
Black = L, White = N, Green = Ground



If your "POWER" LED is on, you have 120VAC installed correctly.



If your "POWER" LED is off, use a voltmeter and check the "INPUT" terminal strip for 120VAC.



If your "POWER" LED is off, and you have 120VAC at the "INPUT" terminal strip, check the input circuit breaker.

If your "POWER" LED is off, and you have 120VAC at the "INPUT" terminal strip, and circuit breaker is OK, then send charger back for repair.



If your “BATTERY CONNECTED” LED is on, you have 12VDC installed correctly.



If your “BATTERY CONNECTED” LED is off, use a voltmeter and check the “OUTPUT” terminal strip for 12 Volts DC.



If your “BATTERY CONNECTED” LED is off, and there is no voltage at the “OUTPUT” terminal strip. Then check the battery connections for 12 Volts DC.



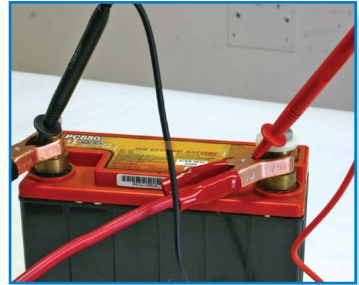
“Fan On” LED should turn on when fan is running. If LED is on, and the fan is not running there is a problem with the fan.



- Fan turns on when the output current is $> 8A$.
- Fan turns off when the output current tapers to $< 5A$.



The easiest way is to use a DC Clamp On Meter to see if there is current flowing from the charger to the battery.



- Measure and record the voltage at the charger.
- Measure and record the voltage at the battery.
- Voltage at the charger should be higher or equal to the battery. If higher than 0.75V, there could be a poor connection or wire gauge is too small.
- Voltage at the battery should NOT be higher than the voltage at the charger.



Indicator showing Charger Output current < 1A.



Showing Output

Charger supplying current to battery or load.



Not Showing Output

Battery not connected, not charging or charger in current limit (low battery).



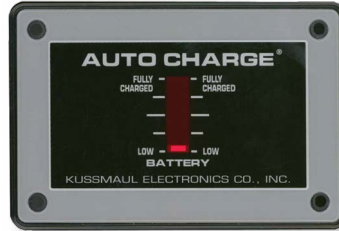
Charger Output current < 1A



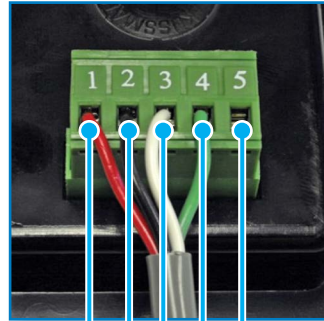
Charger Output current 10-15A



Charger Output current 20-30A



Inoperative or charger has reached its current-limit (40A)



1. Power 18 - 25 VDC

2. Ground

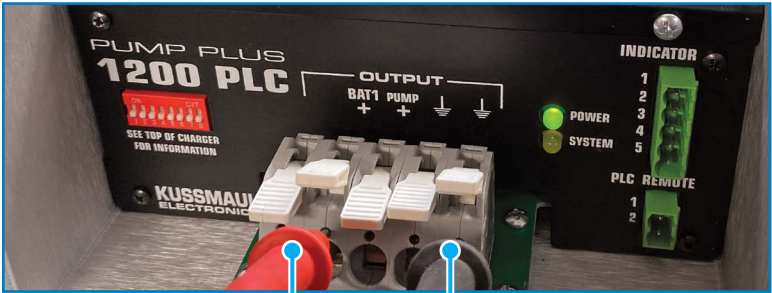
3. Approx. 6 VDC ($\frac{1}{2}$ the battery voltage)

4. 0 - 7 VDC (7V = 40A output)

5. Not connected (pin 5 on indicator only)

NEW GENERATION CHARGER

1 Checking The Charger Wiring



Battery Positive

Battery Negative

2 Checking AC Input Voltage



If your "POWER" LED is on, you have 120 VAC installed correctly.



If your "POWER" LED is off, use a voltmeter and check the "INPUT" terminal strip for 120 VAC.



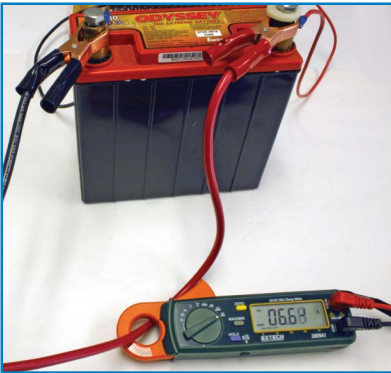
If your "POWER" LED is off, use a voltmeter and check the "OUTPUT" terminal strip for 12 Volts DC.



- Green LED illuminates when AC Shore Power is applied.
- Yellow LED (STATUS):
 - Fast Flash (5x/sec): reverse polarity
 - Slow Flash (1x/sec): battery not connected
 - Solid On: current-limit (normal operation)
 - Solid Off: (normal operation)



- Fan cycles on/off if battery is disconnected.
- Fan is on when output is $>10A$; off when $<5A$.



The easiest way is to use a DC Clamp On Meter to see if there is current flowing from the charger to the battery.



- Measure and record the voltage at the charger.
- Measure and record the voltage at the battery.
- Voltage at the charger should be higher or equal to the battery. If higher than $0.75V$, there could be a poor connection or wire gauge is too small.
- Voltage at the battery should NOT be higher than the voltage at the charger.

DIP Switch Settings

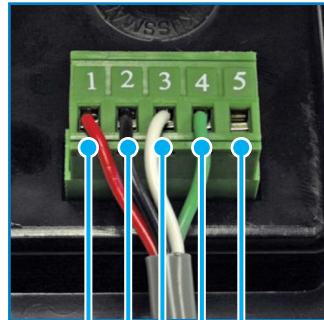
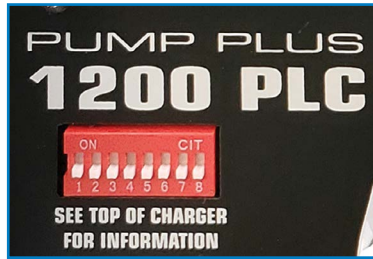
Switches 1 and 2: Battery Type

Switches 3 and 4: Float or 3-Step

Note: Switches down come as factory default setting:

Lead-acid, float charge.

When charging, voltage at the charger should be 13.25 VDC (default switch settings).



1. Power 18 - 25 VDC

2. Ground

3. Approx. 6 VDC ($\frac{1}{2}$ the battery voltage)

4. 0 - 7 VDC (7V = 40A output)

5. Not connected (pin 5 on indicator only)

CHIEF CHARGER

1 Checking The Charger Wiring



AC Input

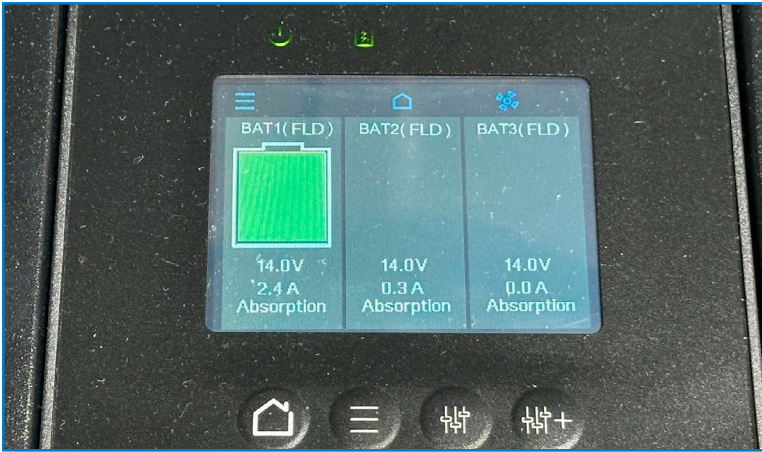
Remote /
Auto Eject Display

20 Amp Aux Output

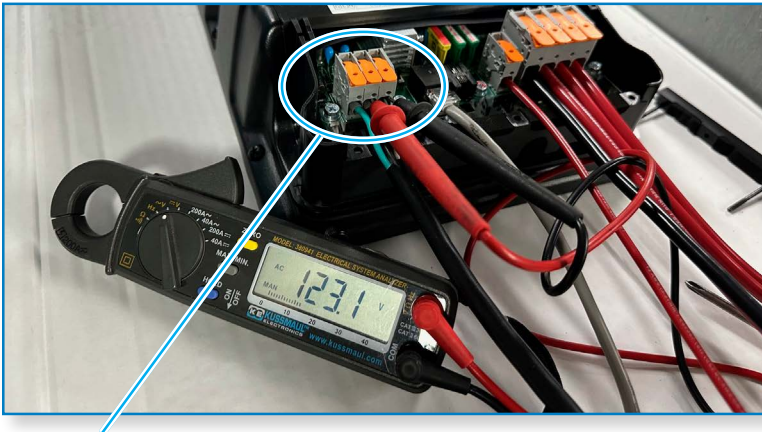
Battery Negative

Batteries Positive

2 Checking AC Input Voltage

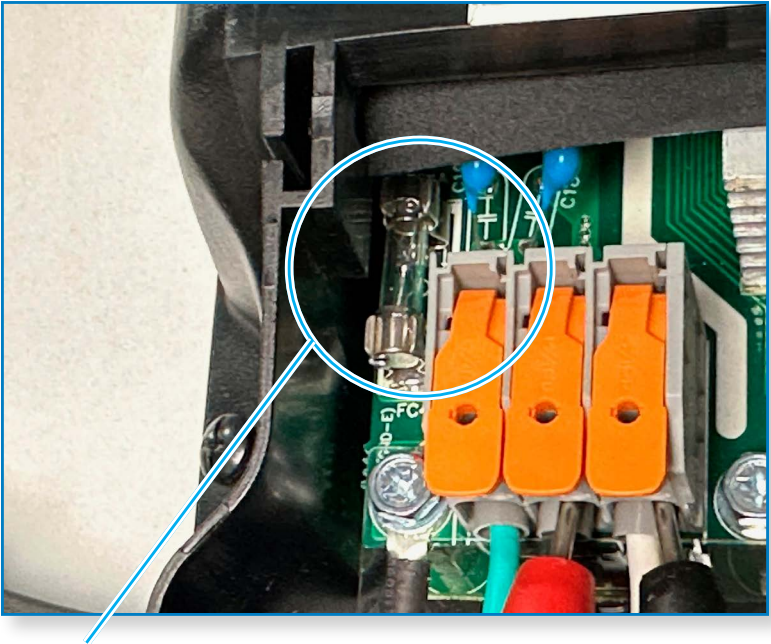


If your display is on, you have 120 VAC installed correctly.



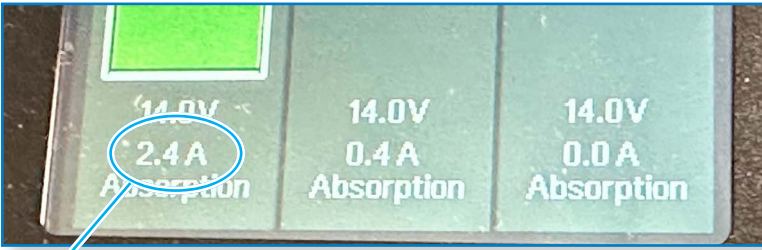
If your display is off, use a voltmeter and check the "INPUT" terminal strip for 120 VAC.

2 Checking AC Input Voltage

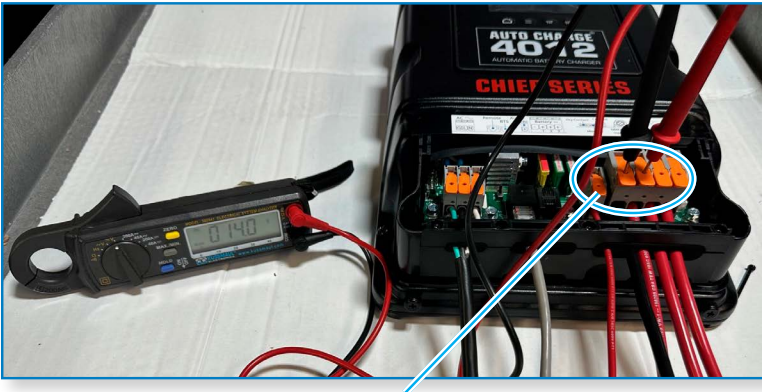


If your display is off, and you have 120VAC at the "INPUT" terminal strip, check the input 10 amp fuse.

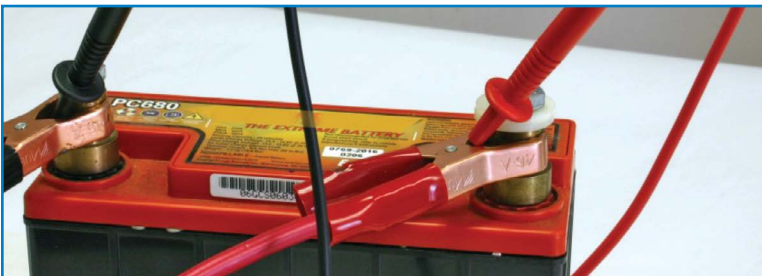
If your display is off, and you have 120VAC at the "INPUT" terminal strip, and the input fuse is OK, then send charger back for repair.



If your display is on and you read some amperage, you have 12VDC installed correctly.



If your display is on and you do not read any amperage, use a voltmeter and check the "OUTPUT" terminal strip for 12 Volts DC.



If there is no voltage at the "OUTPUT" terminal strip. Then check the battery connections for 12 Volts DC.



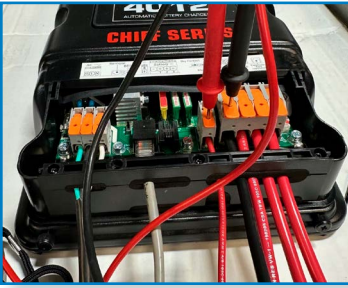
Fan turns on and off when the output current changes. Higher the current the more the fan will run.



The easiest way is to use a DC Clamp On Meter to see if there is current flowing from the charger to the battery.

4

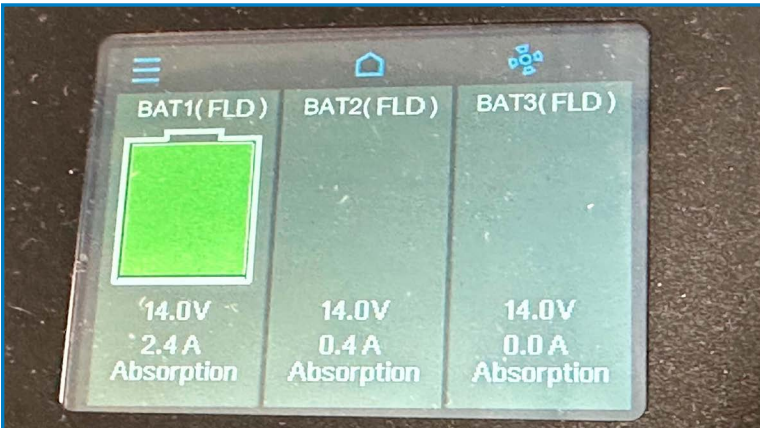
Checking Charger Output



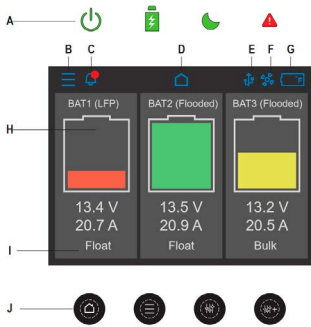
- Measure and record the voltage at the charger.
- Measure and record the voltage at the battery.
- Voltage at the charger should be higher or equal to the battery. If higher than 0.75V, there could be a poor connection or wire gauge is too small.
- Voltage at the battery should NOT be higher than the voltage at the charger.

5

Checking Charger Indicators



When the charger is connected to at least one battery bank and to AC, the onboard display will turn on and start reporting charging and battery status information. picture shows the Home screen. The onboard display is equipped with a touch screen interface.



A	LED indicators	F	Shows up when the unit fan is activated
B	Main menu	G	Battery Temperature Sensor (BTS) reading (requires optional BTS)
C	Shows up when notifications are present	H	Battery level shows up when a battery is connected and detected by the charger
D	Home screen	I	Charging state
E	Shows up when USB device is connected	J	Control buttons: Home Menu Basic Set. Advanced Set.

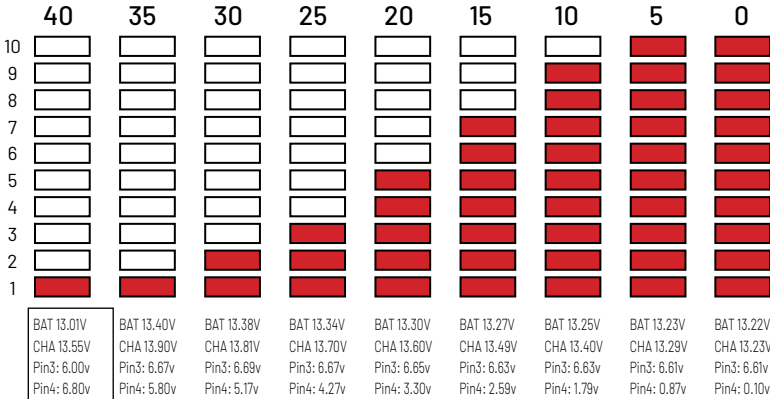


Optional OLED Auto Eject Cover Display
Part# 091-266

Bar-Graph Troubleshooting Guide

AC 1200, AC 1200 PUMP PLUS

CHARGER AMPS OUTPUT with 10ft of 8 gage wire



@ 40amps
voltages can
be much lower

THN- 9-10-13

These voltages are approximate

BAT = voltage at battery

CHA = voltage at charger

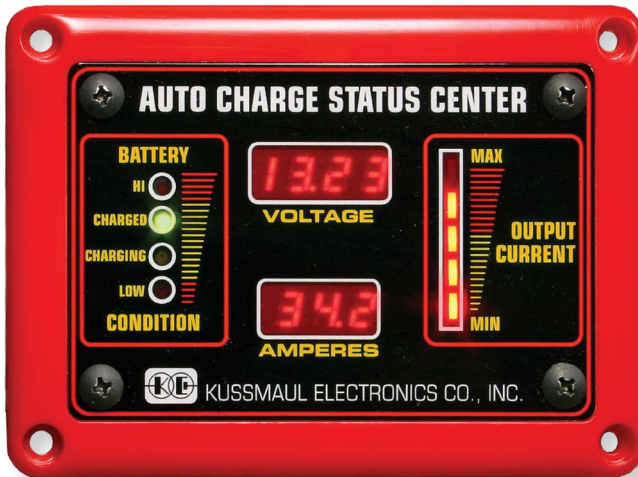
Pin3 = voltage between pin2 & pin3 (1/2 battery voltage)

Pin4 = voltage between pin2 & pin4 (current 0-7v)

Remote Display



Deluxe Indicator



This indicator shows a lot of information and is very helpful in troubleshooting.

WE ARE HERE FOR YOU



KUSSMAUL ELECTRONICS

170 Cherry Avenue,
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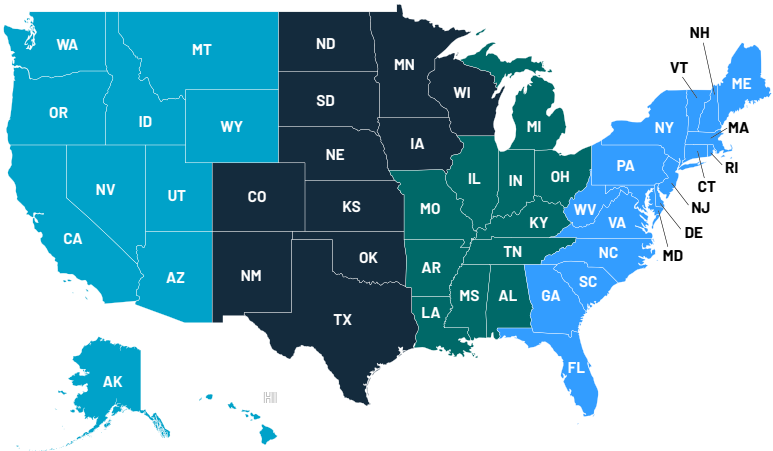
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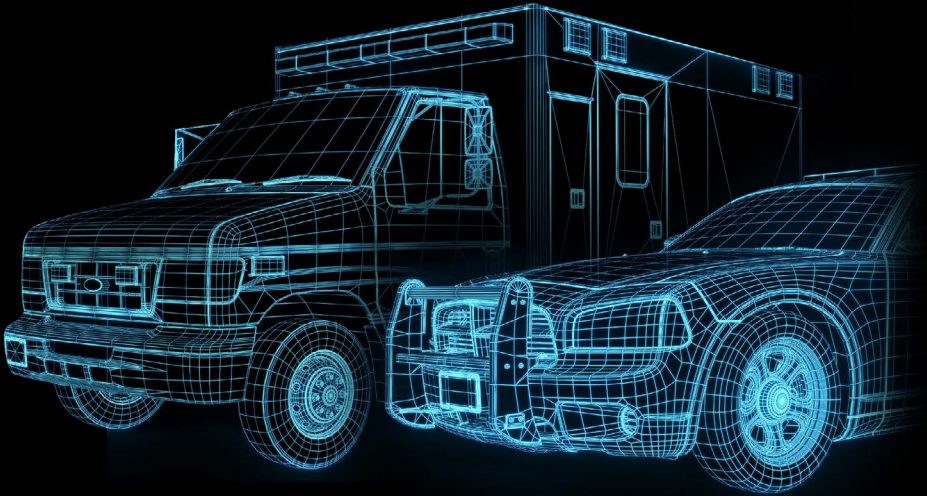
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