Warren CD player

Connections and Ports

- ATM25 port (output only in basic version)
- Infra-red input (input only)
- Visible led output (optional)
- Soft switch (optional)

Description

The device is an adapted consumer CD player with ATM25.6 output. When in play mode, audio cells are transmitted out of the ATM25 port. In the basic version, this device is an output only and must be controlled with standard infra-red (from a Warren Room-Control module). Future versions may allow direct control over the ATM interface.

Operation

Digital audio from the CD replay system is encapsulated in ATM cells. Two formats are selectable using IR control: 1. Left channel is sent on VCI 48 and right channel on VCI 64. 2. Both channels are sent on VCI 48.

The infrared receiver of the CD player is used for normal CD control and all IR received is also sent on VCI 49 using the Warren IR protocol (the status of the optional soft switch is also conveyed therein).

Options

None.

Power Sources

Mains power to the CD player is used.

Other terminals on the PCB and other applications

None.

Warren Bedside Clock Module

Connections and Ports

- ATM25 port (input and output)
- Infra-red output and input
- 7-Segment time/flexy display
- Audio Output
- Input Selection Soft Switches

Description

This device is designed to go on a mantleshelf, bed-side table or wall mount. It is based around the bedside clock-radio format and has control inputs and time and audio outputs. It will first be mounted as a replacement PCB for a commercial clock-radio product.

Operation

The device implements the replay direction of the Warren Audio AAL and has a duplex ATM25.6 port. Stereo samples received on VCI 48 are converted to analog and fed out the speaker.

Infrared commands received on VCI 49 are rendered by the IR output port.

Control commands received on VCI 49 allow programming of the seven segment display.

Infrared received by the device will be transmitted using the Warren IR protocol on VCI 49.

Button pushes will cause ATM cells to be sent on VCI 49 according to the Warren Doorbell/Control protocol.

Options

None.

Power Sources

The device will run from AC mains (240/120V).

Warren Metering/Telemetry Interface

Connections and Ports

- ATM25 port (input and output)
- Water/electicity/gas meter remote sensor port.

Description

This module has no user controls and forms a gateway between the inductive loop circuitry commonly used to provide kerbside access to domestic service metres and the home ATM network.

Operation

The device will provide remote metre reading over the ATM network for gas, electricity and water services.

The device will have to include safeguards which prevents intrusions of privacy which could occur if an authority had uncontrolled instant access to consumptions. For instance the device might allow one reading of a service per quarter and for the information that it provides at that point to be a week out of date.

The device will have to include an authentication mechanism to defeat attempts by a subscriber to substitute his own dummy metre which reads lower, so he is charged less.

Options

None.

Power Sources

The device will run from AC mains (240/120V).

TV Video Overlay Module

Connections and Ports

- ATM25 port (input only)
- UHF/SCART/SVHS in and out.

Description

This module is designed to hide behind a conventional TV set and to allow the overlay of text and graphics for information purposes and perhaps form part of the control interface for the home area network.

Operation

The device contains a lowish resolution framestore which is gen-locked to the baseband Video signal passing through the unit. Text and graphics received on the ATM port are rendered on the display according to a simple protocol.

Options

None.

Power Sources

The device will run from AC mains (240/120V).

Warren Doorbell / Control Panel

Connections and Ports

- ATM25 port (output only)
- Doorbell push switch input
- Optional other switch inputs

Description

This module is a cut down version of one of the other modules in the first instance (ie partially loaded PCB).

Operation

A cell is transmitted on VCI 49 each time the doorbell is pushed or released.

Power Sources

The device will run from unregulated DC power provided on a pair of the CAT 5 cable.

Warren Ethernet Module

Connections and Ports

- ATM25 port (input and output)
- Ethernet standard AUI port

Description

This module will behave like a standard Ethernet media attachment unit (MAU) except that it puts Ethernet over ATM25 instead of over 10BaseX etc..

Operation

Ethernet frames are segmented into 48 byte cells and sent using OSI LLC 802.1 headers inside AAL5 frames on at 25.6 on VCI 48. Cells received on VCI 48 must be valid AAL5 frames and, when a full frame is received it is injected into the ethernet device.

The AUI collision signal is never generated.

Note that this device is providing Ethernet over ATM and not ATM to Ethernet conversion. This enables point-to-point Ethernet link replacement or connection of an Ethernet device to an 802 router or bridge process running on a host computer.

Options

None.

Power Sources

The device will run from the 12 volt supply present at all Ethernet AUI ports.

Warren Audio Module

Connections and Ports

- ATM25 port (input and output)
- Infra-red output
- RCA/Phono Stereo Input
- RCA/Phono Stereo Output
- Soft switch (optional)

Description

This device is designed to be mounted behind an unmodified home HiFi system in order to attach the HiFi system to the home network for input and output. It connects to the line output (normally and also fed to a tape recorder) and to one of the inputs.

Operation

The device implements both directions of the Warren Audio AAL and has a duplex ATM25.6 port. Stereo samples received on VCI 48 are converted to analog and fed to the HiFi. Analog stereo audio from the HiFi is converted to digital form and sent on VCI 48.

Infrared commands received on VCI 49 are rendered by the IR output port.

Options

None.

Power Sources

The device will accept unregulated DC power from the CAT5 ATM cable or from a local mains adaptor.

Other terminals on the PCB and other applications

An equivalent module with SP-DIF instead of analog connections can be built from the same PCB.

Warren Control Gateway

Connections and Ports

- ATM25 port (input and output)
- Lon-works/CE-BUS input and output
- 4-wire security loop master.

Description

This module is a gateway between the ATM25.6 home area network and existing low-rate building control networks, including Echelon Lon-works, CE-BUS and conventional intruder alarms using the 4 wire standard.

Operation

To be specified.

Options

To be specified.

Power Sources

To be specified.

The Warren Hardware Projects

Warren Microphone

Connections and Ports

- ATM25 through port (output only)
- Infra-red input (input only)
- Visible led output (optional)
- Mute switch
- Soft switch (optional)

Description

This device consists of a microphone capsule, low-noise preamplifier, a 16 bit mono ADC operating at 44.1 ksps, an encoder for the Warren Audio AAL and an ATM 25 transmit only interface, all on a small PCB designed to be handheld. A CAT5 UTP cable carries power to the Microphone (+7.5 to 12Volts DC) and takes away the ATM25.6 on two separate pairs. The microphone has an IR receive input.

Operation

When the mute switch is off, audio from the microphone capsule is converted to ATM cells and sent on VCI 48. When the mute switch is on, no audio cells are sent. The status of the mute switch (and of an optional soft switch - used perhaps for slide change or a similar purpose) are conveyed over the ATM network along with the received IR data in cells on VCI 49 using the Warren IR AAL.

It is hoped that there is no need for a volume control on the speaker. Instead, sufficient dynamic range will be directly accessible over the ATM network (up to 24 bits).

Options

The soft switch may be fitted. The device may boxed in a handheld format or wall/table mounting format. Alternative sampling frequencies can be selected at manufacture.

Power Sources

DC power is provided on the ATM25 connection.

Other terminals on the PCB and other applications

None.

Warren Centronix/RS232/Midi Module

Connections and Ports

- ATM25 port (input and output)
- Infra-red output
- Midi, RS232 or Centronix Port

Description

This device comes in three varients and allows access to standard, low-rate, reliable data ports over the ATM network. It implements in hardware a reliable transport protocol using single-cell ATM messages known as the Warren Byte Stream Protocol. The cells are sent and received always on VCI 48.

Infrared received on VCI 49 is transmitted on the device's IR output LED.

Operation

This device uses a new ATM adaptation layer knows as Warren-BSP (Warren Byte Stream Protocol) designed for data rates up to 100 kilobaud (one byte per cell) which require reliable transmission with retransmission using a window size of one and end-to-end flow control. This protocol is an alternative to a stack consisting of Telnet/TCP/IP/AAL5/ATM which would typically be used in software implementations. A gateway between the stacks can be established on any host computer.

In the RS232 and Centronix versions, the physical-layer flow control defined by these standards is mapped to the W-BSP flow control.

Options

RS232 Version: Xon/Xoff mapping to/from RTS/CTS, baud rate.

Midi Version: Mapping of midi channel number to VCI number.

Centronix Version: None.

Power Sources

The device will accept unregulated DC power from the CAT5 ATM cable or from a local mains adaptor. The Centronix Version will also accept power from the 36/25 way centronix connector.

Other terminals on the PCB and other applications

None.

The Warren Hardware Projects

Warren Loudspeaker

Connections and Ports

- ATM25 input port (input only)
- ATM25 through port (output only)
- Infra-red output (output only)
- Visible led output (optional)

Description

This device consists of an ATM25 receive interface with daisychain output port, a 16 or 18 bit 44.1 ksps DAC, a 30 watt rms power amplifier and a good quality two-way (tweeter/woofer) loudspeaker.

Operation

The device receives digital audio samples on VCI 48 or 240 encoded with the Warren Audio AAL and replays them. The replay mechanism includes dynamic dejitter and delay clawback algorithms. All audio cells received are passed on via the through port connection, with the modification that VCIs in the range 48 to 239 are decremented by 16. This allows daisy chaining of a string of up to 12 Warren Speakers which may be addressed individually by using a VCI proportional to the depth down the daisy chain and using VCI 240 for multicast.

It is hoped that there is no need for a volume control on the speaker. Instead, sufficient dynamic range will be directly accessible over the ATM network (up to 24 bits).

Infrared signals received using the Warren IR AAL in cells on VCI 49 are emitted by the Speaker's IR output led. The IR AAL also allows control over the indicator LED option.

Options

In the basic configuration, there are no controls, but a volume control knob and led indicator are options.

Power Source

The PCB will have rectifier and power supply components for direct connection to a mains transformer for mounting inside the same enclosure. The PCB may either be mounted in its own box with another one to form a stereo pair, with audio cables to standard speakers, or the PCB may be mounted inside a loudspeaker cabinet.

Other terminals on the PCB and other applications

Line output level phono/RCA.

The project will develop a range of PCB designs based around the ATM25 line standard and infrared control using both standard and non-standard adaptation and signalling protocols. These designs will include a miniature ATM switch and a range of adaptors for RS232, Audio, Infrared, Clockradio, CD player, Control Panel (doorbell), CE-BUS/Lonworks gateway. The technique of dumb devices with proxy servers will be followed in general.

Warren ATM Switch

Connections and Ports

- 3 or 6 ATM25 ports
- Working LED for each port.

Description

This ATM switch supports all inband (I.361) ATM layer semantics but is implemented entirely in hardware and relies on proxy management.

It consists of a PCB which provides 3 ATM25.6 ports that can either be operated standalone or which can be directly stacked to provide a 6 port switch. Further stacking is possible using an interconnect motherboard.

The switch will be made as small as possible and designed with the intention of fabrication as a single chip in the future.

The device supports 1024 VCs shared over each group of 3 ports. Header translation and multicast are supported. The switch is output buffered with at least 256 cells per output port.

Operation

The switch is programmed using the Warren Proxy Management Protocol (W-PMP) which uses single cell control messages sent on VCI 31 using a patentable source routing protocol. These cells are designed to be interpreted in hardware and to be carried over an set of PVCs which are hardwired into the Warren Switch.

W-PMP also defines a topology and integrity determination functions.

For fault finding, an LED indicator for each port indicates that the port and its route back to the rabbit hole are working.

Options

3 or 6 ports. Disable CAT5 output power option on per port basis.

Power Sources

The switch may either be powered with DC unregulated voltage carried on one of the ATM 25.6 ports or from a local power supply (mains adaptor). Self-resetting safety fuses are included in series with each output port.