



Big Pipe LT

High Bandwidth STL Link for Radio

System Overview

New technologies are necessitating new options when it comes to studio-to-transmitter links (STLs). Technology changes including HD Radio and functional changes like more frequent collocation of multiple stations are demanding more efficient STL solutions with greater bandwidth and bidirectional capability. Existing wireless and terrestrial STLs may not be able to keep up, so many radio stations and networks are seeking new options.

Big Pipe LT is the newest member of Broadcast Electronics' data transport family. Designed for rapid deployment, systems built around Big Pipe LT are flexible, economical and reliable. Multiple radio options are available, adding to the flexibility of the system.

With up to 45 Mb/s bandwidth, Big Pipe LT is capable of delivering up to 24-bit 96 kHz broadcast quality analog or digital audio. With built-in Ethernet capability, Big Pipe LT can also deliver HD Radio coded audio, HD Radio Secondary Program Services and advanced HD Radio data services for multiple transmitters via wireless or wireline path. An RS-232 port is also available, allowing for reliable transport of serial data.

Big Pipe LT simplifies integration among the mission-critical, high-value elements of your facilities and, because it comes from BE, you know that Big Pipe is designed for the realities of radio, including tight budgets and the requirement for rock solid performance. You can confidently buy the equipment you need today, while reducing the risks of rapid obsolescence or unpredictable expenses in the future.

HD Radio Implementation

Big Pipe LT is perfect for HD Radio implementation. With the system's IP capability and a professional quality A/D converter, Big Pipe LT can help you ease the transition to HD radio while maximizing your investment in your current equipment.

Big Pipe LT is capable of delivering both HD Radio Main Channel Programming and multiple channels of HD2 Secondary programming. Main channel audio can be either AES/EBU or analog, with analog audio converted to digital with a minimal 5 ms delay. Audio that has been prepared for transport is sent out using a fast Ethernet connection. Main channel audio, main channel PAD and the combined SPS Audio/PAD stream are delivered to the remote site using IP-enabled radios or a wired Ethernet connection.

Once the data reaches the remote site, each component is routed to its final destination; HD Radio main channel audio to the Big Pipe LT for AES/EBU output to the HD Radio exciter, HD Radio main channel PAD to the HD Radio exciter, and SPS Audio/PAD to the HD Radio exporter.



Key Product Features

- Scalable and flexible to meet the STL, studio-to-studio and other media and data transport needs of radio broadcasters
- Up to 45Mbps bidirectional connectivity allowing integration of multiple services into one product—as much as 20 times the capacity of typical STLs for broadcast radio
- Ethernet connectivity for current and anticipated HD Radio program and data services is standard in all configurations
- Bidirectional point-to-point microwave radios for wireless applications
- Multiple hop systems may be used to connect any number of facilities
- Operates in the license-free 2.4 GHz, 5.3 GHz and 5.8 GHz bands, can be deployed in a matter of hours allowing quick and reliable service

Big Pipe LT

Big Pipe LT

Big Pipe LT takes the proven performance of our now technology leading Big Pipe and packs it in a single-rack space.

Flexible and reliable, Big Pipe LT works just as well for studio facility interconnects as it does for any other media transport need. And because it comes from BE, you know that Big Pipe LT is designed for the realities of radio, including tight budgets and the demand for rock solid performance.

- Transmit and receive up to 24-bit, 96kHz broadcast quality audio
- Single or bi-directional operation
- Stereo and mono capability
- Handles compressed audio using built-in professional grade MPEG Layer II or MPEG Layer III coding/decoding, J.41, ADPCM, G.722 or our extra low-bitrate speech codec
- Built-in silence and audio overload detectors
- Capable of transporting serial data with a standard 9-pin RS-232 port
- Digital clock source is selectable between internal clock, clock from incoming AES/EBU source, or wordclock input
- GPI/O capability with 4 inputs, 4 outputs and 4 status output signals
- Multiple Ethernet output options include TCP/IP, UDP and UDP Multicast

Easy To Install

Hooking up Big Pipe LT is simple. Separate digital and balanced analog XLR connections are easily accessed on the back of the unit. Regardless of whether you choose to feed analog or digital audio to the transmit unit, both output types will be available on the receiving unit adding to the flexibility of the solution.

An industrial-duty 10/100 Ethernet connection can transmit audio on up to six simultaneous connections, each using different audio coding using either a standard RJ-45 connector or a Neutrik Ethercon RJ-45 connector.

Where required, Big Pipe LT can accept an external wordclock signal, sync to the incoming AES/EBU source, or use an internal clock. An RS-232 connection allows Big Pipe LT to also transport serial data.

Big Pipe LT is configured and monitored using a standard web browser on your network and can send e-mail alerts for key functions. Once configured, your settings are stored and maintained within the unit. In the case of network failure or power loss, the system will automatically reconnect when network connectivity or power returns.

Reliable Transport

Big Pipe LT features FEC (Forward Error Correction) and network jitter compensation/safety buffers configurable up to 5 seconds in 1 ms increments, allowing the system to function perfectly even on busy networks connections.

Supported sample rates for uncompressed 16-bit or 24-bit audio range between 8 kHz and 96 kHz. Supported sample rates for MPEG compressed 16-bit audio range between 16 kHz and 48 kHz.

Linear audio is handled with extremely low 5 ms delays. Even when using compressed audio, delays are low. MPEG Layer II audio will see 45ms delays. MPEG Layer III audio may see delays up to 125ms.



Big Pipe LT Microwave Radio BP 4500

- Up to 45 Mb/s, full-duplex throughput
- Range up to 40 miles in 5.8 GHz ISM band
- Range up to 7 miles in 5.3 GHz UNII band
- 16 QAM modulation allows up to 12 collocated radios without interference
- Software selectable interface mode
 - DS3 (45 Mb/s)
 - Ethernet interface (100BaseT)
- Mounts directly and easily on tower or pole for minimal cable loss
- Choice of antenna configurations
 - Compatible with dishes up to 8 meters
 - Can be used with larger dishes for special applications
- SNMP, RS-232, HTTP, FTP and Telnet interfaces provide ease of configuration, installation and operation
- Built-in bit error rate tester (BERT) for local and far-end loopback testing
- Constructed to meet the demands of radio broadcasters
 - Weatherproof unit for outdoor applications
 - -30° to +65° C operational temperature range
 - 99.999% uptime meets or exceeds wireline capability
 - Low parts count results in Mean Time Between Failure (MTBF) of greater than seven years

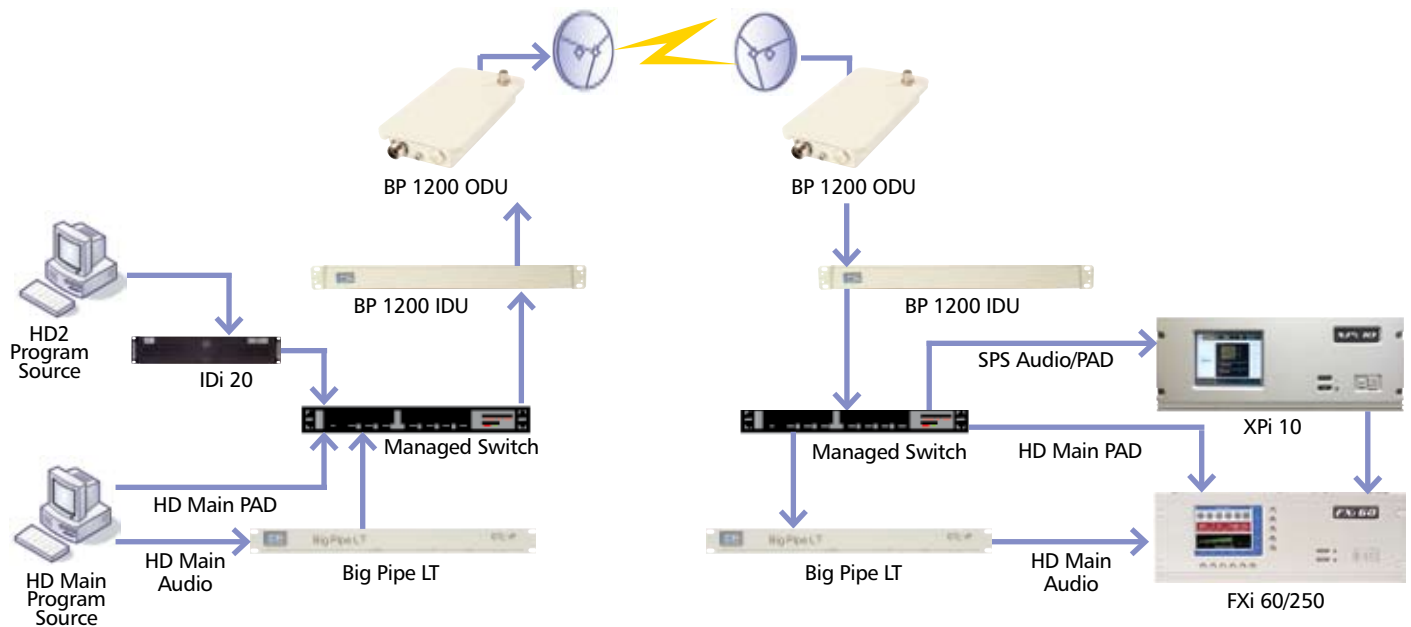


Big Pipe LT Microwave Radio BP 1200

- Up to 20 Mb/s, full-duplex throughput
- Capable of operating over 2.4 GHz, 4.9 GHz, and 5.x GHz license-exempt bands
- Range up to 50 miles with optional external antenna
- Accepts E1 or T1 traffic, supporting:
 - Unframed operation (E1 and T1)
 - AMI and B8ZS zero suppression (T1).
- Provides 10/100BaseT interfaces with auto negotiation and transparent VLAN support
- ODU can mount directly and easily on tower or pole for minimal cable loss
- Choice of antenna configurations, including support for external antenna using N-type coax connectors
- Full local and remote management capabilities. The user-friendly SNMP-based management tool provides full end-to-end configuration, event log and performance monitoring capabilities.
- Constructed to meet the demands of radio broadcasters
 - All-weather case for outdoor applications
 - ODU -35° to +60° C operational temperature range
 - IDU -5° to +45° C operational temperature range



Typical System Layout



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