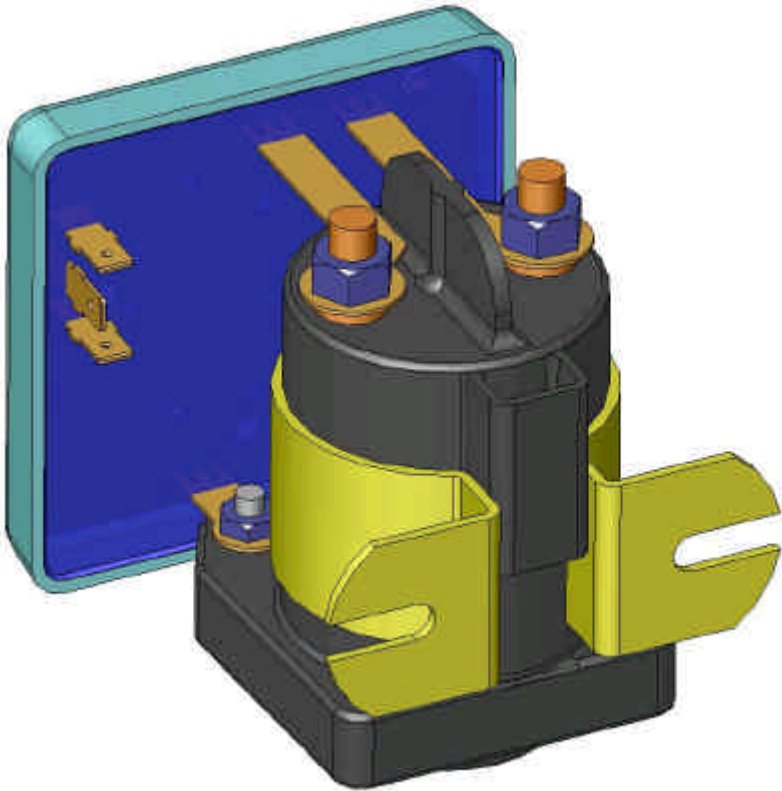



REVISIONS				
REV	ECO	DESCRIPTION	DATE	BY
001	4162	PRODUCTION RELEASE		

1318-200 (UNIDIRECTIONAL) & 1319-200 (BIDIRECTIONAL) 24 VOLT, 200 AMP BATTERY SEPARATORS



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES [MM] TOLERANCES ARE: <div> $.XX \pm .10$ $[.X \pm 2.5]$ $.XXX \pm .030$ $[.XX \pm .76]$ </div> INTERPRET GEOMETRIC DIMENSIONS AND TOLERANCING PER ASME Y14.5-1994 DRAWINGS IN THIS DOCUMENT ARE NOT TO SCALE		 SURE POWER INDUSTRIES, INC. <small>TUALATIN, OREGON USA 97062</small>	
APPROVALS		TITLE	
DRAWN	P.J.	DATE	6/25/04
PRJCT ENGR			
ENGR MNGR			
SALES/MRKTG			
MODEL NO: 1318-200 & 1319-200 24V 200A BATTERY SEPARATORS SPECIFICATION OUTLINE		SIZE A	
CAGE CODE NO. 55156		DWG NO. 13XX-200-24V	
SCALE: NONE		FILE: SPEC 13XX-200-24V	
SHEET 1		OF 6	
REV 001			

PROPRIETARY

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		-SEE SHEET # 1-		

OVERVIEW

The 1318-200 (unidirectional) and 1319-200 (bidirectional) are 200A battery separator modules with an integrated relay for 24V systems. The units monitor both the main and auxiliary battery banks. If the main battery (for the 1318-200) or either battery bank (for the 1319-200) is above the connect threshold, the relay connects the two banks together. If the main battery (for the 1318-200) or either batteries (for the 1319-200) are below the disconnect threshold the unit will open the relay. The connect threshold is set to a nominal voltage of 26.8V, 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 25.7V, 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. When the engine is started, the start signal causes the controller to check if the auxiliary battery is within about 0.85V 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:

1. Main Battery connection

This is the high current connection to the main battery bank. 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 bank. 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 1319-200 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.

			
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ENVIRONMENTAL SPECIFICATIONS:

Control module is encapsulated in epoxy. Relay is water resistant.

Characteristic	Parameter	Unit	Notes
Relay Temperature Range	-40 TO +60	°C	Operating condition
Control Temperature Range	-40 TO +85	°C	Operating condition
Storage Temperature Range	-55 to +105	°C	
Humidity	0 to 95	%RH	+/-3% @ 50-amp load. IAW SAE J1455 (Rev. Aug94), Section 4.2.3, Figure 4a.
Vibration	See Notes		IAW SAE J1455 (Rev. Aug94), Represents design intent
Shock	See Notes		IAW SAE J1455 (Rev. Aug94), Section 4.10.3.1 & 4.10.3.2.2, Represents design intent
Thermal Shock	See Notes		@ 50-amp load. IAW SAE J1455 (Rev. Aug94) Section 4.1.3.2, Figure 2c. Represents design intent

ELECTRICAL SPECIFICATIONS:

MAXIMUM RATINGS:

Maximum ratings establish the maximum electrical rating to which the unit may be subjected without damage.

Characteristic	Symbol	Parameter	Unit	Notes
Input Voltage	V_{INMAX}	32	V	Damage to relay MAY occur if repeatedly operated above 32V
Standoff Voltage	V_{SO}	40	V	Applies to AUX BATT, MAIN BATT, and START SIGNAL terminals only.
Time at Standoff	t_{SO}	Continuous		
Continuous Relay current	$I_{R,MAXC}$	200	A	
Inrush Relay current	$I_{R,MAXI}$	600	A	
START LAMP drive current	I_{LAMP}	250	mA	Not current limited. Drawing more than 250mA may damage unit.
Electrical Isolation	V_{ISO}	500	V AC	All terminals together with respect to ground.



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Note: All terminals protected against reverse polarity excepting reversal of one of the battery bank polarities. (Relay is not current limited. Connecting battery banks of opposite polarity will damage relay).

ELECTRICAL CHARACTERISTICS:

Unless otherwise stated, conditions apply to full operational temperature range and full voltage range (18V to 32V)

Characteristic	Symbol	MIN	TYP	MAX	Unit	Notes
Normal Input Voltage	V_{IN}	18		32	V	Voltage range unit is guaranteed to function within specification.
Minimum Input Voltage	V_{INMIN}		17		V	Typical coil pull-in voltage is 17V @ 25°C.
Contact life			50,000		Cycles	
Connect Voltage:	V_{CON}		26.8		V	@ 25°C, See note.
Disconnect Voltage:	V_{DCON}		25.7		V	@ 25°C, See note.
Quiescent Current	I_{QUES}		10	13	mA	Relay off, Start Signal input open or grounded.
Relay drive current	I_{RELAY}		0.85		A	
START LAMP output voltage	V_{LAMP}		Battery voltage – 1.4V		V	Battery voltage being the higher of the two battery stack voltages.
START SIGNAL threshold voltage	V_{SST}		1.5		V	Voltage where START SIGNAL input switches state.
Connect debounce	t_{CD}		4.4		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_{DD}		7.2		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.

Note: Typical voltage settings have $\pm 2\%$ tolerance.

			
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ELECTROMAGNETIC COMPATIBILITY:

Transient Immunity Tests	Level ¹	Notes
Load Dump	$28 + 122e^{(-t/0.4)}$	IAW with SAE J1455 (Rev. Aug94), Section 4.11.2.2, Table 4b. Pulse applied to MAIN BATT and AUX BATT terminals
Inductive Switching	$28 + 400e^{(-t/0.001)}$ $28 - 600e^{(-t/0.001)}$	IAW with SAE J1455 (Rev. Aug94), Section 4.11.2.2, Table 4b. Pulse applied to all terminals except GND and LAMP.
Mutual Inductance	$28 \pm 300e^{(-t/0.000015)}$	IAW with SAE J1455 (Rev. Aug94), Section 4.11.2.2, Table 4b. Pulse applied to all terminals except GND.


Electrostatic Discharge Immunity	Level ¹	Notes
ESD – Packaging and Handling	± 8 kV direct ± 15 kV air	IAW with SAE J1455 (Rev. Aug94), Section 4.11.2.2.5.1 / SAE J551/19 utilizing a 150pF/150Ω discharge network.
ESD – In vehicle	± 8 kV direct ± 15 kV air	IAW with SAE J1113, Part 13 (Rev. Feb95) utilizing a 330pF/2kΩ network.

Radiated Immunity Test	Level ¹	Notes
Absorber Lined Chamber 100MHz to 4GHz	75-100V/m	Ref. SAE J1113, Part 21 (Rev. Oct94). Amplitude Modulation: 80% at 1kHz. Antenna and DUT at one meter.
Stripline Test Method 10kHz to 100MHz	100V/m	Ref. SAE J1113, Part 23 (Rev. Sep95). Amplitude Modulation: 80% at 1kHz.

Emissions Limit Test	Level ²	Notes
Radiated Emissions Narrowband 30MHz to 1GHz	Per standard	ISO 13766:1999, section 6.5 EN 13309:2000, section 4.6
Radiated Emissions Broadband 30MHz to 1GHz	Per standard	ISO 13766:1999, section 6.4 EN 13309:2000, section 4.5

¹Immunity levels represent design intent.

²Sufficient to apply CE marking.

			
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SCALE: NONE		FILE: SPEC 13XX-200-24V	SHEET 5 OF 6

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MECHANICAL SPECIFICATIONS:

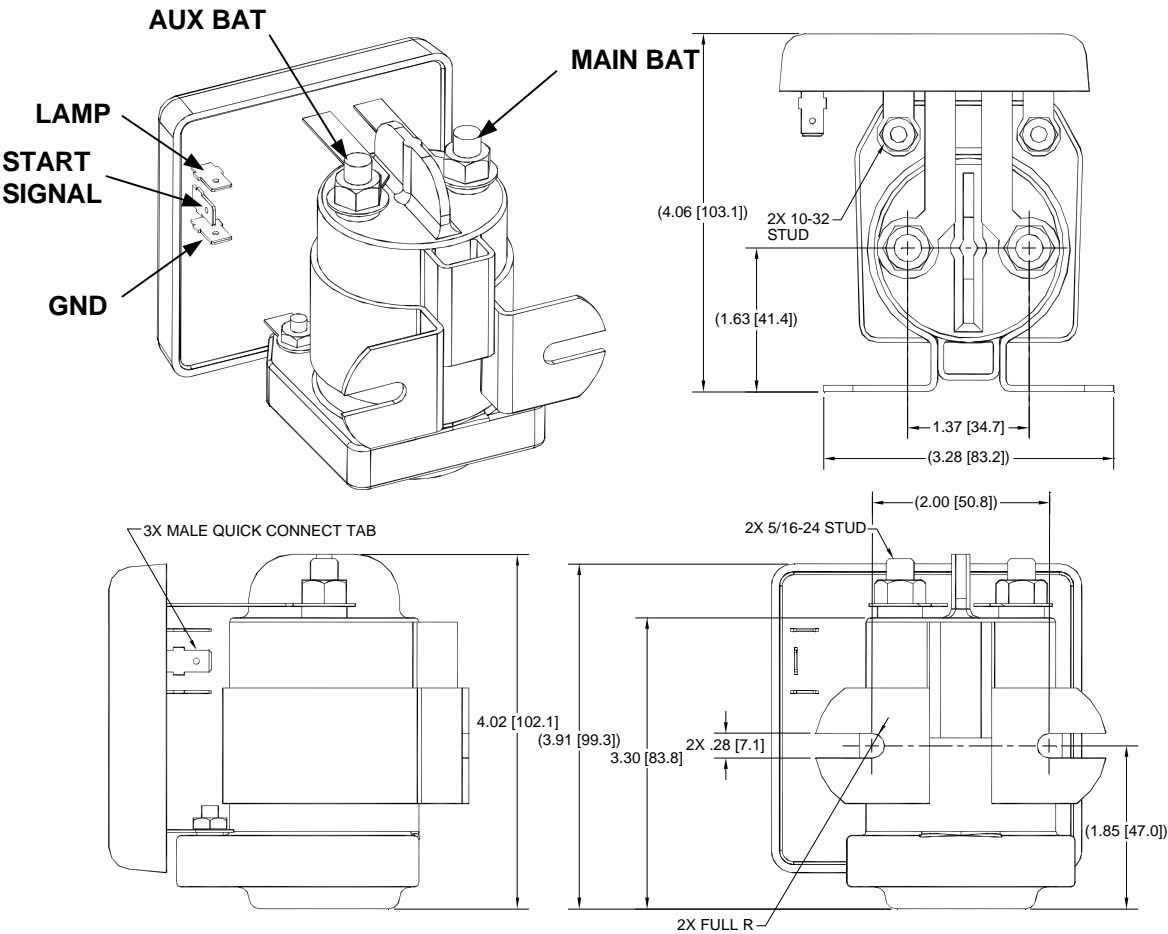
Weight: Approximately 1.9 LBS. (0.86Kg)


Terminal Torque Specifications

Characteristic	Maximum	Units
Battery terminals (5/16-24)	50	inch-lbs
Coil terminals (10-32)	20	inch-lbs

Note: Quick connect tabs are ¼” and spacing is compatible with Delphi P/N 12040949.

UNIT DIMENSIONS





SURE POWER

INDUSTRIES, INC.

TUALATIN, OREGON USA 97062

TITLE

MODEL NO: 1318-200 & 1319-200 24V
200V BATTERY SEPARATORS
SPECIFICATION OUTLINE

SIZE

A

CAGE CODE NO.

55156

DWG NO.

13XX-200-24V

REV

001

SCALE: NONE

FILE: SPEC 13XX-200-24V

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