



PRODUCT CHANGE NOTICE

PCN Number: PCN-20260603

Change Title: Hardware and Power Management Optimizations to Enhance System Performance

Notification Date: 01/08/2026

Affected Product: DSBOARD-ORNX Rev.1.2

New Product: DSBOARD-ORNX Rev.2.0

Dear Customer,

Please be advised that Forecr is implementing a modification to the product(s) specified above. This update is part of our ongoing commitment to product and process optimization. Shipments of the new product revision will begin on October 1, 2026.



Change Information

Description		Hardware and power management optimizations to enhance system performance
	Current Status	New Status
1.	Power input range was 9-28V DC.	Power input range increased to 9-32V DC.
2.	Power input was protected with 10A slow blow fuse.	Power input fuse change to 15A fast blow.
3.	Power input over-voltage protection utilized a TVS diode with a 30V breakdown voltage rating.	Power input over-voltage protection TVS has been replaced with 33V breakdown voltage model to support wider 9-32V input range.
4.	Total system power consumption monitoring was not available on board.	Power monitor added to read system power consumption.
5.	There was no dedicated power supervisor mechanism.	A hardware power supervisor IC has been added to add minor delay for not starting boot-up sequence until stable power is supplied to board.
6.	The module power path used a fixed 5V buck regulator structure.	The fixed 5V output regulator has been changed to a 5V-8V adjustable power regulator.
7.	System 5V buck regulator supported 8A current output capability.	System 5V buck regulator has been updated to 10A current output rated model.
8.	2x 100uF aluminum polymer capacitors were used on the main power rail.	1x 120uF aluminum polymer capacitor has been used on the main power rail
9.	Module Power On control circuitry relied on a logic CMOS gate control structure.	Module Power On circuit has been redesigned as an MCU based alternative.
10.	5V_AO and 3.3V_AO power rails were not available.	5V_AO and 3.3V_AO LDOs have been integrated.
11.	Additional camera power connector was not available.	Additional camera power connector has been added.
12.	There was no external RTC option; there was only an internal RTC option.	An external RTC IC with much better efficiency added for 10+ years battery life. A slide switch structure has been integrated to select between native Jetson RTC and this new structure.
13.	The onboard status indicator for system boot was a white LED.	The boot LED has been changed to green.
14.	Current CAN transceiver model supports only standard CAN communication protocols.	CAN transceiver has been upgraded to a CAN FD compatible model
15.	The board included only a dedicated temperature sensor for thermal monitoring.	The standalone sensor has been replaced with an integrated 6-Axis IMU and temperature sensor.
16.	The HDMI connector model supported a -25°C operating temperature range.	The HDMI connector model has been updated to -40°C compatible model.
17.	M.2 Key-M and M.2 Key-E connectors lacked direct I ² C connection paths.	I ² C connection options have been added for both M.2 Key-M and M.2 Key-E connectors (configured as DNI by default).
18.	Board temperature rating was -25°C to 85°C, excluding Jetson processor.	Board temperature rating is upgraded to -40°C to 85°C, excluding Jetson processor.
19.	Board was not supporting Orin NX Super Mode.	Board now supports Orin NX Super Mode.

Reason for Change

Power System Enhancement:

The power infrastructure and input protection have been significantly enhanced to support a wider operating range and heavier system loads. This includes a 15A fast-blow fuse, an optimized TVS diode, and an upgraded 10A system 5V buck regulator. The module power structure has been transitioned to a 5V-8V adjustable rail to fully enable "super mode" functionality. Power management is now intelligent and precise, featuring an MCU-based power-on circuit, a dedicated power supervisor IC, and a real-time power monitor.

Connectivity & Communication Upgrades:

Communication bandwidth, network reliability, and system flexibility have been vastly improved. The standard CAN transceiver was upgraded to a CAN FD compatible model, enabling larger payloads and higher data transfer rates.

Enhanced Onboard Features & Reliability:

Onboard sensing, timekeeping, and physical interfaces have been upgraded for maximum reliability. Space-efficient motion and thermal tracking are now handled by an integrated 6-Axis IMU and temperature sensor. To significantly improve battery efficiency, a dedicated external RTC IC has been introduced, alongside an integrated slide switch that allows for manual selection between the native Jetson RTC and this new external structure. Interface robustness is improved with an industrial-grade HDMI connector, ensuring reliable video output as the board's supported operating temperature range has been extended to -40°C to 85°C. Finally, the boot LED was changed to green for improved visual comfort.

Impact on Product

- ☐ No impact on the existing hardware design or system architecture
☒ Other impact (please specify):

- **Hardware & Functionality:**

To support an expanded input voltage range, electrical protection and hardware robustness at the power input have been upgraded with a 15A fast-blow fuse and a 33V TVS diode. The board's internal power infrastructure has been heavily strengthened to fully enable and sustain high-performance Super Mode functionality; the fixed module power structure has been transitioned to a 5V-8V adjustable rail, and the system 5V buck regulator now supports up to a 10A current output to handle these maximum system loads. System power control utilizes an MCU-based power-on circuit and a dedicated hardware power supervisor IC for reliable sequencing. Additionally, an onboard power monitor has been integrated to allow real-time tracking of overall power consumption.

Communication bandwidth and flexibility have been upgraded by replacing the standard CAN transceiver with a CAN FD compatible model. For sensing and timekeeping, an integrated 6-Axis IMU-Temperature sensor replaces the standalone thermal sensor, and a dedicated external RTC IC has been introduced to maximize battery efficiency, paired with a slide switch for manual selection between the native Jetson RTC and this new architecture. Finally, a softer green Boot LED reduces glare, and the entire board's operating temperature range has been officially extended to -40°C to +85°C, achieved by upgrading all critical components previously restricting this environmental range to industrial-grade standards.

- **Mechanical / Form & Fit:**

The mechanical design of the carrier board is generally compatible with the previous revision. The overall board dimensions, PCB footprint, and mounting hole locations remain unchanged; the board can still be mounted in existing enclosures. However, during the optimization of the capacitors on the main input rail, there has been a 4 mm increase in the height of the aluminum capacitor. Aside from this, the newly added or modified components are not expected to cause any mechanical constraints.

- **Software / BSP Requirement:**

With this hardware revision, an update to the Board Support Package (BSP) is required to ensure the system operates at full capacity and supports the new features. These configurations, implemented at the operating system, driver, and Device Tree levels, enable the reading of power consumption data via the newly added power monitor and the control of MCU-based intelligent power sequencing operations.

Furthermore, this update includes the device tree addressing for the newly integrated RTC IC, the configuration of the CAN FD transceiver for high-speed data communication, and the integration of kernel drivers for the 6-axis IMU and temperature sensor, which replace the previous standalone sensor. To ensure full compatibility with the hardware revision and seamlessly utilize all functions, customers must upgrade to the latest provided BSP release.

Recommended Actions for Customer

Customers are required to review the changes outlined above according to their specific use cases and evaluate any potential electrical, mechanical, or software incompatibility. Furthermore, due to the implemented hardware updates, the new board revision will not operate with existing BSP versions. Therefore, upgrading to the latest provided BSP release is required to ensure proper system operation.

Production of Dsboard-Ornx-Rev.12 will continue upon request. Please specify the revision requirement during the ordering process.

Contact Information

For any questions regarding this change, please contact:

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