



Universal System Controller Operational Description

Purpose of the *TheaterTouch*

The intended use of the *Universal System Controller* is to transmit IR, (infrared) control signals to home electronic devices. These devices include VCRs, DVD players, TV cable boxes, audio surround decoders, satellite receivers, televisions, etc. The *Universal System Controller* is a custom programmable device that contains a touchscreen display and keypad buttons. The Touchscreen display and keypad are programmed with the users set of electronic equipment and the parameters that can be controlled. The user interface on the touchscreen display is also custom programmable. The *Universal System Controller* is then programmed with the IR controls for each electronic device that the user desires to use.

Universal System Controller Transmitter

When the user interface for the electronic devices to be controlled and the IR control signals have been programmed into the *Universal System Controller* it is ready to use. When a user presses on the touchscreen or keypad to transmit, for example to start the play control on a VCR, the microprocessor, PXA255, senses the push. The PXA sends a serial command to the C8051F311 microcontroller. The IR control signal corresponding to that location on the touchscreen or keypad is then pulled from internal FLASH memory. When the IR control signal is identified, the control signal is routed to the RF transmitter board. The control signal is modulated on the RF transmitter board and output. The PXA255 microprocessor uses an internal PLL running at 200 MHz which is fed from an external 3.6864 crystal. The microcontroller uses an internal 24.5 MHz oscillator. The RF module uses an internal 433MHz SAW oscillator.

TheaterTouch Antenna

The antenna on the *Universal System Controller* is a grounded line SMD Planar (Splatch), soldered to the RF module, internal to the chassis and is not easily accessible.