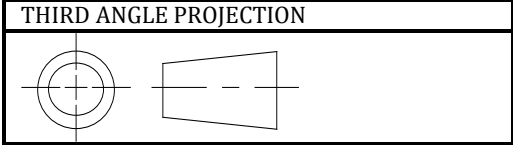


SIZE <b>A</b>	DWG NO ETX680-24-TSO	SH 1	REV B.1
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CLICK HERE  
TO UPDATE  
TEMPLATE

REVISION BLOCK			
REV	DESCRIPTION	DATE	APPROVED
A	Initial Release	4/05/2020	NICOSON
B	Update to longer RS-232 cable and sealed 3 pin connector	5/05/2021	NICOSON
B.1	BMS Firmware V2.9C	7/20/2021	NICOSON

## ETX680-24-TSO Top Level Assembly Drawing

THIS DOCUMENT SHALL BE REVISED IN ITS ENTIRETY. ALL SHEETS OF THIS DOCUMENT ARE THE SAME REVISION LEVEL AS INDICATED IN THE REVISION BLOCK. UNLESS SPECIFIED ELSEWHERE, TOLERANCES ARE  $\pm 1/16"$

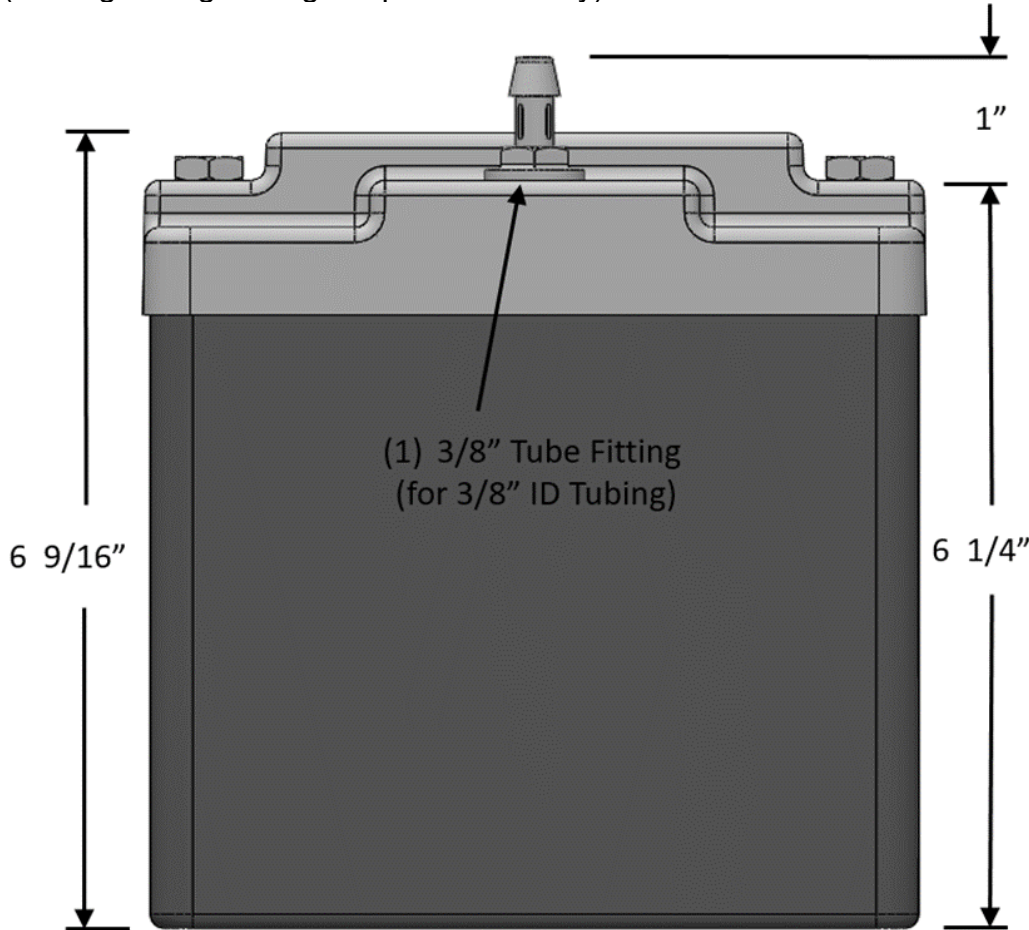
<b>EarthX</b>	Windsor, CO	SIZE <b>A</b>	DWG NO ETX680-24-TSO	DESCRIPTION 11.7Ah Battery
DRAWN S NICOSON		SCALE	SHEET 1	
ISSUED R NICOSON				





### Top Level Assembly

The ETX680-24-TSO is a Class B lithium battery of energy category 4 (>200Wh), venting category B (venting through designed provisions only).



Item #	Part #	Description	Quantity
1	ETX680-24-TSO	11.7 Ah Battery	1
2	M8-1-12	M8 Phillips Hex Head Screw	2

### Notes

- This battery meets the TSO-C179b standards
- This product is manufactured under FAA TSOA quality system requirements.
- Battery ratings are per DO-311a
- Reference documents: 180319 Acceptance Test Procedure (ATP)
- Components of this article meet the applicable flammability requirements of §§ 23.25/27/29.853, 23.25/27/29.863, and 25.869.
- The conditions and tests required for TSO approval of this article are minimum performance standards. Those installing this article either on or within a specific type or class of aircraft must determine that the article installation conditions are within the TSO standards. The article may be installed only according to 14 CFR part 43 or the applicable airworthiness requirements

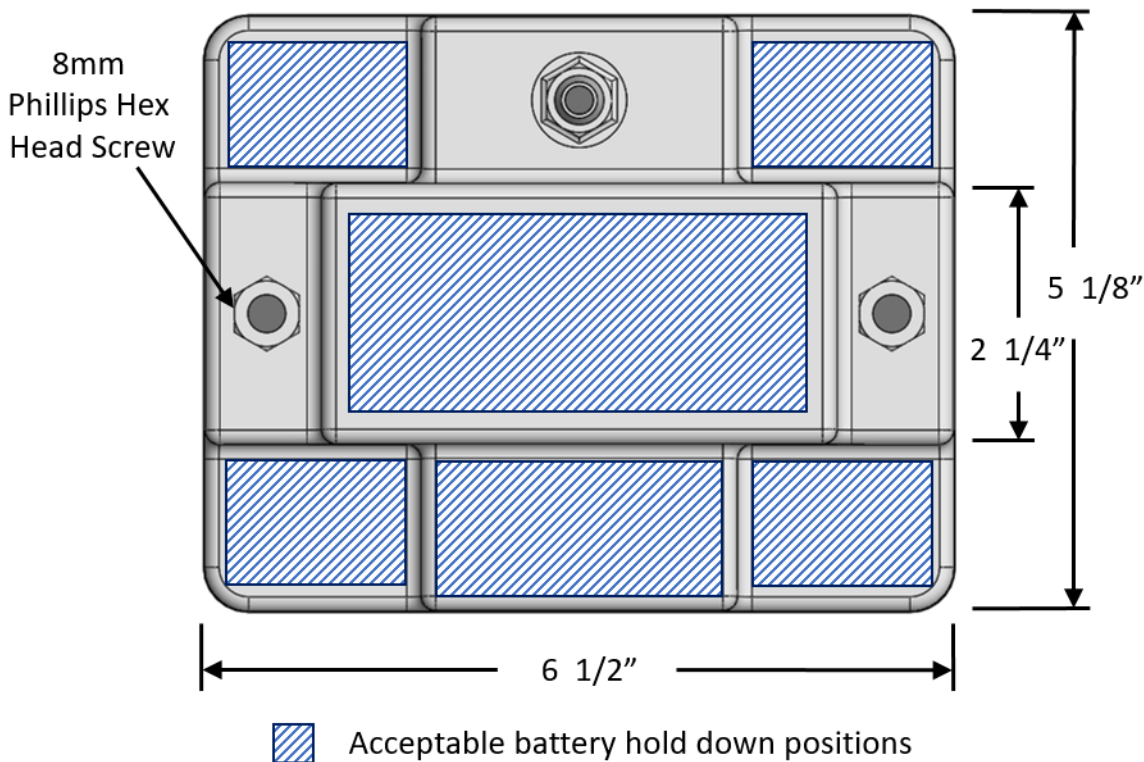




- Refer to documents 200407 Installation & Maintenance Manual (IMM), and 200408 Instructions for Continued Airworthiness (ICA), for installation and limitation details.

### **Battery Mounting**

The ETX680-24-TSO can be mounting in any position except upside down. A battery holder or battery box can contact any part of the bottom and sides of the battery, and any area on the top of the battery as indicated in the figure below.

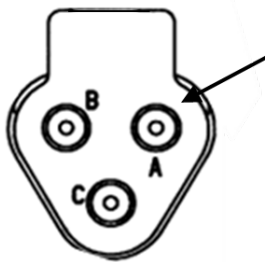


### **Battery Monitoring Cable**

The ETX680-24-TSO can provide status and fault information via a discrete output and RS-232 output. The connection to the battery is a three conductor latching and sealed plug (see the figures below).

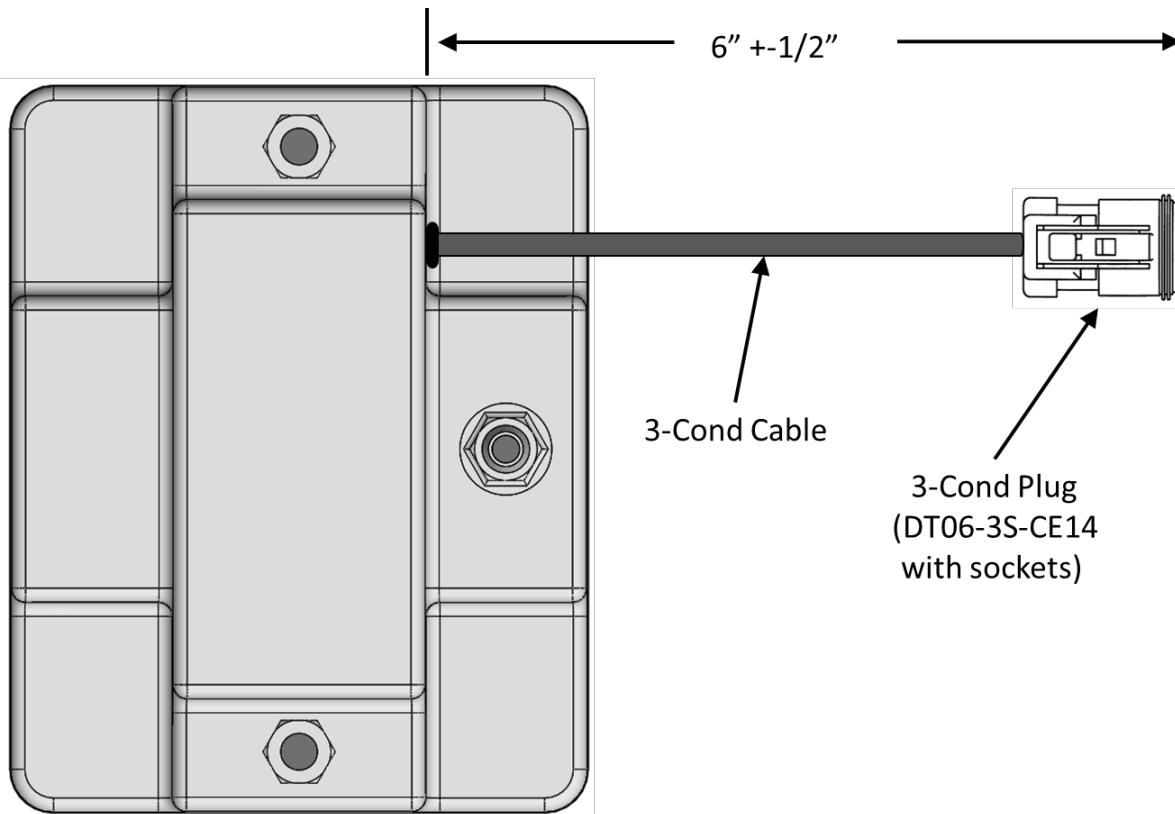
Plug End View

Pinout



- A: Discrete Output
- B: RS-232 Tx
- C: RS-232 Gnd





### Specifications

Voltage	26.4 V
Capacity (1C, 1hour rate at 23 °C)	11.7Ah @ 1C rate (See below)
Capacity vs Temperature	25 °C = 100% 0°C = 97% -30°C = 95% (11.3Ah at this temperature)
Self-Discharge Rate	<3%/month @ 25°C
Peak Power (I <sub>pp</sub> ), 23/-18 °C	850 / 400 amps
Rated Power (I <sub>pr</sub> ), 23/-18 °C	500 / 250 amps
Max Continuous Discharge Amps (Discharging 100% of capacity)	24A
Standard Charge Voltage	27.6 – 28.8 V
Recommended Charger/Maintainer Amps	5 - 15A
Max Charge Amps	70A (from aircraft charging system)
Life (Charge cycles)	4000 cycles @ 1C discharge rate, 25°C (20% depth of discharge) 2000 cycles @ 10C discharge rate, 25°C (80% depth of discharge)
Life (Years)	6 Years
Weight	7.2lb (3.27Kg)





Dimensions	6.5in (L) x 5.1in (W) x 6.6in (H) 166mm(L)x129mm(W)x168mm(H)
Environmental Rating (resistance to water intrusion)	IP 66 (wash down with a high-pressure washer)
Operating Temperature (short term)	-30 °C to +60 °C (+65 °C for 30minutes)
Storage Temp	-40 °C to +70 °C
Short Term Ground Survival Temp	85 °C (30 minutes)
Maximum Altitude	50,000 Ft
Shelf Life	1 year (without charging)
FAA Standard Order	TSO-C179b
Design Assurance Level (DAL)	C (major)
Flammability Rating (case and vent tube)	14CFR 25.853 (a)

### TSO Label Info

The TSO label contains the following information:

- Battery Classification: Rechargeable Lithium Battery
- ETX680-24-TSO { }
- TSO-C179b-CLASS B-4B
- Serial #:
- Date of Manufacture:
- BMS Part # and Revision:
- Firmware Revision:

Note: the x's in serial number field of the label are as follows, first three characters are year and month (i.e. 18A, where A is January, B is February, etc.) and the last five are a sequential number.

Below is the graphic design.

