Features

- SONET/SDH Mux/Demux, Transport Overhead Terminating Transceiver, & Pointer Processors for an STS-192/STM-64 and up to 4 x STS-48/STM-16s.
- Provisionable as SONET or SDH on a per line basis.
- High Speed Side supports a 622 MHz 16-bit STS-192/STM-64 interface.
- Low Speed Side supports a 622 MHz 16-bit STS-192/STM-64 interface or four 622 MHz 4-bit STS-48/STM-16 interfaces.
- Cross-connects, in both directions, with STS-1 level granularity.
- Provisionable as SOH/LOH pass-through or termination/regeneration device.
- Compliant with ITU G.707, Bellcore GR-253, and ANSI T1.105 standards.

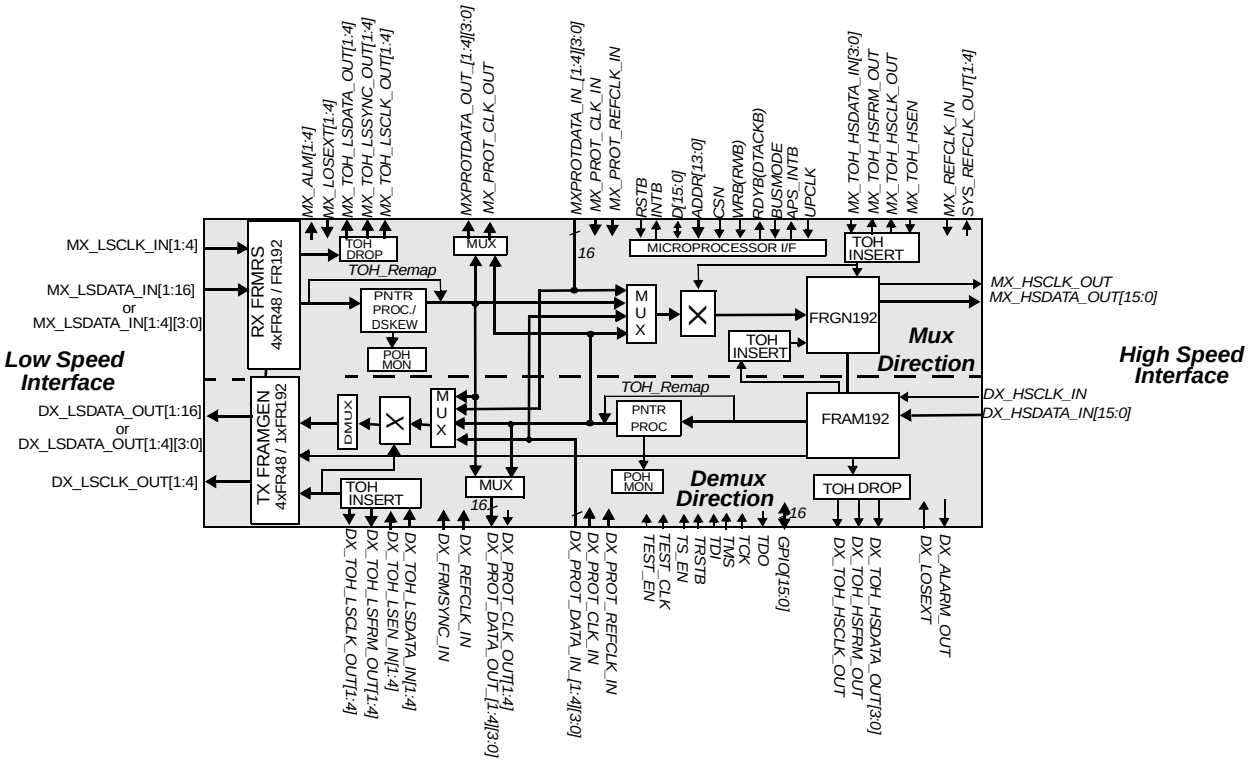
Multiplex Direction

- Multiplexes 4 STS-48/STM-16 tributaries into an STS-192/STM-64 or bypass for STS-192/STM-64-to-STS-192/STM-64 connections.
- Provisionable pointer processor bypass available for STS-192 to STS-192 operation (through-timing). Both a full bypass (no frame regeneration) as well as a pointer processor bypass (frame generation enabled) are provided.
- Selector for choosing high or low-speed interfaces, Deskew Buffers, or APS inputs.
- STS-192/STM-64 framer.
- Non-Intrusive TOH Monitoring for all inputs: STS-192/STM-64 or 4x STS-48/STM-16.
- TOH can be either terminated/regenerated, or transparently passed-through the device on a per function basis, in both through-timing and pointer processing applications.

Demultiplex Direction

- Demultiplexes an STS-192/STM-64 into 4 STS-48/STM-16 connections or supports a bypass mode for STS-192/STM-64-to-STS-192/STM-64 connections.
- Provisionable pointer processor bypass available for STS-192 to STS-192 operation (through-timing). Both a full bypass (no frame regeneration) as well as a pointer processor bypass (frame generation enabled) are provided.
- Selector for choosing demultiplexed tributaries from high-speed interface, low-speed interfaces or from APS inputs.
- Non-Intrusive STS-192/STM-64 Frame and TOH Monitor.
- TOH can be either terminated/regenerated, or transparently passed-through the device on a per function basis.
- STS-192/STM-64 or 4 x STS-48/STM-16 framer(s).
- Configurable TOH Generators for STS-192/STM-64 or STS-48/STM-16 outputs.

Figure 1: Block Diagram



FINAL / PRODUCTION RELASE Information - The information contained in this document is about a product in its fully tested and characterized stage. All features described herein are dsupported. Contact AMCC for updates to this document and the latest product status.

Overview and Applications

SONET Processing

The S19204 can be used in either SONET or SDH applications. On the low-speed side, it can interface to 4 STS-48/STM-16 or 1 STS-192/STM-64 signal in each direction. On the high-speed side, it can interface to 1 STS-192/STM-64 signal in each direction.

In the demultiplex direction, the S19204 accepts a 622 MHz 16-bit STS-192/STM-64 signal. There are several modes of operation that the S19204 supports in the demultiplex direction.

The S19204 provides a full bypass mode, as well as a pointer processor bypass mode. In the full bypass mode, the S19204 simply passes the incoming STS-192/STM-64 signal directly through to the Demux output. Framing, descrambling and TOH monitoring are performed off-line, in a non-intrusive manner for monitoring purposes only. No pointer processing, cross connection or frame generation is performed.

In pointer processor bypass operation, the S19204 locates the incoming STS-192/STM-64 frame, optionally descrambles the data, and non-intrusively monitors the TOH. The STS-192/STM-64 signal is then passed directly to the frame generation block, in which outgoing TOH overhead bytes can be provisionally regenerated, on a per function basis. Again, no pointer processing is performed, and the cross-connect block is bypassed.

For applications requiring pointer processing, the S19204 locates frame in the incoming STS-192/STM-64 signal, performs descrambling, monitors the TOH bytes, and then performs pointer processing. The pointer processor provides a mode in which the incoming TOH bytes transparently pass through the pointer processor to the corresponding locations in the TOH of the outgoing tributaries. The TOH bytes involved in this transparent pass-through mode include the defined overhead bytes for the constituent STS-48/STM-16 or STS-192/STM-64 signals. A 4xSTS-48/STM-16 mux, with inputs from the MX and DX LINE and APS inputs, and a 192x192 cross-connect block is available after the pointer processor. This MUX/cross-connect block can be used to select STS-1 from any of the demuxed tributaries, tributaries from the low-speed mux inputs, or tributaries from the DX and MX APS interfaces to place into any one of the outgoing STS-1 time slots in any of the outgoing signals in the demux direction. Whether the signal contains an STS-192c/AU-4-64c payload or a STS-192/AU-4-64 payload, the S19204 can demultiplex the signal to 4 STS-48/STM-16 tributaries. The selected tributaries then proceed in the demux direction to frame generators that provisionally generate the TOH/SOH bytes, perform scrambling, and output the data. Alternatively, the overhead data can be transparently passed through the from the demux input to the demux output(s).

In the multiplex direction, the S19204 accepts a single 16-bit wide 622 MHz STS-192/STM-64 signal or 4 STS-48/STM-16 signals. There are several modes of operation that the S19204 supports in the multiplex direction.

For STS-192 only operation, the S19204 provides a full bypass mode, as well as a pointer processor bypass mode. In the full bypass mode, the S19204 simply passes the incoming STS-192/STM-64 signal directly through to the mux output. Framing, descrambling and TOH monitoring are performed off-line, in a non-intrusive manner for monitoring purposes only. No pointer processing, cross connection or frame generation is performed.

In pointer processor bypass operation, the S19204 locates the incoming STS-192/STM-64 frame, optionally descrambles the data, and non-intrusively monitors the TOH. The STS-192/STM-64 signal is then passed directly to the frame generation block, in which outgoing TOH overhead bytes can be provisionally regenerated, on a per function basis. Again, no pointer processing is performed, and the cross-connect block is bypassed.

The S19204 also supports an Inverse Multiplexing mode, where four incoming STS-48/STM-16 signals that are frequency locked and framed aligned to each other, within 500 nsecs, can be interleaved to create an STS-192/STM-64 signal, and if required, pointer processed.

For applications requiring pointer processing, the S19204 locates the incoming STS-192/STM-64 or STS-48/STM-16, frames (from either the incoming mux tributaries, or via the Deskew Buffers), descrambles the data, non-intrusively monitors the TOH/SOH bytes and then performs pointer processing for all valid combinations of STS-192C/AU-4-64c, STS-48c/AU-4-16c, STS-12c/AU-4-4c, STS-3c/AU-4-4c or STS-1/AU-3 signals. The pointer processor also provides a mode in which the incoming TOH bytes transparently pass through the pointer processor to the corresponding locations in the TOH of the outgoing tributaries. The TOH bytes involved in this transparent pass-through mode include the defined overhead bytes for the constituent STS-48/STM-16 or STS-192/STM-64 signals. A 4xSTS-48/STM-16 mux, with inputs from the MX and DX LINE and APS inputs, and a 192x192 cross-connect block is available after the pointer processor. This MUX/cross-connect block can be used to select STS-1 from any of the incoming mux tributaries, tributaries from the high-speed Pointer Processor outputs, or tributaries from the DX and MX APS interfaces to place into any one of the outgoing STS-1 time slots in the outgoing STS-192/STM-64 signal in the mux direction. After the MUX/Cross-Connect block, the STS-192/STM-16 muxed signal then proceeds to a frame generator that provisionally generates the TOH/SOH bytes, performs scrambling, and outputs the data. Alternatively, the overhead data can be transparently passed through from the mux inputs to output.

Low-Speed Interfaces

On the low-speed side, in both the mux and demux directions, the S19204 supports either a 16-bit wide, 622 Mb/s STS-192/STM-64 signal, or four 4-bit wide, 622 Mb/s STS-48/STM-16 signals. The S19204 is designed to bolt directly to AMCC SERDES and Clock Recovery Unit devices. (See figure below.)

High-Speed Interface

On the high-speed side, in both the mux and demux directions, the S19204 supports a 16-bit wide, 622 Mb/s STS-192/STM-64 signal.

Controller Interface

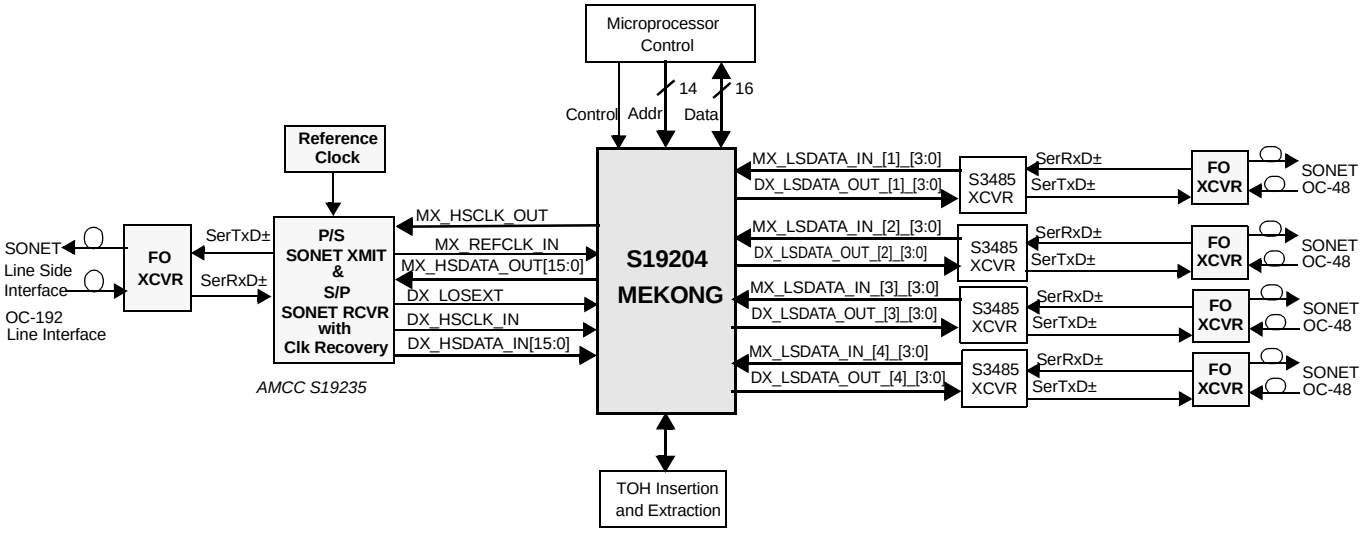
A high-speed, synchronous, microprocessor interface is provided for configuration and monitoring. S19204 provides numerous, automatic, monitoring functions. It can be configured to provide an interrupt to the control system, or it can be operated in a polled mode.

Applications

- WDM and DWDM
- SONET/SDH Add Drop Multiplexers, Terminal Multiplexers and Digital Cross Connects
- ATM switches and Packet over SONET Routers

Figure 2: Typical Applications

TYPICAL APPLICATIONS: S19204 in a STS-192/AU-4-64 channelized System



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