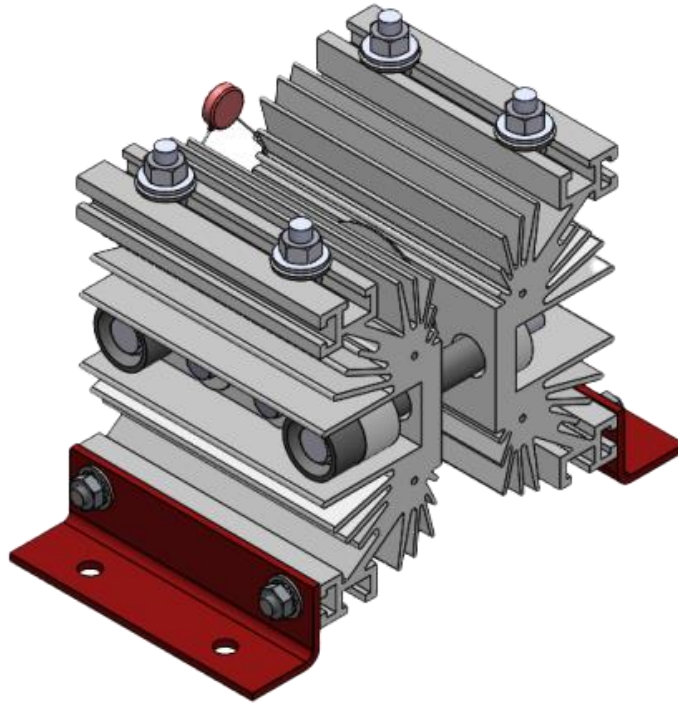


AUTOMATIC BEST BATTERY SELECTOR

BBS-800S



Installation & Operation Manual

SENS Part Number: 101344
Document Revision: A
DCN Number: 108576
Date: 9/12/24

Installation or service questions?

Call SENS between 8 a.m. and 5 p.m. (Mountain Time),
Monday through Friday, or visit our website.



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1 IMPORTANT SAFETY INSTRUCTIONS FOR INSTALLER AND OPERATOR

1.1 SAVE THESE INSTRUCTIONS.

1.2 DO NOT EXPOSE THIS PRODUCT TO RAIN OR SNOW.

1.3 Use of an attachment not recommended or sold by SENS may result in a risk of fire, electric shock, or injury to persons.

1.4. ONLY TRAINED AND QUALIFIED PERSONNEL MAY INSTALL AND SERVICE THIS PRODUCT.

1.5. Do not operate the product if it has received a sharp blow, been dropped, or otherwise damaged in any way; shut off power at the branch circuit protectors and have the unit serviced or replaced by qualified personnel.

1.6. WARNING: RISK OF EXPLOSIVE GASES

1.6.1. **WORKING IN THE VICINITY OF A BATTERY IS DANGEROUS. STORAGE BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING THIS PRODUCT, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.**

1.6.2. To reduce the risk of battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of a battery. Review cautionary markings on these products and on the engine.

1.7. PERSONAL PRECAUTIONS

1.7.1. Someone should be within range of your voice or close enough to come to your aid when you work near a storage battery.

1.7.2. Have plenty of fresh water and soap nearby in case battery electrolyte contacts skin, clothing, or eyes.

1.7.3. Wear complete eye protection and clothing protection. Avoid touching eyes while working near a storage battery.

1.7.4. If battery electrolyte contacts skin or clothing, wash immediately with soap and water. If electrolyte enters eye, immediately flood the eye with running cold water for at least 10 minutes and get medical attention immediately.

1.7.5. **NEVER** smoke or allow a spark or flame in vicinity of battery or engine.

1.7.6. Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short circuit battery or other electrical part that may cause explosion. Using insulated tools reduces this risk, but will not eliminate it.

1.7.7. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a storage battery. A storage battery can produce a short circuit current high enough to weld a ring or the like to metal, causing a severe burn.

2 SYSTEM DESCRIPTION

2.1. General

- 2.1.1. The BBS-800S automatic best battery selector is a diode isolator that connects an independent battery to a starting motor (the load). The isolation system allows current to flow from the battery to the load, but not the reverse. The BBS-800S is typically paired with a second BBS-800S for redundant battery applications.
- 2.1.2. The BBS-800S is designed for negative ground systems, and is not suited for electrical systems with a positive ground.
- 2.1.3. The BBS-800S is available as one model number: BBS-800S

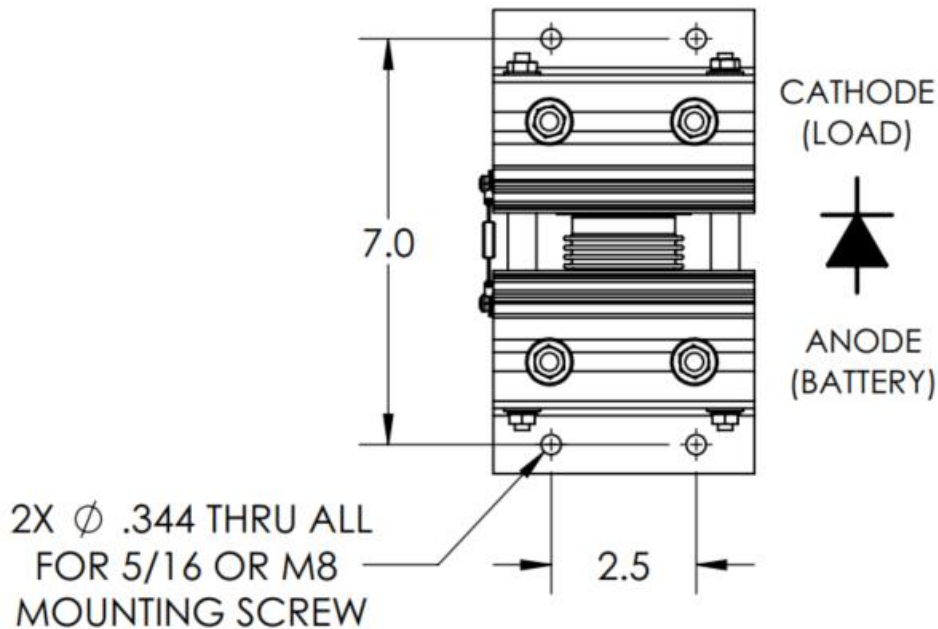
2.2. Features

- 2.2.1. Automatic operation with low maintenance requirements
- 2.2.2. One high-current diode with low forward voltage drop for high system efficiency
- 2.2.3. Large aluminum heatsinks to ensure reliable cooling with no airflow
- 2.2.4. Integrated high-voltage transient protection device (MOV) for diode

3 INSTALLATION

3.1. Wall Mounting

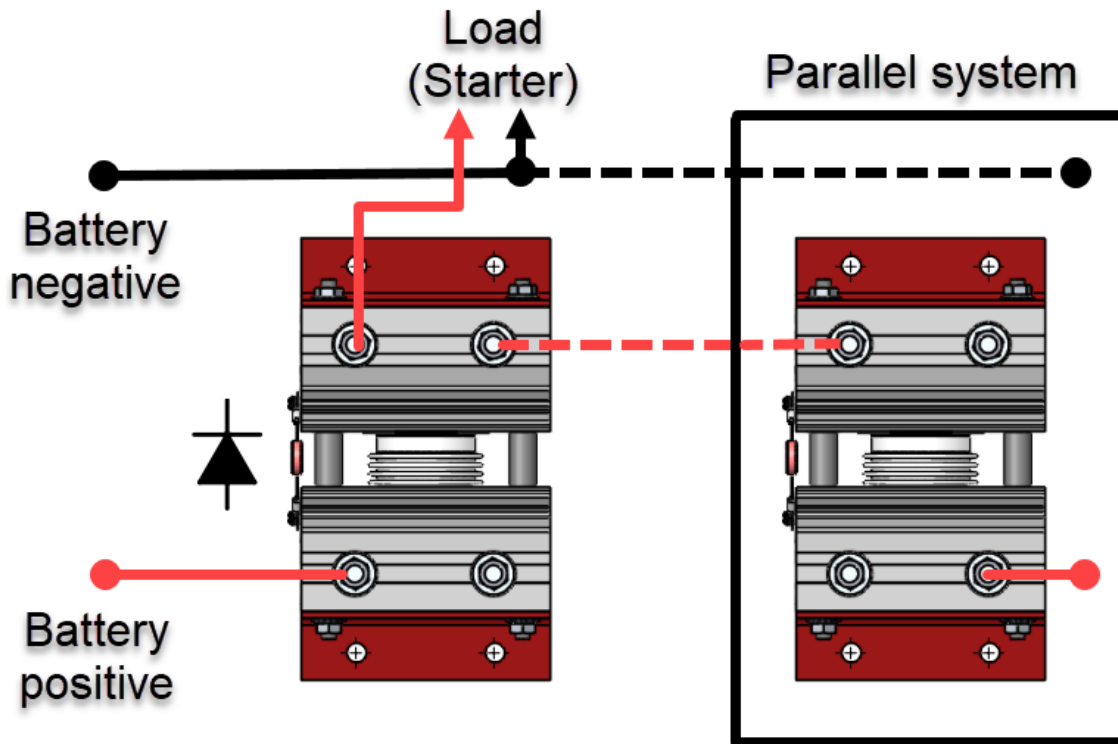
Mount the BBS-800S on a suitable wall or bulkhead.



WARNING:

THIS CONFIGURATION IS NOT ENCLOSED FROM THE FACTORY AND DANGEROUS CURRENT IS PRESENT ON THE HEATSINKS WHEN ENERGIZED. ENSURE AT LEAST 0.50 INCHES OF SPACE IS MAINTAINED BETWEEN THE BBS-800S AND ANY ADDED ENCLOSURE OR SAFETY GUARDS.

3.2. DC Cable Connections



- 3.2.1. Make ring lug connections directly to the heatsinks using the 5/16-18 hardware provided.
- 3.2.2. An oxide inhibitor conductive grease should be applied to the metal surface contact areas of each heatsink and lug.
- 3.2.3. DO NOT PLACE ANY HARDWARE BETWEEN THE RING LUG AND HEATSINK. THE BOTTOM SURFACE OF THE RING LUG SHOULD MAKE A SOLID MECHANICAL AND ELECTRICAL CONNECTION TO THE HEATSINK.

3.3. DC Cable Specifications

Use wire, connectors, and hardware in accordance with national and local codes:

- 3.1.1. Gauge: up to 4/0 AWG (0000), stranded copper
- 3.1.2. Temperature Rating: 90C minimum
- 3.1.3. Style: THHN, RHH, RHHW, or SIS (typical)
- 3.1.4. Length: 6 feet to source, 6 feet to load (24 feet total, round-trip) at specified voltage drop

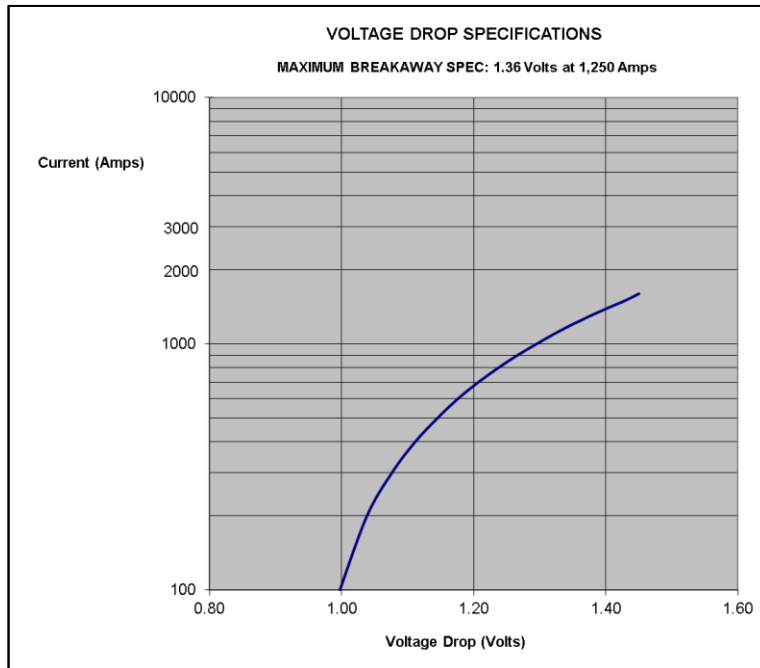
4 OPERATIONS AND SPECIFICATIONS

4.1. BBS-800S Operation

The BBS-800S operates automatically and without attention from the user. For continued operation within specification, periodically check DC cable connections to ensure that fasteners are tight and all metal is free from corrosion.

4.2. Breakway Current Specification

Maximum breakaway current (approximately 1 second at engine start-up) is 1,250 Amps, with a maximum 1.36 volt drop as measured at the DC connections at the BBS-800S heatsinks.



4.3. Rolling Current Specifications

See specifications in the table below, and also in a bar graph at the end of this manual.

Pulse Duration	Ambient Temperature	Rolling Current Specification
90 seconds	50C (122F)	750 Amps
	25C (77F)	900 Amps
	-18C (0F)	1,150 Amps
60 seconds	50C (122F)	875 Amps
	25C (77F)	1,050 Amps
	-18C (0F)	1,325 Amps
30 seconds	60C (140F)	1,000 Amps
	55C (131F)	1,025 Amps
	50C (122F)	1,075 Amps
	25C (77F)	1,300 Amps
	-18C (0F)	1,600 Amps
NFPA 110 15 on, 15 off 90 sec total	50C (122F)	700 Amps
	25C (77F)	825 Amps
	-18C (0F)	1,100 Amps

4.4. Continuous Current Specifications

The BBS-800S may be operated in continuous current mode. Maximum continuous current specifications are as follows:

- 4.4.1. 45 Amps DC continuous at 50C (122F) ambient temperature
- 4.4.2. 67.50 Amps DC continuous at 25C (77F) ambient temperature
- 4.4.3. 67.50 Amps DC continuous at -18C (0F) ambient temperature

4.5. Operating Voltage 0 to 120VDC Nominal

The BBS-800S is rated for operation in DC systems up to 120VDC nominal, including battery systems that have actual DC system voltages that may be as high as 160 volts under certain operating conditions. The BBS-800S is designed to operate reliably and safely in these types of systems.

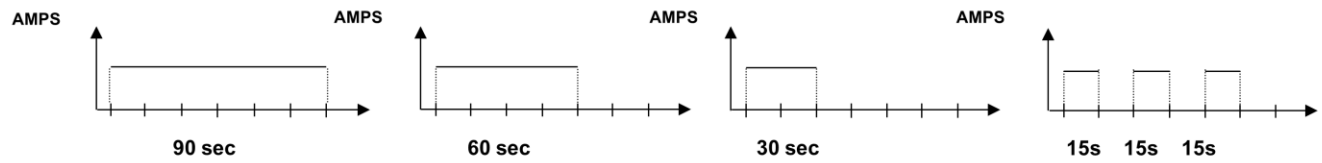
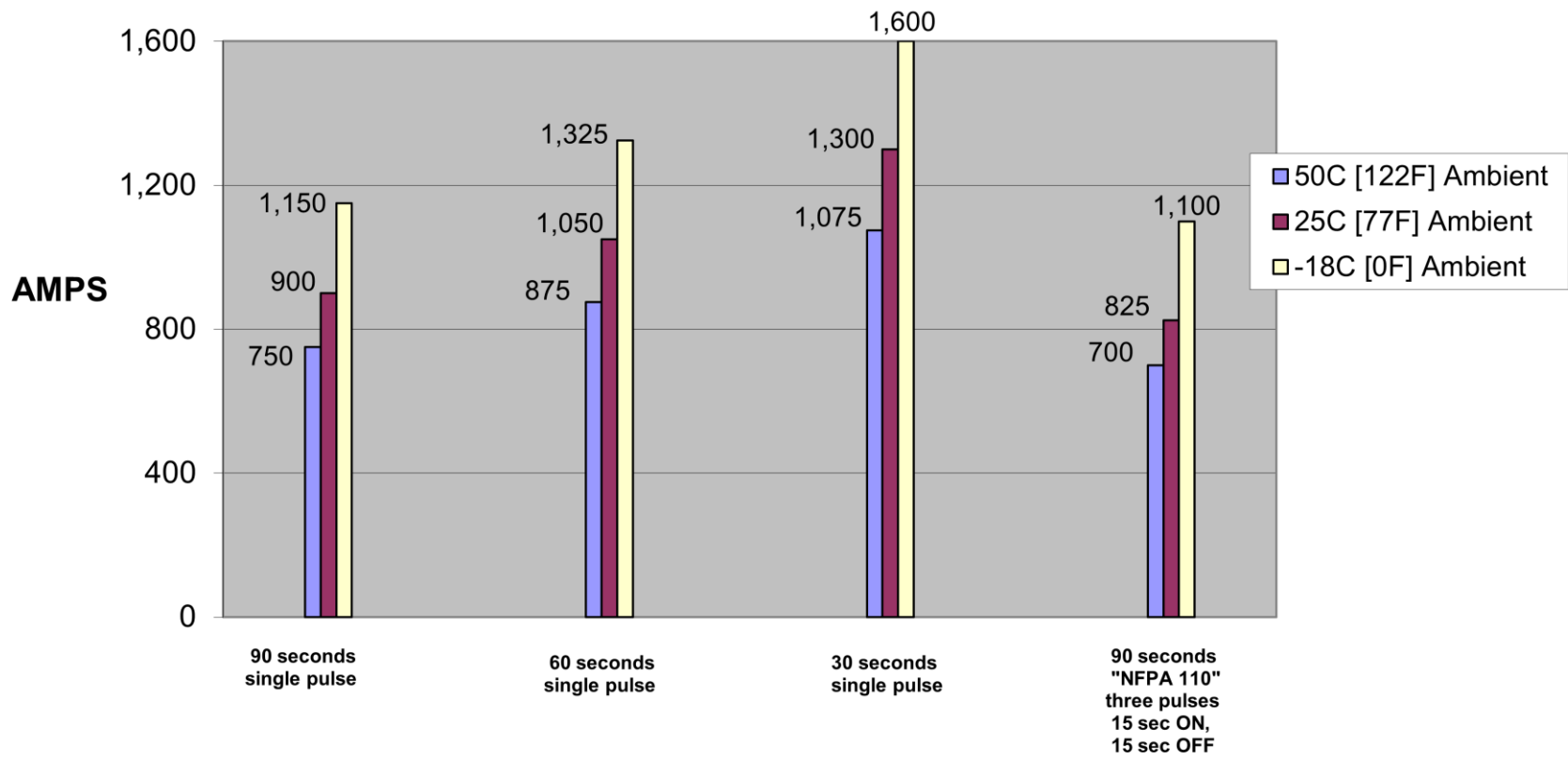
4.6. Operation With an Engine-Driven Alternator

When a BBS-800S is installed in an engine starting system with an engine-drive alternator the alternator must be connected to the battery, not the output of the BBS-800S.

4.7. Installation Questions or Failure(s)

Contact SENS at 1-800-742-2326, 8 a.m. - 5 p.m., (Mountain Time) Monday - Friday.

SENS BBS-800S ROLLING CURRENT SPECIFICATIONS



DC CURRENT CRANKING CYCLES

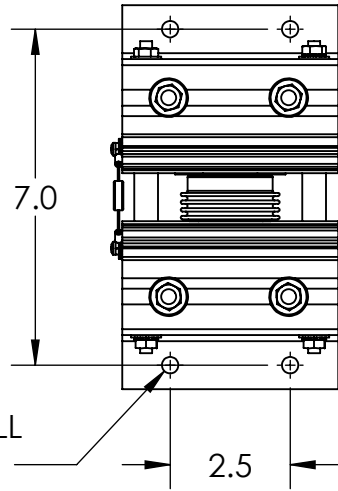
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NOTES:

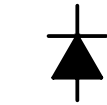
1. ASSEMBLY IS OPEN (NON-ENCLOSED)
2. **CAUTION: HEAT SINKS ARE ENERGIZED DURING USE!**
3. PROTECT PERSONNEL AND EQUIPMENT BY ADDING STURDY SAFETY GUARDS OR ENCLOSURE AND MAINT AT LEAST .50" BETWEEN CONDUCTIVE PARTS OF THIS ASSEMBLY AND ENCLOSURE/GUARDS ADDED IN FIELD
4. ASSEMBLY IS ROHS COMPLIANT

REV	DCN	DESCRIPTION	DATE	AUTHOR
01	108531	INITIAL RELEASE	3/8/2024	MHOLCOMB
02	108531	ADDED "BATTERY" AND "LOAD" NOTES	3/14/2024	MHOLCOMB

MOUNTING HOLE PATTERN

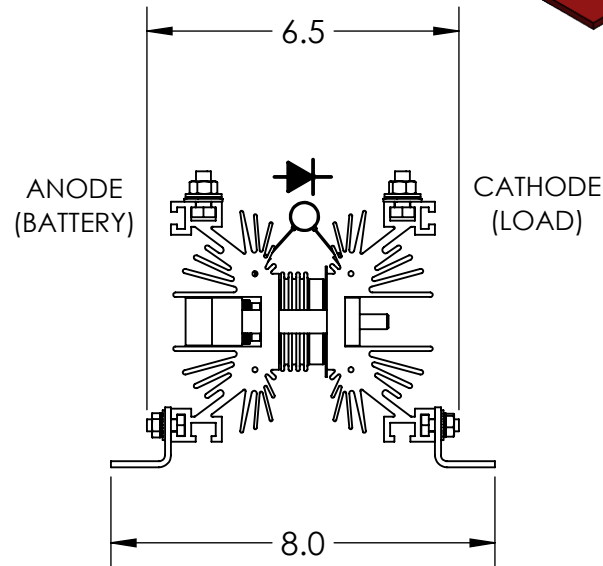
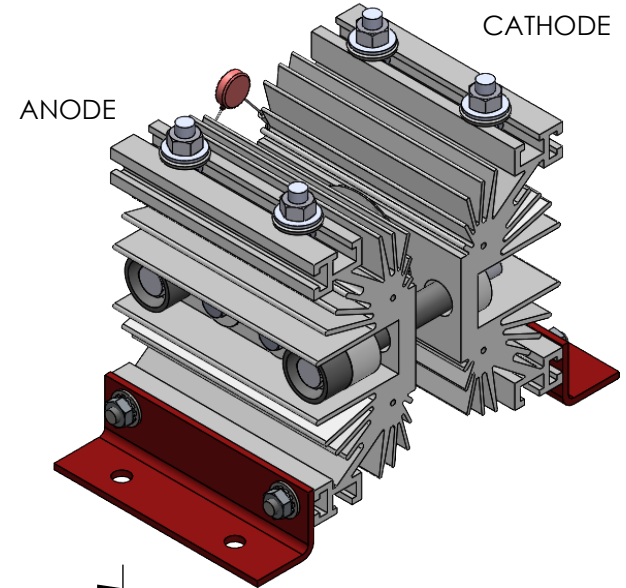
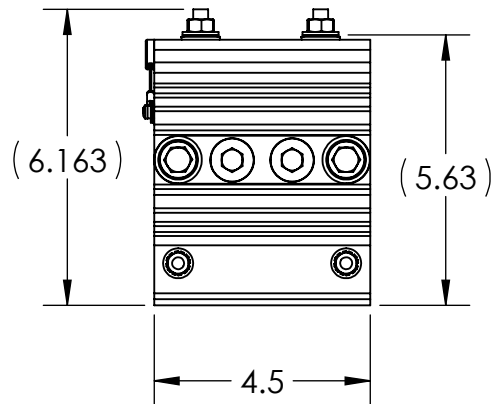


CATHODE
(LOAD)



ANODE
(BATTERY)

2X ϕ .344 THRU ALL
FOR 5/16 OR M8
MOUNTING SCREW



SENS
STORED ENERGY SYSTEMS
1840 INDUSTRIAL CIRCLE LONGMONT, CO 80501
303-678-7500 WWW.SENS-USA.COM

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UNLESS OTHERWISE SPECIFIED FOR ALL SHEETS: DIMENSIONS ARE IN INCHES. DO NOT SCALE DRAWING. MOST REVISED ITEMS INDICATED IN BLUE. DEFAULT TOLERANCES:

$\pm 1/16"$ ASSEMBLY TOLERANCE

ORIGINAL AUTHOR:	matthewh
RELEASE DATE:	3/14/2024
SHEET FORMAT SIZE:	A
THIRD ANGLE PROJECTION	
DIMENSIONS & TOLERANCES PER ASME Y14.5 - 2009	

PART NUMBER:	2DCAD-BBS800S-STD
DESCRIPTION:	2DCAD,BBS-800S,STANDARD

REVISION:	02
SHEET:	1 OF 1

SENS Limited Warranty

BBS Best Battery Selectors & BCS Battery Control Systems

What is covered?

This warranty covers any defect in material and workmanship on BBS model best battery selectors and BCS model battery control systems (referred to herein as "Product") manufactured by Stored Energy Systems, LLC (SENS).

What this warranty does not cover:

This warranty does not cover damages, defects or failures of your equipment resulting from shipping damage, accidents, installation errors, unauthorized adjustment or repair, unauthorized third-party service, failure to follow instructions, misuse, fire, flood, acts of persons not in our control, and acts of God.

For how long:

Five years from date of shipment.

What we will do:

If your Product is defective within five years of date of shipment, we will repair it or, at our option, replace it at no charge to you.

If we choose to replace your Product, we may replace it with a new or refurbished one of the same or similar design. The repair or replacement will be warranted for the remainder of the original five-year warranty period. If we determine that your Product cannot be repaired or replaced, we will refund its purchase price to you.

What we ask you to do:

Contact SENS service department to obtain warranty service instructions. To obtain warranty service the product must be returned, freight prepaid, to the factory under a Return Material Authorization (RMA) number provided by SENS. If, in SENS' opinion, the problem can be rectified in the field, SENS may elect to ship replacement parts for customer installation instead of having the product returned to the factory.

Limitation:

This warranty is limited to defects in material or workmanship of the Product. It does not cover loss of time, inconvenience, property damage or any consequential damages. Repair, replacement or refund of the purchase price of the equipment is your exclusive remedy.