Astrodyne D

CASE STUDY: FACILITATING MULTI-OUTPUT POWER SUPPLIES FOR SURGICAL ROBOTICS

AT A GLANCE Requirements

- Wide input AC range from 90VAC to 264VAC
- Class I Earth Ground specifications
- Multiple outputs including 48VDC @ 550-600W, and12VDC @ 300-400W, and 5Vsb
- GPIO support for AC OK, DC OK, and Remote On/Off functionalities
- Compliance with safety standards like IEC60601-1, 2MOPP, BF, and IEC60601-1-2 Class B.

Benefits

- Multi-output assembly comprising two of their state-of-the-art standard power supplies alongside a custom-designed
- PCBA for seamless communication and monitoring via PMBus in a cart-based medical setting
- Featured the Astrodyne TDI ASM550-480-BNH-S00 model and ASM400S-12 standard solution
- PCBA also served as the output interconnect for PSU1 and PSU2



OVERVIEW

Astrodyne TDI provides a

cutting-edge robotics platform to a

medical technology company, improving surgical precision and patient outcomes. The platform integrates 3-D imaging and robotic tools, reducing cutting time in knee arthroplasty for better outcomes and quicker recovery. Robotic-assisted surgery offers patients faster return to an active lifestyle and shorter hospital stays.

POWER CHALLENGES

The medical technology company sought a power assembly tailored to their needs, encompassing a wide input AC range from 90VAC to 264VAC, operating at 48Hz to 62 Hz, with Class I Earth Ground specifications. The desired output voltages included a primary power supply (Power Supply #1), which provided 48VDC @ 550-600W, and a secondary power supply (Power Supply #2) which delivered 12VDC @ 300-400W, and 5Vsb. GPIO support for AC OK, DC OK, and Remote On/Off functions required, along with adherence to safety standards like IEC60601-1, 2MOPP, BF, and IEC60601-1-2 Class B.

ASTRODYNE TDI'S SOLUTION

Astrodyne TDI engineered a bespoke multi-output assembly comprising two of their state-of-the-art standard power supplies alongside a custom-designed PCBA for seamless communication and monitoring via PMBus in a cart-based medical setting. Power Supply #1 featured the Astrodyne TDI ASM550-480-BNH-S00 model, while Power Supply #2 boasted the trusted Astrodyne TDI ASM400S-12 standard. The specialized PCBA, meticulously crafted by Astrodyne TDI, facilitated the monitoring and control of AC OK, DC OK, and Remote On/Off for both PSU1 and PSU2, with connectivity established through a Molex-type connector. This PCBA also served as the output interconnect for PSU1 and PSU2, enabling connection via terminal blocks for optimal functionality.