

CONFIDENTIAL

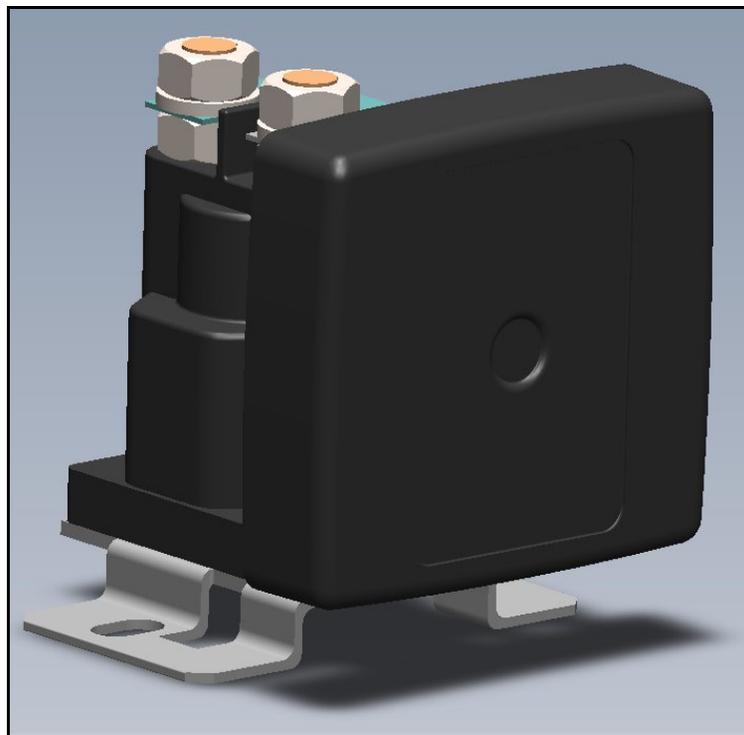
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REVISIONS

PLANT DIST CODE(S): U

REV	DESCRIPTION	DATE	BY
01	PRODUCTION RELEASE	11/4/2011	BF

# 1314A (UNIDIRECTIONAL) & 1315A (BIDIRECTIONAL) 12 VOLT, 100 AMP BATTERY SEPARATORS



**UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES [MM]**  
 TOLERANCES ARE: .XX ± .10 [X.X ± 2.5]  
 .XXX ± .030 [X.XX ± 0.76]  
 INTERPRET GEOMETRIC DIMENSIONS AND TOLERANCING PER ASME Y14.5-1994  
 DRAWINGS IN THIS DOCUMENT ARE NOT TO SCALE



TITLE  
**MODEL NO: 1314A/1315A  
 12V BATTERY SEPARATOR, 100A  
 SPECIFICATION OUTLINE**

APPROVALS	DATE
DRAWN BY JZD	11/26/2011

SIZE <b>A</b>	PLANT OF ORIGIN <b>U</b>	DRAWING NO. <b>1314A_1315A</b>	REV <b>01</b>
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SCALE: <b>NONE</b>	FILE: 1314A_1315A-01	SHEET <b>1</b> OF <b>7</b>
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PROJECT ENG APPROVAL	
ENG MANAGER APPROVAL	
PRODUCT MANAGER APPROVAL	

## OVERVIEW

The 1314A (unidirectional) and 1315A (bidirectional) are 100A battery separator modules with an integrated relay for 12V systems. The units monitor both the main and auxiliary battery banks. If the main battery (for the 1314A) or either battery bank (for the 1315A) is above the connect threshold, the relay connects the two banks together. If the main battery (for the 1314A) or either batteries (for the 1315A) are below the disconnect threshold the unit will open the relay. The connect threshold is set to a nominal voltage of 13.2V, which would only be reached when the charging system is operating. This will cause the relay to close and the charging system can charge both banks of batteries. The disconnect voltage is set to a nominal 12.7V, which is near the full charge resting voltage of the batteries. This will cause the relay to be opened shortly after the engine is stopped, attempting to preserve 100% of the starting battery capacity for engine cranking. An optional start override is also available. When the engine is started, the start signal causes the controller to check if the auxiliary battery is within about 1V of the main battery; if so, the relay contact is closed; thus, providing the starter system with maximum battery voltage available.

## UNIT CONNECTIONS

The unit has five connections (see Connection Diagram for locations):

### 1. Main Battery connection

This is the high current connection to the main battery. This connection is made directly to the relay. Product labeling refers to this as the MAIN BAT connection. The unit is powered from the main battery connection or the auxiliary battery connection, drawing power from whichever has the higher voltage.

### 2. Auxiliary Battery connection

This is the high current connection to the auxiliary battery. Product labeling refers to this as the AUX BAT connection. The unit is powered from the main battery connection or the auxiliary battery connection, drawing power from whichever has the higher voltage.

**Note: For the 1315A model, the battery connections can be reversed.**

### 3. Ground

This is the unit ground connection.

### 4. Start Signal input

This is the input for engine start signal override. When power is applied to this input, the relay will close if the Aux. Battery is no less than 0.85 Volts below the Main battery.

### 5. Start Lamp output

This is the start lamp drive output. The start lamp is powered when the start signal input has caused the relay to close. This output can source up to 250mA to an incandescent lamp. For LED type indicator, see MAXIMUM RATINGS, START LAMP drive current.



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## ELECTRICAL

### MAXIMUM RATINGS

Maximum ratings establish the maximum electrical rating to which the unit may be subjected.

Characteristic	Symbol	Parameter	Unit	Notes
Input Voltage	$V_{INMAX}$	16	V	Damage to relay MAY occur if repeatedly operated above 16V
Standoff Voltage	$V_{SO}$	24	V	5-minute duration. Applies to AUX BATT, MAIN BATT, and START SIGNAL terminals only.
Time at Standoff	$t_{SO}$	Continuous	V	Control is protected from continuous operation at 40V
Continuous Relay current	$I_{R,MAXC}$	100	A	
Inrush Relay current	$I_{R,MAXI}$	400	A	30 seconds on, 6 minutes off duty cycle.
START LAMP drive current	$I_{LAMP}$	250	mA	Protected from short circuits on output—tested at 16V. This output is designed for an incandescent lamp. A current-limiting resistor must be used in series with an LED indicator (1k-Ohm, ½ W recommended).
ESD	$V_{ESD}$	±8kV contact ±8kV air	V	Ref. SAE J1113-13. All terminals in any combination.



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All terminals protected against reverse polarity except reversal of one of the battery polarities. (Relay is not current limited. Connecting batteries of opposite polarity will damage relay).

### ELECTRICAL CHARACTERISTICS

Unless otherwise stated, conditions apply to full operational temperature range and full voltage range (9V to 16V)

Characteristic	Symbol	MIN	TYP	MAX	Unit	Notes
Normal Input Voltage	V <sub>IN</sub>	10		16	V	Proper relay operation not guaranteed below 10V.
Contact life			50,000		Cyc	100A resistive load.
Connect Voltage	V <sub>CON</sub>		13.2		V	Nominal minimum voltage required at main battery terminal for attached relay to be energized.
Disconnect Voltage	V <sub>DCON</sub>		12.7		V	Nominal maximum voltage required at main battery terminal for attached relay to be de-energized.
Quiescent Current	I <sub>QUES</sub>		1.8		mA	13.0V, relay off, Start Signal input open or grounded.
Relay drive current	I <sub>RELAY</sub>		0.75		A	
START LAMP output voltage	V <sub>LAMP</sub>		Battery voltage – 2.2V		V	2.2V is the typical voltage drop from Main Battery to the Start Lamp output (Battery voltage being the higher of the two battery voltages).
START SIGNAL threshold voltage	V <sub>SST</sub>		58% of Battery		V	Nominal minimum voltage required on START SIGNAL input for the input to activate.
Connect debounce	t <sub>CD</sub>	14			S	When the battery voltage rises above the connect voltage and the relay closes, this is the minimum amount of time it will stay closed, regardless of the battery voltages.
Disconnect debounce	t <sub>DD</sub>	10			S	When the battery voltage falls below the disconnect voltage and the relay opens, this is the minimum amount of time it will stay open, regardless of the battery voltages.



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## ENVIRONMENTAL SPECIFICATIONS

Control module is encapsulated in epoxy, relay is water resistant.

Characteristic	Parameter	Units
Operational Temperature Range (Control)	-40 TO +85	°C
Operational Temperature Range (Relay)	-28 TO +48	°C

## TRANSIENT IMMUNITY/EMISSIONS

Characteristic	Level	Notes
Inductive Load Switching	+400V/-600V	Ref. SAE J1455, Section 4.11.2.2.2 Rev 8/94
Mutual Coupling	±300V	Ref. SAE J1455, Section 4.11.2.2.2 Rev 8/94
Load Dump	100V	Ref. SAE J1455, Section 4.11.2.2.2 Rev 8/94
ISO Immunity	Per standard <sup>1</sup>	ISO 7637-2:2004
ISO Emissions	Per standard <sup>1</sup>	ISO 7637-2:2004

<sup>1</sup>Sufficient to apply E mark.

### RADIATED EMISSIONS

Characteristic	Level	Notes
Radiated Emissions Narrowband 30MHz to 1GHz	Per standard <sup>2</sup>	ISO 13766:1999, section 6.5 EN 13309:2000, section 4.6 EU Directive 72/245/EEC as amended
Radiated Emissions Broadband 30MHz to 1GHz	Per standard <sup>2</sup>	ISO 13766:1999, section 6.4 EN 13309:2000, section 4.5 EU Directive 72/245/EEC as amended

<sup>2</sup>Sufficient to apply CE mark.

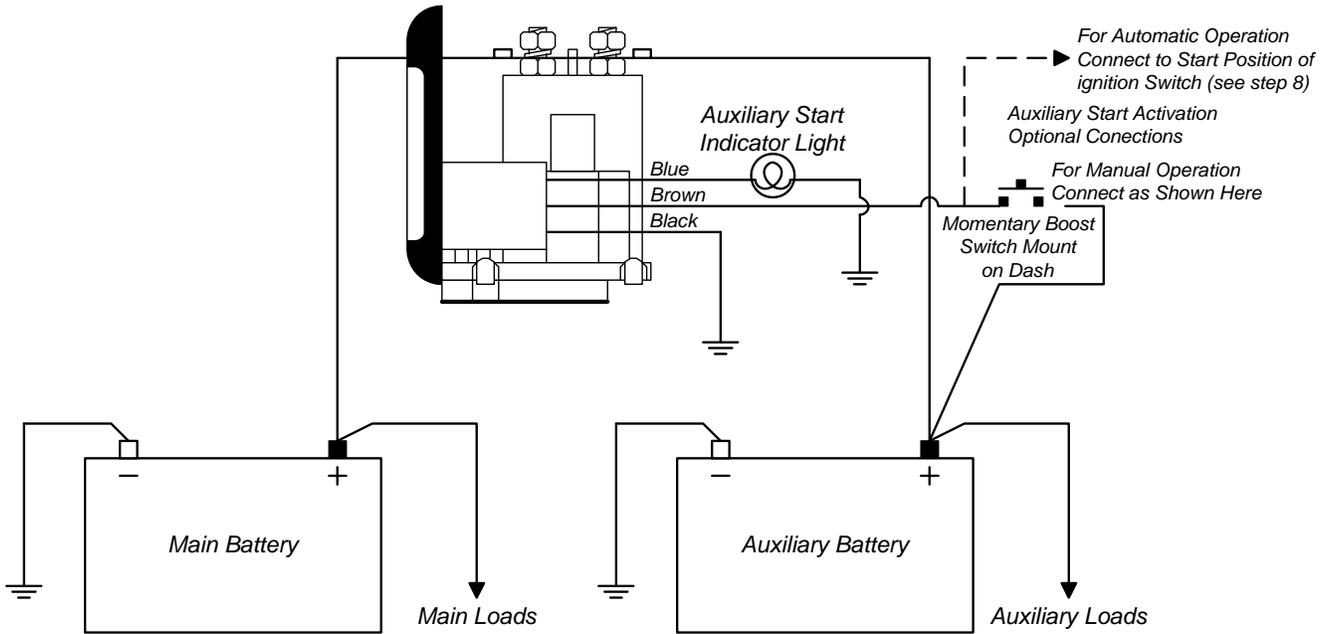


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# CONNECTION DIAGRAM

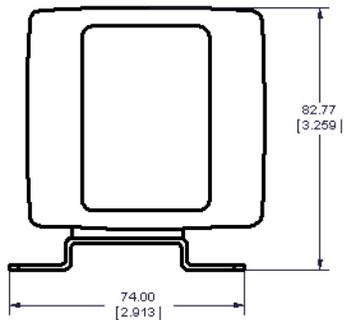
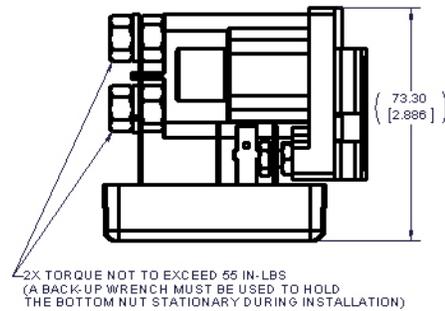
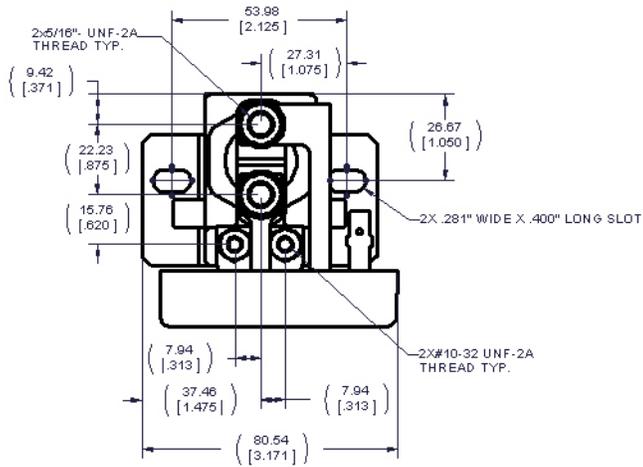


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# UNIT DIMENSIONS



**Weight:** Under 1 Lb. (0.45Kg)  
**Recommended Mounting:** Coil terminals up or horizontal

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