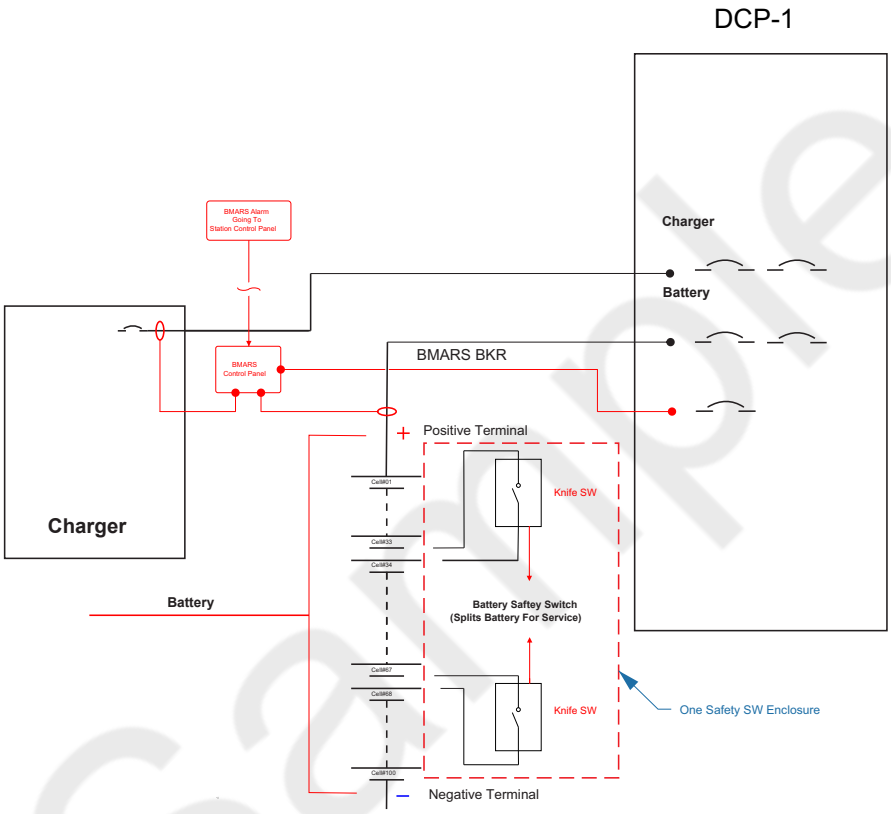
Preparing for field Installation of BMARS: (08/26/21)

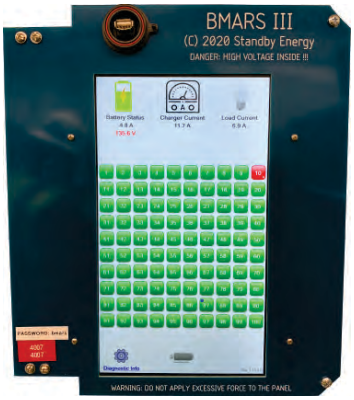
Below is a functional block diagram of a typical System. Your System may have more or less hardware, however this description will give you a guide of what you will need to prepare for.



BMARS Consists of the following equipment:

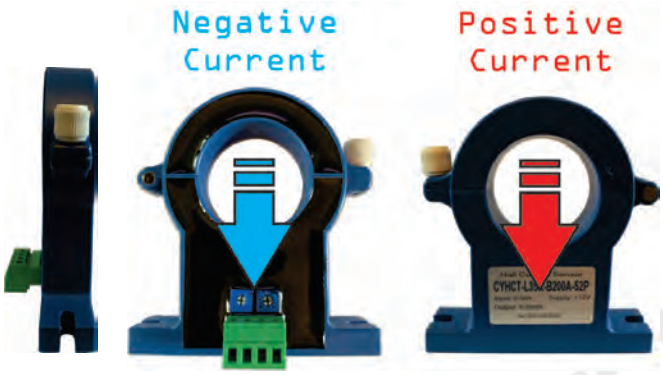
1. 1 ea. BMARS Main Control Panel
2. BMARS Monitor Board and Cable (1ea Monitor Board and 1ea Monitor Cable for each 5 cells of the Battery, see the "BMARS Wire Harness Connections" drawing).
3. 1 ea. Split Core BMARS Hall Effect Transformer (HET) Module and Cable for monitoring the Charger Current.
4. 1 ea. Split Core BMARS Hall Effect Transformer (HET) Module and Cable for monitoring the Battery Current.

ITEM #1 MAIN CONTROL PANEL



ITEM #2 MONITOR BOARD (4” x 2.75” x 1.5”) ONE FOR EACH 5th CELL OF THE BATTERY

ITEM #3 & 4 HALL EFFECT TRANSFORMER



ACTION ITEMS:

1.

BMARS is powered from the Station Battery it is monitoring. BMARS is internally fused with a 1 A Fuse. However, because this power is usually fed from a DC Breaker in the Stations Main DC Panel, many times the smallest DC Breakers for these Panels is in the 10-15 ADC range. A Conduit and Cable for this must be taken to the location where the BMARS Main Control Panel (Item 1.) will be installed. The cable must be sized for the DC Breaker used. NOTE: If SEI Supplied this DC Panel let us know if you want us to supply this Breaker to be installed in the Station DCPanel.

2.

Each BMARS Monitor Board (Item 2.) will mount on or near each 5th Cell of the Battery. It will communicate via 2.4GHz wireless with the BMARS Main Control Panel (Item 1.) NOTE: Because of this wireless communication, the area between the Battery and the BMARS Main Control Panel (Item 1.) must not be walled off.

3.

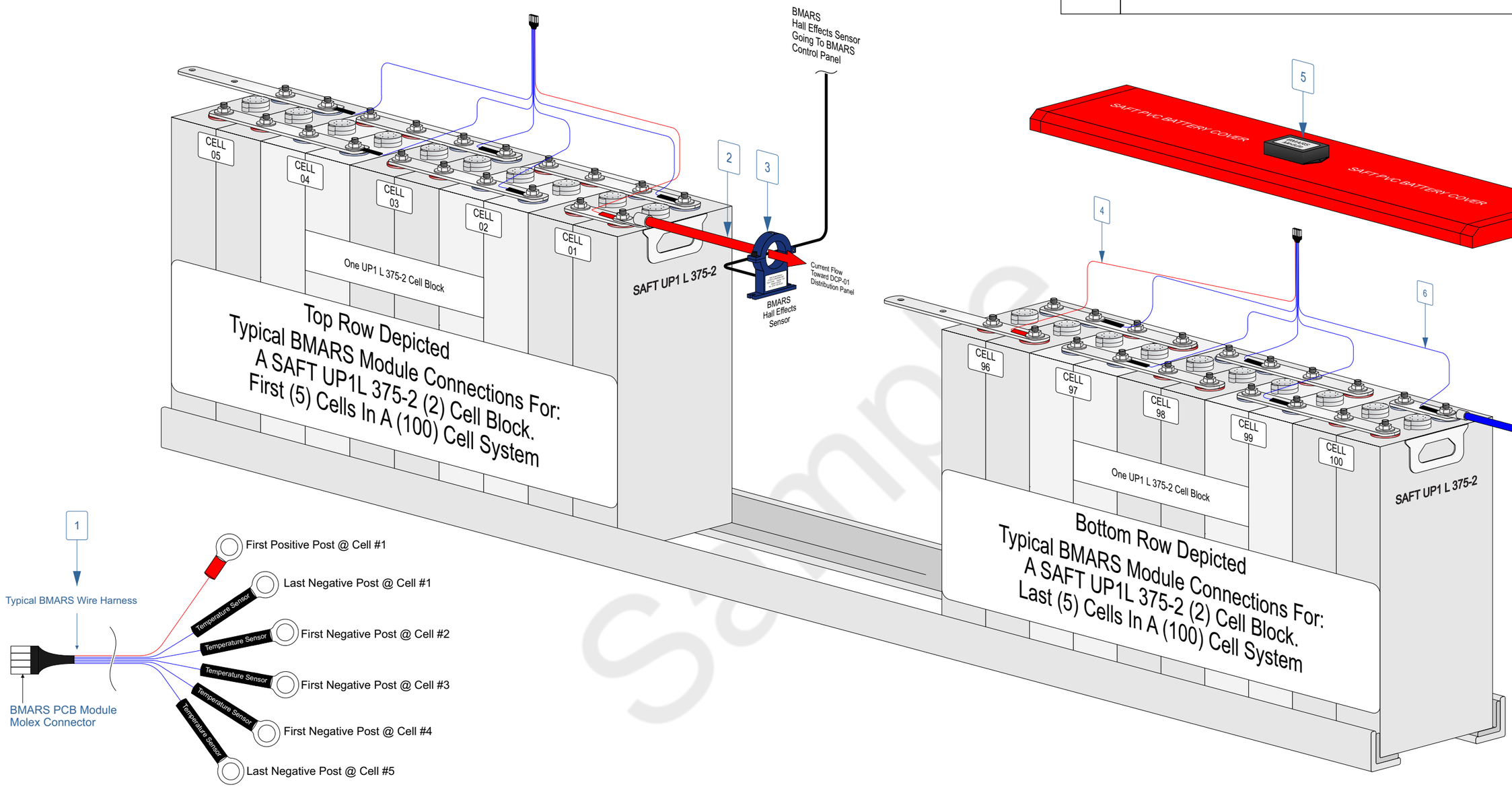
The Charger, Split Core BMARS Hall Effect Transformer (HET) Module (Item 3.) will be placed over the PositiveCharger Output Cable, with the cable running out through the Clamp On Transformer from the Connector side of the Module and out to the Load side. This HET Module Cable Conduit must be adequate to accept the Cable and Connector, 1” ID.
All current "out" of the charger is positive current.

4.

The Battery, Split Core BMARS Hall Effect Transformer (HET) Module (Item 4.) will be placed over the Positive Battery Input/Output Cable, with the cable running out through the Clamp On Transformer from the Connector side of the Module and out to the Load side. This HET Module and Cable Conduit must be adequate to accept the Cable and Connector, 1” ID.
All current "into" the battery is negative current.
All current "out" of the battery is positive current.

end

REVISIONS		
REV-NR		08/27/2021



BMARS Components

1	BMARS PCB Module Pigtail Wire Harness
2	Positive DC Conductor
3	BMARS Hall Effects Communicating With BMARS Control Panel
4	BMARS PCB Module Wire Harness Positive Terminal Ring Connector (1)
5	BMARS PCB Module
6	BMARS PCB Module Wire Harness Negative Terminal Ring Connectors (5)
7	Negative DC Conductor

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BMARS Modules Top Mount IOM

BMARS Wire Harness Connections

DRAWING # BMARS TYPICAL

SCALE: NTS | T.A.C. | SHEET: 1 of 3

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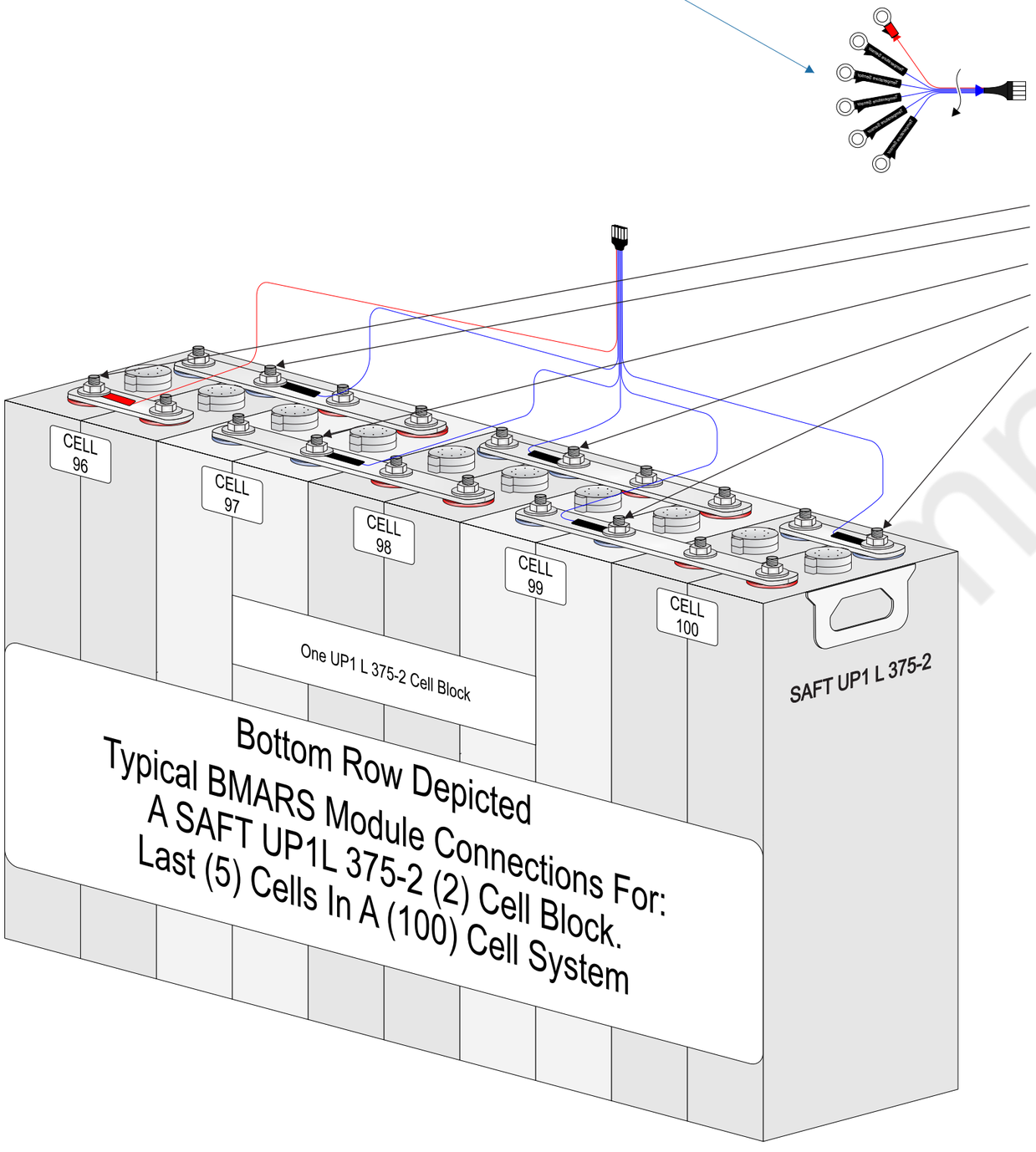
Please note that Temperature Sensors need to run along the bus bars as shown in the picture below. This is so that the red battery covers will fit onto the top of the batteries for safety.



1. **(One Red connection) to the 1st Positive cell post, and the (One Temperature Sense Probe) going to the Negative Post.**
2. **One Temperature Sense Probe going to the Negative Post of the 2nd cell.**
3. **One Temperature Sense Probe going to the Negative Post of the 3rd cell.**
4. **One Temperature Sense Probe going to the Negative Post of the 4th cell.**
5. **One Temperature Sense Probe going to the Negative Post of the 5th cell.**
6. **(One Red connection) to the 6th Positive cell post, and the (One Temperature Sense Probe) going to the Negative Post.**
7. **One Temperature Sense Probe going to the Negative Post of the 7th cell.**
8. **One Temperature Sense Probe going to the Negative Post of the 8th cell.**
9. **One Temperature Sense Probe going to the Negative Post of the 9th cell.**
10. **One Temperature Sense Probe going to the Negative Post of the 10th cell.**
11. **Etc. etc. etc.**

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BMARS Modules Top Mount IOM			
BMARS Wire Harness Connections			
DRAWING # BMARS TYPICAL			
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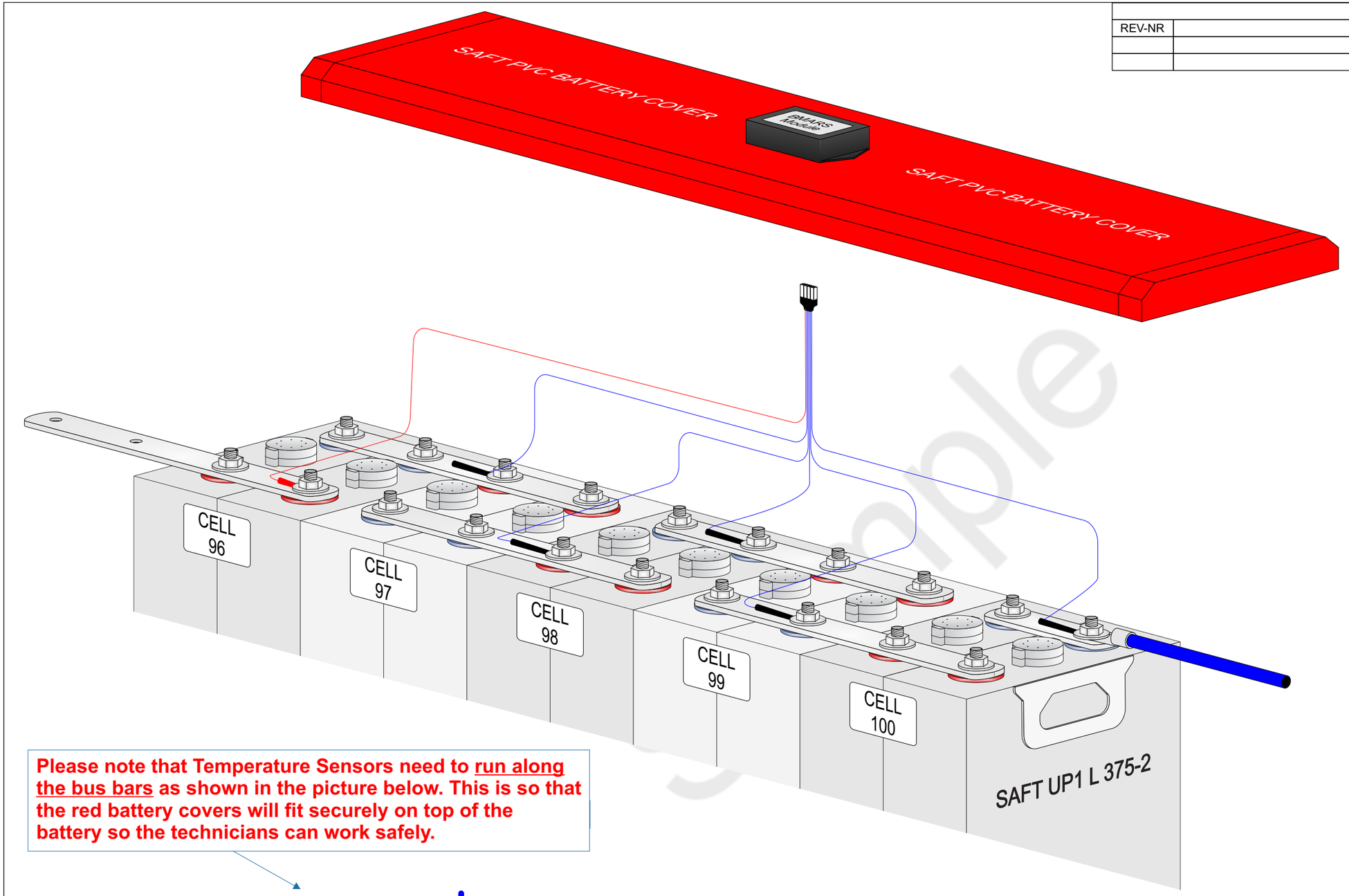
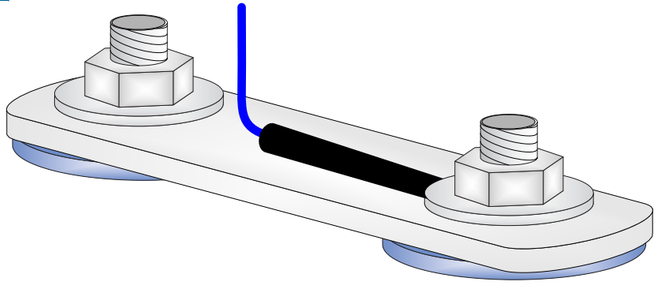


Please note that Temperature Sensors need to run along the bus bars as shown in the picture below. This is so that the red battery covers will fit securely on top of the battery so the technicians can work safely.



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BMARS 3 Modules Top Mount IOM

BMARS 3 Wire Harness Connections

DRAWING # BMARS 3 TYPICAL

SCALE: NTS | B.R.V. | SHEET: 3 of 3