Description of the SmartSight S1000 Block-Diagram

The various parts of the block-diagram are numbered and an explanation of these blocks is given below.

First the S1000 Transmitter will be described:

The S1000 Transmitter provides one audio input, one audio output, one video input, two alarm inputs, one alarm output, and one asynchronous serial port connection. It samples and digitizes the signals on all its interface ports then multiplexes the resulting data and wirelessly sends it over to the S1000 Receiver, using an embedded IEEE802.11b wireless modem. At the S1000 Receiver, the received data is de-multiplexed over the corresponding inputs and outputs, effectively creating a transparent wireless link between the interface ports on each of the S1000 Receiver and S1000 Transmitter units.

A. Power Supply (7)

The power supply converts the raw AC/DC power, input via the 9-pin interface connector (1), to regulated 3.3VDC and 2.5VDC supply voltages for the unit components.

B. Trimedia CPU (8)

The Trimedia CPU is the heart of the system. It interfaces digitally to the Audio (3), Alarm (4), Video (6), and Serial Port (5) sections. It handles all audio and video compression and decompression. The CPU also handles all networking and user interface functions.

The CPU reads the sampled data from the audio input (3) compresses it to minimize the bandwidth required for wireless transmission then sends it to the S1000 Receiver via the Wireless Modem (9).

The CPU receives compressed audio data from the S1000 receiver unit via the Wireless Modem (9), decompresses the received audio data and writes it to the audio output (3).

The CPU reads the ON/OFF state of the two alarm inputs (4) then sends it to the S1000 Receiver via the Wireless Modem (9).

The CPU receives the ON/OFF state of the two alarm inputs on the S1000 Receiver unit via the Wireless Modem (9) and writes this state to the alarm output (4).

The CPU reads the “Transmit” serial data input via the Serial Port Tx input (5) then sends it to the S1000 Receiver via the Wireless Modem (9).

The CPU receives the “Transmit” serial data from the S1000 receiver unit Serial Port via the Wireless Modem (9) and writes it to its Serial Port (5).

The CPU reads the sampled data from the Video Input (6), compresses it to minimize the bandwidth required for wireless transmission then sends it to the S1000 Receiver via the Wireless Modem (9).

C. Audio I/O (3)

The Audio I/O section consists of a voice-band (300Hz-3400KHz) PCM CODEC and associated signal conditioning circuitry required to provide an unbalanced 600 Ohms line-level analog interface. Nominal audio input level is 0dBm. Nominal audio output level is –8.2dBm. The interface to the CPU (8) is a synchronous PCM serial port running at 2048 KHz. Analog audio input and output connections are brought out of the unit via the 8-pin interface connector (2).

D. Alarm I/O (4)

The Alarm I/O section comprises two dry contact inputs and one dry contact output. The inputs consist of two Schmitt trigger logic gates with associated signal conditioning circuitry for dry contact closure detection. The output of the logic gates reflect the ON/OFF state of their respective Alarm input. The logic gate outputs are accessible to the CPU (8) via a parallel I/O interface. The output consists of an optically isolated solid-state relay activated by a digital signal. This digital signal is controlled by the CPU (8) via a parallel I/O interface. Alarm input and output connections are brought out of the unit via the 8-pin interface connector (2).

E. Serial Port (5)

The Serial Port section consists of a single channel UART with associated line-interface circuitry to support both EIA232 and EIA422/485 line levels. Line level selection is under CPU (8) control. The interface to the CPU (8) is via a parallel I/O interface. Serial port interface signal connections are brought out of the unit via the 9-pin interface connector (1).

F. Video I/O (6)

The video section consists of a digital video decoder chip with associated signal conditioning circuitry to support a standard 1Vpp NTSC or PAL analog composite video source. The decoded and digitized composite video is sent to the CPU via a CCIR656 parallel interface. The analog video signal connection is brought out of the unit via the 9-pin interface connector (1).

G. Lucent/Agere Wireless Modem (9)

The Wireless Modem section consists of an Agere IEEE802.11b OEM module. The CPU sends and receives data to and from the S1000 Receiver via this wireless module in accordance with IEEE standard 802.11b DSSS. The module implements all wireless functions and interfaces to the CPU (8) via a PCI bus. The RF antenna port of the OEM module is brought out of the enclosure via an SMA female bulkhead connector (10).

S1000 Receiver description:

The S1000 Receiver provides one audio input, one audio output, one video output, two alarm inputs, one alarm output, and one asynchronous serial port connection. It samples and digitizes the signals on all its interface ports then multiplexes the resulting data and wirelessly sends it over to the S1000 Transmitter, using an embedded IEEE802.11b wireless modem. At the S1000 Transmitter, the received data is de-multiplexed over the corresponding inputs and outputs, effectively creating a transparent wireless link between the interface ports on each of the S1000 Receiver and S1000 Transmitter units.

The S1000 Receiver is essentially identical to the S1000 Transmitter with the exception of the Video I/O section (6). In the S1000 Receiver, the Video input becomes a video output. Video data received from the S1000 Transmitter is processed and sent to the Video Output (6).

All other blocks are identical and their function is explained in the description of the S1000 Transmitter.