INSTRUCTION TO SERVICE

ITS:61122	Aug 12, 2024
SECTION:	290-ELECTRICAL SCHEMATICS
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SUBJECT:	FEBS BATTERY PROGRAM UPDATE PROCEDURE – FW 2324
SUMMARY:	FW2324 offers: • Improved BMS response to overcharging and other functional safety mechanisms • Robust detection of failure modes through DTCs • Battery Data Recorder (BDR) capabilities • Streamlined flashing processes. • Logic improvements for better integration with application
AFFECTED SR:	ALL ELFA2 XE Buses

ITS61122

THIS ITS DOCUMENT SHOULD BE RETAINED AND REFERRED TO FOR FUTURE MAINTENANCE UNTIL THE NEW FLYER PARTS AND/OR SERVICE MANUAL IS UPDATED TO REFLECT WORK DONE AS A RESULT OF THIS DOCUMENT. ENSURE THAT THIS DOCUMENT IS AVAILABLE FOR PARTS AND MAINTENANCE STAFF GOING FORWARD.

Contents

1. EQUIPMENT REQUIREMENT

The following equipment is required:

1.1. NEXIQ with USB-Link 2 cable or PCAN tool

1.2. Battery diagnostic cable

1.3. Software package

1.3.1. XALT Service Tool (XST) version 2324.

1.3.2. BOT_2150_02.mot Bootloader.

1.3.3. BMS_00XX_232403_02

Note: Contact Service engineering specialist for software package

2. SET UP/INSTALL THE XST

2.1. Copy and paste the XST_2324.zip file provided by SES.

2.2. Extract the zip folder to the local drive.

2.3. Navigate to the binary folder under the XST_2324 main folder and double click on the XST_2324_01.exe to install the software. A desktop shortcut will be added to the desktop.

2.4. Refer Xpand service tool user manual in the support documents folder provided with zip folder for any further information on how to use the xst.

3. FLASH THE BOOTLOADER ON MCU (INTERNAL CAN)

3.1. Cycle the MRS to ON position.
Check for vansco wakeup. If not, press the startup button.

3.2. Before updating, check the following:

- SOC>30%.
- LV battery health is good.
- Constant 24V supply to MCU T30

3.3. Key on the bus with hazards on.

3.4. Cycle the MRS to OFF position.

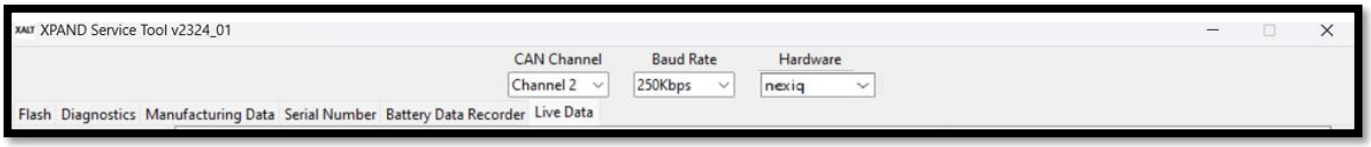
3.5. MCU T15 vansco output set to true

3.6. Connect the Nexiq CAN interface plug to the Ebus black diag port.

3.7. Connect the Nexiq USB plug to the laptop and launch XST_2324 software.

3.8. On the XST software navigate to the flash tab.

3.9. Set the CAN Channel to **Channel 2**, Baud rate to **250K** and Hardware to **Nexiq.**



3.10. Select the “browse” button and navigate to where the **BOT_2150_02.mot** file is located. Choose the file and press the Flash button to start flashing the MCU.

3.11. Wait until the flash progress bar reaches 100%. When done wait for 60 seconds before moving to the next stage.

4. FLASH THE BOOTLOADER ON SCU (SERVICE CAN)

4.1. Connect the interface harness aka octopus’ cable to the NEXIQ and to the BDU diagnostic port. connect the NEXIQ to your laptop with a USB cable.

4.2. Within the interface harness, connect CAN 1 to STRING 1 (the NEXIQ with the XST tool only communicates on CAN 1 – so you’re connecting the NEXIQ to one string at a time).

4.3. On the XST software navigate to the flash tab.

4.4. Set the CAN Channel to **Channel 1**, Baud rate to **250K** and Hardware to **Nexiq.**

4.5. Select the “browse” button and navigate to where the **BOT_2150_02.mot** file is located. Choose the file and press the Flash button to start flashing the MCU.

4.6. Wait until the flash progress bar reaches 100%. When done wait for 60 seconds before moving to the next SCU.

4.7. After flashing All the SCU’s

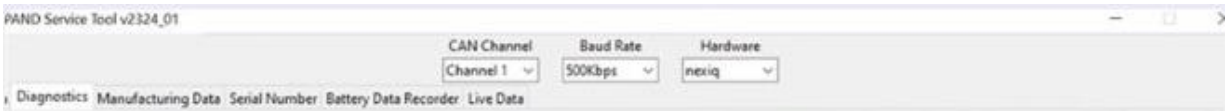
4.8. Key the bus OFF (wait until bus fully goes to sleep)

5. FLASH THE BMS FILE TO THE MCU (APPLICATION CAN)

5.1. Connect the Nexiq CAN interface plug to the Ebus black diag port.

5.2. In the XST software, navigate to the Flash tab.

5.3. Change the settings to: CAN Channel - **Channel 1**; Baud rate – **500K**; Hardware – **Nexiq**.



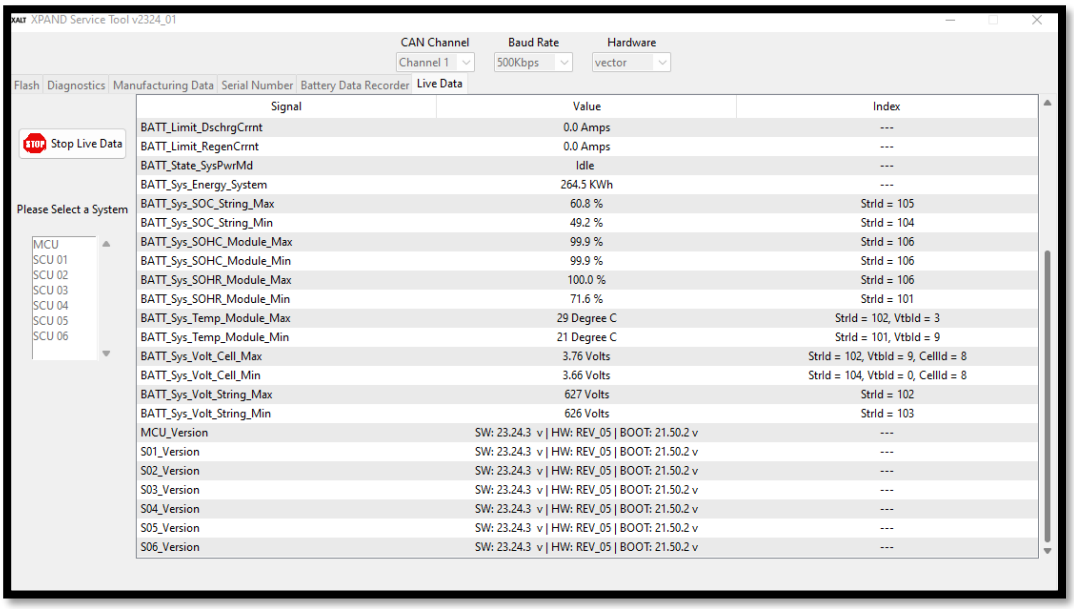
5.4. Press the browse button and choose the BMS_00XX_232403_02.mot.

☞ ***NOTE: BMS file is specific to battery type.***

5.5. Press the Flash button and wait until the flash bar reaches 100%.

5.6. Once completed successfully – Key OFF the bus for 5 minutes and then Key ON the bus

5.7. To confirm MCU and SCU have the correct bootloader and software version, click to Live data tab, scroll to the bottom of the page as shown below.



6. CLEAR CODE INSTRUCTIONS FOR 2150-2324 XST

6.1. Click and highlight the Permanent fault.

6.2. Right click on the permanent fault.

6.3. Select the bottom most option for clear fault in drop down window.

6.4. Insert above clear code into newest pop-up window using CTRL+C (to copy) and CTRL+V (to paste).

6.5. Copy and paste the Authorization Code into the “Authentication Code” window.

6.6. Be sure when copying that no blank or invisible characters populate at the beginning or end of the code.

6.7. You will get confirmation that it was activated.

6.8. You will need to right click on each string and then select “clear fault”.

6.9. It will state something along the lines of code still active.

6.10. After doing this for all strings key the bus off for 10 minutes.

6.11. Key the bus back on and then check with XST to ensure no faults remain.

LIST OF ABBREVIATIONS

Abbreviations	Description
APP	Application
BDU	Battery Disconnect Unit
BMS	Battery Management System
CAN	Controller Area Network
FBPS	Freudenberg Battery Power Systems
HV	High Voltage
LV	Low Voltage
MCU	Master Control Unit
SCU	String Control Unit
XST	XPAND Service Tool
SES aka TSS	Service Engineering Specialist.

LABOUR ESTIMATE				
	Operation	Number of Technician(s)	Hours	Labor Time T X HR
1	Rework - Update XALT software to rev 2324	1	0.25	0.25