SEL-MDX2-EES/-ERS

Transport Stream Multiplexer/Demultiplexer

The Selenio SEL-MDX2 encapsulator and multiplexer module makes it easy to multiplex, demultiplex, remultiplex or encapsulate streams for transport. Incoming programs can be readily repurposed into new programs, local content (commercials, news and more) can be easily added to existing programs, and new transport streams can be quickly generated.

With features including DVB scrambling and conditional access (CA) enabled by a Simulcrypt interface, the Selenio multiplexer is ideal for contribution and distribution functions, as well as Direct-to-Home (DTH) market applications.

Features

- Back module configurations (two)
- HD-BNC
  - Eight ASI inputs/outputs or SMPTE-310 outputs on HD-BNC
  - 10 MHz reference input on HD-BNC
  - GPS one pps sync input on HD-BNC
- HD-BNC and RJ-45
  - Five ASI inputs/outputs or SMPTE-310 outputs on HD-BNC
  - 10 MHz reference on HD-BNC
  - GPS one pps sync input on HD-BNC
  - 10/100Base-T on RJ-45 for Simulcrypt server

- Transport stream input/output
  - Configurable as ASI input or output per port
  - Configurable DVB-ASI or SMPTE 310 output per port
  - MPEG format 188/204 bytes per TS packet (188-byte internal only)
  - Data rate set from 2 pps internal time base, frame or GPS reference
  - Total module bandwidth – 800 Mb/s
  - Total programs supported across module – 50
  - Total PIDs supported across module – 4096
  - PID or program multicasting, up to eight destinations

- Multiplexing
  - Creation of up to eight individual multiplexes
  - Program multiplexing
  - Mirroring of odd numbered port to next even numbered port
  - PID insertion
  - Unreferenced PID insertion
  - High/Low service prioritization
  - Automatic or manual PID/program numbering
  - Mux bypass (pass through)
  - Data carousel
  - Remote/local statistical multiplex of encoders
  - Output modes CBR and capped VBR
  - Opportunistic data insertion
  - IP to IP multiplexing

- Conditional access
  - DVB Common Scrambling
    - Unique control word by PID (not just program)
    - Up to 240 control words
    - Maximum data rate of 214 mb/s
- BISS encryption
- DVB Simulcrypt version 3
  - Supports ECM and EMM interfaces only
  - Separate IP connection for CAS on module
  - Simultaneous connections to multiple different Conditional Access Systems from different CA vendors
- Demultiplexing
  - Up to eight individual multiplexes can be received
  - Program demultiplexing
  - PID extraction
  - Demux bypass (pass through)
  - Demux output streams can be CBR or capped VBR
  - IP to IP demultiplexing

- Gigabit Ethernet
  - Access via frame data network
  - Number of SPTS streams supported (in/out): 50/50
  - Support for unicast and multicast reception/transmission
  - Source-specific joins supported with multiple sources (IGMPv3)
  - FEC and encapsulation as per SMPTE 2022
  - Network jitter buffer and PCR recovery

- SFN adaptation
  - Supports DVB, ISDB-Tb SFN adaptor functions
    - DVB, SFN adaptor functions
    - DVB MIP insertion
  - 10 MHz and one pps timing input

- SI/PSI processing
  - Support for combining of PAT, PMT and SDT tables
  - Support for inclusion of static tables via data carousel
  - Support for inclusion of streaming tables as TS input stream
  - Integrated with third-party PSI generation system(s)
  - Concurrent support for static and dynamic table

- DVB-T Gateway
  - Supports a single DVB-T2 output in T2MI format
    - Single T2MI output over ASI or IP; uses ASI output #1
    - SFN operation
    - Multiple PLPs up to 8, each fed from a separate multiplexor
    - I/O interfaces not used as a PLP source can be used for normal mux/demux processing

- T2MI Functions
  - Full allocation mode supported; each PLP is configured with a static allocation of FEC blocks
  - Bandwidth – 5, 6, 7 and 8 MHz plus 1.7 and 10MHz
  - Extended carrier mode
  - Selection of pilot patterns 1-8
  - Modulation modes of 8PSK – 256 QAM
  - Rotated constellation
  - 1K to 32K FFT
  - ¼ to 1/128 guard band interval
  - Peak to average power reduction (PARP) modes TR, ACE and TR+ACE
  - Selectable super-frame and frame length
  - Selectable number of sub-slices
  - Nti and Pi time interleaving selection
  - High efficiency transport stream packing (HEM)
  - Type 1 and/or Type 2 PLPs
  - Input stream synchronization (ISSY)
- SFN Function
  - 10 MHz, 1PPS and NTP input
  - Individual addressing of modulators
  - MISO
  - T2 MIP insertion
  - Time-Stamp modes absolute and relative (absolute requires external NTP server)

Specifications

Specifications and designs are subject to change without notice

ASI INPUT	
Number of Inputs	up to 8
Standard	EN 50083-9
Connector	HD-BNC
Data Rate	0 to 210 Mb/s
Minimum Sensitivity	200 mV
Maximum Input Voltage	88 mV pk-pk
Minimum Discrete Connector Return Loss	-15 dB (0.3 MHz to 1 GHz)
ASI OUTPUTS	
Number of Outputs	up to 8
Standard	EN 50083-9
Connector	HD-BNC
Data Rate	0 to 210 Mb/s
Output Voltage	800 mV ±10% pk-pk
Clock Rate	270 MHz ±100 ppm
Deterministic Jitter	10% pk-pk
Random Jitter	8% pk-pk
Maximum Rise and Fall Time	1.2 ns (20% to 80%)
310M OUTPUT	
Connector	HD-BNC
Peak-to-Peak Voltage	0 mV ±10%
Rate	9.392658 MHz ±2.8 ppm
Format	i-phase-mark coding
Applicable Standards	SMPTE 310M
10 MHZ REFERENCE	
Connector	HD-BNC
Waveform	Sinusoidal 7 dBm nominal
Termination	50 ohms
1 PPS REFERENCE	
Connector	HD-BNC
Waveform	10 uS TTL pulse
Termination	>10 K ohms
ELECTRICAL	
Power Consumption	40 W maximum

Ordering Information

MULTIPLEXER/DEMULTIPLEXER HARDWARE ONLY

MULTIPLEXER/DEMULTIPLEXER HARDWARE ONLY	
SEL-MDX2-EES	MDX2, MPEG-2 transport stream multiplexer/demultiplexer, 2 in/out dependent on software feature key, configurable for SMPTE 310 output or DVB-ASI input or output. Back module with HD-BNC connectors (8 ASI ports) and 10 MHz and 1 PPS inputs. Requires software model key
SEL-MDX2-ERS	MDX2, MPEG-2 transport stream multiplexer/demultiplexer, 2 in/out dependent on software feature key, configurable for SMPTE 310 output or DVB-ASI input or output. Back module with RJ-45 data (video IP) port, HD-BNC connectors (5 ASI ports), 10 MHz and 1 PPS inputs. Requires software model key
MULTIPLEXER/DEMULTIPLEXER MODEL TYPES	
SEL-SK-M2-MPEG	MDX2, Software model key, basic transport stream multiplexer/demultiplexer configuration
SEL-SK-M2-ATSC	MDX2, Software model key, ATSC transport stream multiplexer/demultiplexer configuration
SEL-SK-M2-DVB	MDX2, Software model key, DVB transport stream multiplexer/demultiplexer configuration
SEL-SK-M2-ISDB	MDX2, Software model key, ISDB transport stream multiplexer/demultiplexer configuration
SEL-SK-M2-ENCAP	MDX2, Software model key, tunnel encapsulation (no multiplexing) configuration
SELOPT-SK-M2-T2GW	MDX2, Software model key,DVB-T2 Gateway Functionality, includes one PLP, up to seven additional PLPs can be added (additional licenses required)
MULTIPLEXER/DEMULTIPLEXER OPTIONS	
SELOPT-SK-M2-4CH	MDX2, Software-keyed option to select 4 in/out channels (adds 2 channels)
SELOPT-SK-M2-8CH	MDX2, Software-keyed option to select 8 in/out channels (adds 6 channels)
SELOPT-SK-M2-BISS	MDX2, Software-keyed option for BISS encryption
SELOPT-SK-M2-SCR	MDX2, Software-keyed option for DVB simulcrypt scrambling up to 4 CAS servers and 240 Services
SELOPT-SK-M2-SFN	MDX2, Software-keyed option to support single frequency network (SFN) operation within the multiplexer
SELOPT-SK-M2-MPLP	MDX2, Software-keyed option for one additional PLP license
MULTIPLEXER/DEMULTIPLEXER FRONT MODULE ONLY	
SEL-FM-MDX2	MDX2, Multiplexer/Demultiplexer front module only. Requires software model key and back module
MULTIPLEXER/DEMULTIPLEXER BACK MODULES	
SEL-BM-MDX-EES	Single back module for MDX multiplexer/demultiplexer with HD-BNC connectors for 8 ASI input/output ports and 10 MHz and 1 PPS inputs
SEL-BM-MDX-ERS	Single back module for MDX multiplexer/demultiplexer with one RJ-45 data (video IP) port and HD-BNC connectors for 5 ASI input/output ports and 10 MHz and 1 PPS inputs
SFP DUAL-INPUT OPTION	
OP+SFP+RR	Small Form Factor (SFP) for Imagine Fiber Optic Products. Dual PIN receiver with pathological support for baseband video

Images/Diagrams

PROD - MCP MODULE - SEL-MDX2-EES - SWATCH

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