

# Specification

Model: 6V & 12V 2/4/6A

Model No: I-7011

Revision: 1.0

**ACDelco** Fully Automatic Battery Charger  
For Most DC 6/12V Rechargeable Lead-acid Batteries

- High frequency & efficiency switching mode
- Automatic selection 6/12V
- Turning knob for 2 / 4 / 6 Amp charging rate
- LED Indicators for
  - 6 / 12V Charge up
  - Charging
  - Percentage level of battery being charged
  - Error check
- 3-stage charging with pulse charging function
- Safety features:
  - Over-charge and overheat protections
  - Short-circuit protection
  - Spark-proof clamps



The image shows the ACDelco I-7001 battery charger. It is a black and yellow device with a control panel on top. The panel features a rotary knob for selecting charging rates (2, 4, or 6 Amps) and a digital display showing the percentage of battery charge (0%, 25%, 50%, 75%, Full). There are also indicators for 6V and 12V charging. The device is shown with its red and black alligator clips attached. A small inset box in the bottom left corner of the image area displays the text 'AUTOMATIC CHARGER 2/4/6 AMP' and icons for various vehicle types: Car, Boat, Motorcycle, and Van.

**AUTOMATIC CHARGER**  
**2/4/6 AMP**

Car Boat Motorcycle Van

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# 1 INPUT REQUIREMENTS

## 1.1 INPUT VOLTAGE

The power supply must operate on a sinusoidal input voltage defined in table 1.

Input Range	Minimum	Nominal	Maximum	Unit
180-264	180	230	264	Vac

Table 1 - Input Voltage Range

## 1.2 INPUT FREQUENCY

The power supply shall operate within specification 50~60 ±3 Hz.

## 1.3 INPUT CURRENT

Maximum steady state input current shall not exceed A for any line voltage specified in table 2

## 1.4 INPUT PROTECTION

### 1.4.1 INPUT CURRENT PROTECTION

A fuse with rating of 4 A / 250 V( Time Lag ) shall be installed on the input line side near the input connector to provided protection to the power supply.

## 1.5 EFFICIENCY

The power supply efficiency shall not be less than 80%at the maximum load of section 2.2

## 2 OUTPUT REQUIREMENTS

### 2.1 OUTPUT POWER

Unit total output power, under steady state conditions, shall not exceed 80W.

### 2.2 OUTPUT VOLTAGE AND CURRENT

#### MINIMUM OUTPUT VOLTAGE

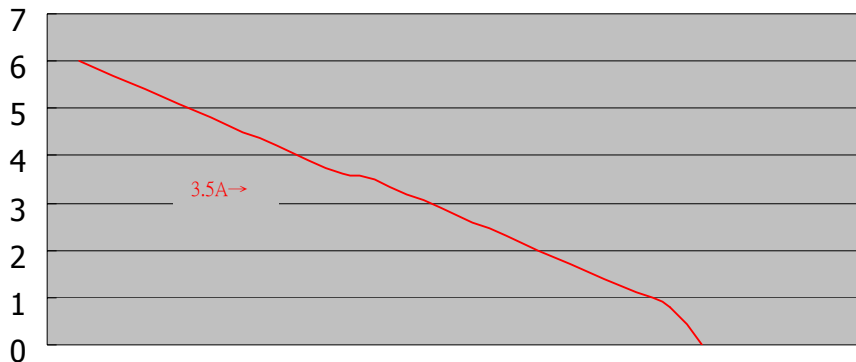
Rated Output Current (A)	Minimum Output Voltage (v)	
	12(V)	6(V)
2	12.48	6.24
4	12.48	6.24
6	12.78	6.39

Table 2 – Minimum Output Voltage

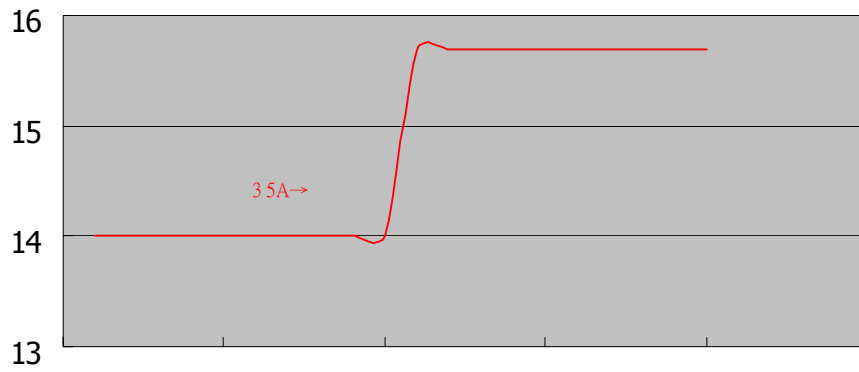
### 2.3 REFERENCE CHARGING CURVE

12V

Charging Current (A)

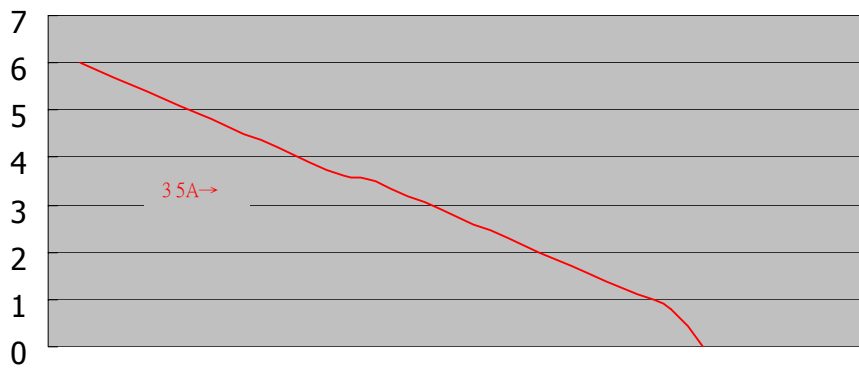


Charging Voltage (V)

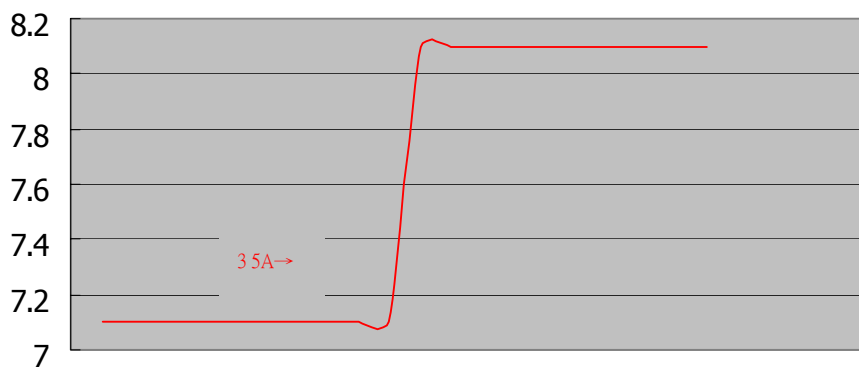


6V

Charging Current (A)



Charging Voltage(V)



## 2.4 OVER POWER PROTECTION

Over power protection shall operate at 110% Max. of rated power defined in section 2.2 at table-1 line input conditions.

## 2.5 SHORT CIRCUIT PROTECTION

Power supply shall have self-limiting protection to protect against short circuit or overload conditions. No damage to the supply shall result from intermittent short circuit condition.

# 3 ENVIRONMENT

## 3.1 OPERATING / STORAGE TEMPERATURE

Operation: 0 to 40°C.

Storage: -20 to 80°C

## 3.2 HUMIDITY

Operation: 10% to 90% RH, non-condensation.

Storage : 5% to 95% RH, including condensation.

## 3.3 SHOCK AND VIBRATION

### 3.3.1 SHOCK NON-OPERATION

The unit shall be subjected to a series of six(6) shocks, one(1) on each side, Top and bottom. Each shock shall consist of a 50G half sine wave pulse with a velocity change of 167 in/sec.

### 3.3.2 VIBRATION

Operating: 10-250Hz, 0.25Gs peak to peak, 3 axes, 15 min sweep.

Non-Operation: 10-300Hz, 2.0Gs peak to peak, 3 axes, 15 min sweep.

## 3.4 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)

Power supply shall have a calculated MTBF of greater than 30,000 hours, calculated utilizing MIL-HDBK-217F with the following assumptions:

Input voltage: 220Vac / 50Hz

Output load: Rated full load

Ambient temperature: 25 degrees C

# 4. SAFETY

Unless otherwise specified, the supply is designed to meet IEC 60335-2-29 and/or equivalent safety standards for use in Battery Charger Equipment. Specific agency certifications will be applied at customer's request and cost.

**Note:** Leakage current shall be less than 0.5 mA at input voltage of 230Vac / 50Hz

## 4.1 IMMUNITY

### 4.1.1 ELECTROSTATIC DISCHARGE (ESD), EN 61000-4-2

±8KV (Air discharge)

±4KV (Contact discharge)

±4KV (Indirect discharge)

### 4.1.2 RADIATED FIELD IMMUNITY EN 61000-4-3

Power supply shall withstand following condition:

Frequency Range: 80 - 1000MHz

Field Strength: 3 V/m with 80% amplitude modulation of 1kHz

### 4.1.3 FAST TRANSIENT IMMUNITY, EN 61000-4-4

Power supply shall withstand EN 61000-4-4 +/- 2kV requirements.

### 4.1.4 SURGE IMMUNITY, EN 61000-4-5

Power supply shall withstand +/- 1kV (L – L) and +/- 2kV (L – PE) without functional failure

### 4.1.5 CONDUCTED IMMUNITY EN 61000-4-6

Power supply shall withstand following condition:

Frequency Range: 0.15 - 80MHz

Field Strength: 3 V/m with 80% amplitude modulation of 1kHz

### 4.1.6 POWER FREQUENCY MAGNETIC FIELD IMMUNITY, EN 61000-4-8

Power supply shall meet EN61000-4-8 requirements

### 4.1.7 VOLTAGE DIPS AND INTERRUPTIONS EN 61000-4-11

Power supply shall meet EN61000-4-11 requirements.

## 4.2 DIELECTRIC VLOTAGE WITHSTAND (HI-POT)

The power supply shall withstand following Hi-pot test without breakdown.

4242 Vdc line to ground for 1 minute.

4242 Vdc input to output for 1 minute.

**Note:** Time duration may reduce to 1 second on production.



#### 4.3 PRODUCT DROP TEST

Number of Drops : 3 times.

Height: 90 cm

Floor surface: Concrete Floor

Judging Criteria : To withstand Hi-Pot Test , and without electrical breakdown.

#### 4.4 BALL IMPACT TEST

Ball Spec. : Steel Ball , Diameter=51.8 m/m, Weight=535 gw

Height of Drop : 90 cm

Number of Drops : 3 times.

Judging Criteria : To withstand Hi-Pot Test , and without electrical breakdown.

#### 4.5 STRAIN RELIEF TEST

The strain relief withstand a pull force of 35 lb applied for 1 minute in a direction mostlikely to cause damage.

#### 4.6 CLAMP ATTACHMENT SECURITY

Conductor is securely attached to clamp conductor to clamp connection withstands a 35 lb tensile load without separation.

#### 4.7 HANDLE ATTACHMENT SECURITY

Handle to enclosure connection withstands 4 times weight of the charger with separation.

#### 4.8 CLAMP RETENTION

Clamp provides good terminal gripping capability. Clamp does not become dislodged from 5/8 inch diameter lead terminal post when pulled with a force of 10 lb at 90 degrees to the axis of the clamp.

#### 4.9 CORROSION RESISTANCE

Clamp demonstrates no excessive surface corrosion after 12 hours exposure to 100% humidity 100°F.

## 5 EMC SPECIFICATION

### 5.1 EMI REQUIREMENTS

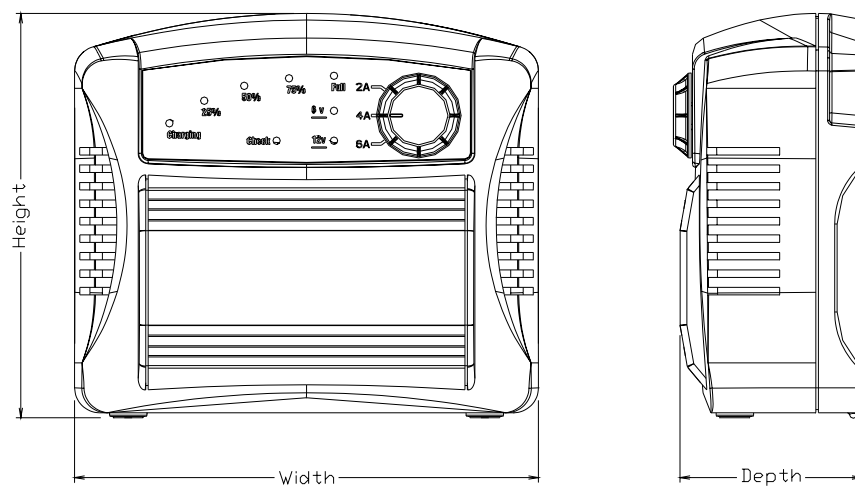
Meet CISPR-22 standard

Report No : 41217003-E

## 6 MECHANICAL

### 6.1 DIMENSION

#### 6.1.1 PRODUCT



Height = 162 m/m

Width = 186 m/m

Depth=73 m/m

Weight=1075 gw

#### 6.1.2 CLAMP

Length = 75 m/m

Width = 44 m/m

Jaw Length = 35 m/m

Jaw Width = 16 m/m

Weight = 17gw

### 6.2 MATERIAL

#### 6.2.1 ENCLOSURE

Housing – Plastic ABS UL 94-V0

Bind Cable – Silicon Rubber

Foot Pad – NBR Rubber

6.2.3 CLAMP

Clamp – SPCC , Nickel-plate

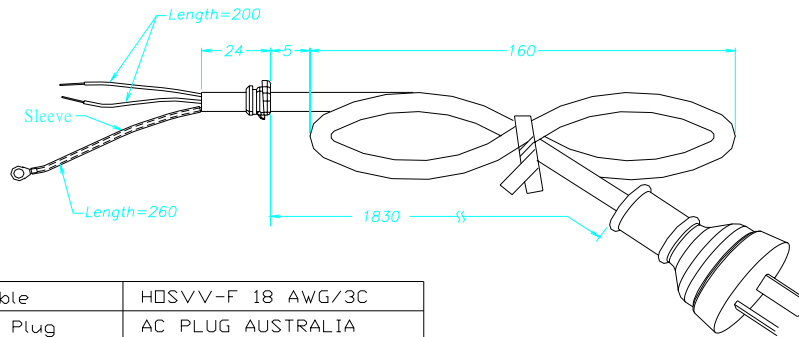
Clamp Spring – SUS-4

Handle – PVC

6.3 INPUT CONNECTOR AND OUTPUT CABLE

6.3.1 INPUT CONNECTOR

AC Input connector shall be a Class I Plug Style.



AC CORD: SVT TYPE

Insulation Thickness: 0.07 inch

Conductor Strand Dia: 0.16 mil

Number of Strands: 41

Total Circular Mil Area: 0.8 cir mil

6.3.2 OUTPUT CABLE:

The output cable shall be 6 ft mrlong, SPT-2 18 AWGX2C wire, and Black/RED in color.

Insulation Thickness: 0.07 inch

Conductor Strand Dia: 0.16 mil

Number of Strands: 41

Total Circular Mil Area: 0.8 cir mil

