

Console PCB Operational Description

The Console PCB is the principal controller for the system. Under microprocessor control, it processes analog and logical inputs to provide control to the system outputs, including the display, as well as to deliver cryogen to a catheter. The Console PCB also receives RF data from the handheld remote control, and transmits RF data to the remote display.

Logical inputs and outputs to the console PCB are:

- Pedal inputs
- Keyboard inputs
- Sensor inputs from the bleed, cryo delivery, and heater thermocouples; the pressure sensor, and the cryogen volume sensor
- Logical I/O to the catheter
- USB data I/O
- Speaker outputs for operator alert tones
- Emergency shutoff switch logical input
- Solid-state relay output to the heater
- Solenoid outputs for the pressure building coil, cryogen delivery, cryogen venting, and suction control.

The microprocessor controlling console board operations utilizes an external clock source running at 22.1184 MHz.

RF communication with the remote control and display utilize the Cypress CYWUSB6932 Wireless USB[®] chip, operating in the 2.4 (2.40 to 2.483) GHz ISM band. The CYWUSB6932 utilizes Direct-Sequence Spread-Spectrum (DSSS) technology and Gaussian Frequency Shift Keying (GFSK) across 78 different 1 MHz channels in the ISM band. Frequency synthesis is performed on-chip from an external 13 MHz crystal. The CYWUSB6932 drives a Centurion WCR2400 ½-wave coaxial dipole antenna, which is connected to the board via a standard SMA connector.

The PCB is fabricated from FR4 fiberglass, and is constructed in four layers: two signal, one power, and one ground. Except for the antenna, the PCB is contained within a metal enclosure. The enclosure is secured to chassis ground via an 18 AWG wire, and by four mounting screws, one at each corner of the enclosure.