



## MANDATORY BATTERY BALANCE PRE-FLIGHT CHECK FOR ALPHA ELECTRO

### ANALYSIS

#### - DUE TO CUMULATIVE DATA PACKETS THE EPSI DISPLAY CAN REACH AN ERROR STATE

During flight and charge cycles, the BMS reports to the EPSI regularly. In this process there is an accumulation of data that can result in a misread of the EPSI SOC/battery balance interface display.

### RISK

#### - THE BATTERY SOC DISPLAY ON THE EPSI CAN RAPIDLY CHANGE

During operation of the aircraft, there is a risk that this accumulation can force an error on the SOC display, indicating the battery has had a rapid SOC reduction. This information is most likely false.

### MANAGEMENT (IN FLIGHT)

#### - IF YOU EXPERIENCE A BATTERY READ ERROR IN FLIGHT

Do not panic. Switch the EPSI display to the secondary aircraft information page to assess the battery SOC.

**First** - Assess the **Batt U**: display voltage for each battery.

Each battery **Batt U**: value should be similar, not less than 5% difference.

A **Batt U**: voltage display of 350V represents approximately 50% SOC

THE MINIMUM BATT U: VOLTAGE VALUE IS 300V - This represents approx. 10% SOC

**Second** - Assess the **MIN U**: display voltage for the lowest individual cell voltage

Each battery **MIN U**: value should be similar, not less than 5% difference.

THE MINIMUM SAFE FLIGHT MIN U: VOLTAGE VALUE IS 3200mV

THE MIN U: FAILURE VOLTAGE IS APPROX. 2800mV

If the above values present within these thresholds, the aircraft is safe to continue flying. HOWEVER, if there is a battery balance or battery value read error on the main user interface display YOU MUST immediately route to the closest practical airstrip for a safe landing, flying as efficiently as possible.

### MITIGATION

#### - MANDATORY ASSESSMENT AT END OF CHARGE CYCLE

The above read errors and data cache anomalies are easily mitigated by a simple check of the EPSI state during flight and at the end of the charge cycle.

IF AT THE END OF THE COMPLETE CHARGE CYCLE (or during the previous flight) the batteries are showing any imbalance on the main EPSI display, complete a battery reset via the EPSI display via the following method..

Turn **MASTER** and **AVIONICS** switches to: **ON**.

rotate the knob on EPSI:

- **3 times right, - 5 times left, - 6 times right**. Choose "restart battery r" by rotating the knob to select, press the knob to begin restart procedure. Repeat for the Front Battery

Allow around 1 minute for the full restart to complete.

Power OFF AVIONICS and MASTER, pull the PWR CONT. circuit Breaker , Main circuit Breaker and both battery circuit breakers.

Reset all breakers and power up MASTER and AVIONICS. The batteries should now read in balance within 5%.

# System Mode

SYSTEM mode shows several diagnostic values of the system components. This mode is selected by rotating the knob. Refer to the table below for a short description of the parameters.

FLIGHT		SYSTEM	
<b>BATTERY</b>		<b>DRIVE</b>	
Position:	Front rear	NMT state:	1
Mode:	Active Active	Status:	63
SOC/SOH:	88/99 89/100	Temp M/I:	80°/55°
MAX temp:	31° (0) 34° (0)	RPM:	2150/min
MIN U:	4090mV 4100mV		
MAX U:	4100mV 4123mV		
Bus U:	369.0V 373.0V	Coolant:	55°/58°
Batt U:	371.0V 370.0V	Hobbs:	0min
Batt I:	89.0A 75.0A		
PC err:	0 0		
Balancing:	0 0		
Uptime:	5554 6675		
<b>DC/DC</b>		<b>POWER LEVER</b>	
Presence:	yes	Presence:	yes
State:	1	Output:	800
Output U:	1.4V	Scaled:	880
Output I:	2.5A	Final:	870
Input U:	369.0V	Seen zero:	yes
Input I:	0.3A		

BATTERY section	
One column for each battery	
Parameter	Description
Mode:	Battery status (ready = connected ; active = connected and power relays closed ; error)
SOC:	State Of Charge of the batteries
MAX temp:	Shows the max temp inside the battery pack, detected by the temperature sensors integrated. ( x ) value: number of temperature sensors not working
MIN V: MAX V:	Mininum and Maximum voltage value of the cells in each battery pack.
Bus U:	Voltage on the bus (power lines after the batteries) (0 when batteries are ready but no power transfer)
Batt V: Batt I:	Battery voltage and current. Negative values possible during charging.
PC err:	Pre-Charge error. This value is for servicing purposes.