**Features**

- Scalable, high bitrate, multi-input, multi-output TS multiplexer
- Demultiplexer/Remultiplexer
- Program filter and mapping (“cherry picker”)
- PID filter and mapping
- PID remapping
- PSI (PAT/PMT) signaling
- PCR dejittering and restamping
- PCR reclocking
- Service ID remapping
- ServiceName renaming
- Scheduled content playback from hard drive
- Time stamping
- TS CBR and VBR
- Optional ATSC, DVB-T, ISDB-T signaling including user definable channel labeling descriptors
- Optional PSI, ATSC, DVB-T, ISDB-T signal merging

**Inputs:**
- ASI or IP (UDP/RTP) or TS files

**Outputs:**
- ASI, IP (UDP/RTP), and optional RF

**Transport Stream (TS) grooming and remultiplexing of multiple streams received over ASI or Gigabit Ethernet at up to 500 mbps aggregate bit rate**

- Create a new ASI compatible ATSC stream to feed transmitters with ASI inputs
- DVB to ATSC table conversion
- Configurable Forward Error Correction (FEC) support for SMPTE 2022-1/2
- ASI to IP conversion for transporting digital video content over IP networks
- Network jitter correction
- Full motion video front panel displays any input for preview purposes
- Rackmountable 1 RU design
- Made in USA

**Applications**

- Contribution: Dynamically adjust services and profiles to customize the ASI or IP feeds and multiplex functionality for live events, live production, post production and content delivery
- Distribution: Multiplex services from many sources and local programming with service processing and preparation for transmission over satellite uplinks, terrestrial broadcast, cable and IPTV
- Regionalization: Regionalize multiplexes at head-ends and transmitter sites with service add/drop
- Rebrand channels via table processing

**Overview**

The T-Mux IP/IP+ASI: ATSC is the newest member of DVEO’s broadcast oriented product line. This sophisticated live and stored media server and multiplexer is designed to ingest 50+ live compressed video streams and create modified “packages” with varying numbers of streams for transmission over ATSC transmitters.

In addition to creating services, the T-Mux also includes a schedulable player that will mix locally stored content into the muxed packages. During certain times live feeds are preferred, but at other times stored content will be preferred. This device allows you to repackage a mix of live and locally stored content into multiple offerings according to the subscriber’s budget.

**Block Diagram**

![Block Diagram Image](Image)
Key Benefits

- **Optimize Transport Bandwidth:** Get the most out of your transport by creating up to 8 independent Multiple Program Transport Streams (MPTS) from all of the inputs. Support bandwidth constraints by removing unwanted streams like secondary audio, or even drop complete programs.

- **Reliable IP Transmission:** Insert Forward Error Correction (FEC) to ensure reliable delivery. Network jitter and errors in the transmission path are corrected in the receiving system to recreate the original transport stream.

Capabilities

- **Analytics**
  - Presented via Web UI
  - Dynamic input/output stream stats
  - Signaling verification
  - TS Error checking

- **Video streaming from file playlists**
  - Multichannel video streamer
  - Playlist and scheduler driven
  - >30 GBytes on board storage
  - Web-based GUI with file upload and progress bar

- **Transport Streams**
  - Maximum bitrate input/output: ~500Mb/s – Constrained by input device, output device, and CPU usage
  - Maximum number of MPTS outputs: Not limited – Constrained by CPU usage or output devices
  - Maximum video elementary streams per program: Not limited
  - Maximum number of audio elementary streams per program: Not limited
  - Maximum number of data streams per program: Not limited
  - UDP unicast and multicast UDP input/output TS support
  - Also supports UDP/RTP for all inputs (auto detect) and outputs
  - SMPTE 2022 FEC Pro-MPEG
  - UDP/RTP input support (converted to TS)
  - Transport packet size: 188/204 bytes

- **Network**
  - 4 independently configured GigE ports
  - UDP/RTP input auto detect
  - IPTV simulcast output

Rear Panel

Example Configuration - Device Can Be Customized

Options

- T-Mux ASI 2i/2o: Multiplexer with 1 input and output stream, 2 ASI inputs and 2 ASI outputs
- Additional ASI input/option combinations available

Scheduler GUI

Scheduler Screen

Computer Modules, Inc.
11409 West Bernardo Court
San Diego, CA 92127
Tel: 858-613-1818 Fax: 858-613-1815
www.dveo.com
Sample of GUIs

Configure Inputs

Multiplexer Outputs

Modify Program Mapping

Options

T-Mux IP/IP+ASI: ATSC
- Single IP In and Out
- Single ASI In/IP Out
- Single ASI Out
- Single ASI In/Single ASI Out
- Dual ASI In/ASI Out
- mSATA up to 1 TB, 32 GB standard

Specifications

ASI Inputs
Up to four ASI female inputs, 75Ω (limited by maximum aggregate bitrate) 
213 Mbps per input 
Receive MPTS and SPTS with service filtering

ASI Outputs
Up to four ASI outputs. Option for 2 ASI outputs (limited by maximum aggregate bitrate). 
Output up to 213 Mbps constant bit rate 
Programmable unique MPTS or SPTS 
PCR regeneration

Gigabit Ethernet
Four independent Gigabit Ethernet (GigE) ports, RJ45 
10/100/1000 Base-T auto-sensing 
Half and full duplex

Interoperability
Video Formats: Transport stream MPEG-2 SD/HD and MPEG-4 (AVC) SD/HD 
Audio Formats: MPEG-1 Layer II and Dolby AC-3 service type control

Multiplexing
Service and component PID tracking, filtering and remapping (route any input to any output port) 
Input and output unique SPTS and MPTS 
Each output (ASI, GigE) is programmed uniquely 
PCR re-stamping 
PAT/PMT computation band insertion 
Synchronization of data and video 
Configurable packet format of 188 or 204 bytes per packet

Payload Processing
Forward Error Correction (FEC): Compliant with SMPTE 2022-1/2 
Maximum Aggregate Data Rate: 500 Mbps with unlimited services 
Multicast: Multicast: IGMP v1, IGMP v2, IP/UDP and IP/UDP/RTP multicast or unicast

PSIP Processing
Pass-through and dynamic regeneration of certain PSIP tables noted below

Table Processing
Measurements: Advanced component/service/TS analysis and bit rate measurements 
MPEG/PSI Tables: PAT, PMT, CAT 
ATSC/PSIP Tables: MGT, VCT, STT, RTT, EIT, ETT 
ATSC/PSIP Tables: NIT, SDT, TDT, EIT

Administration
Access: Web UI, password protected, configuration from anywhere 
USB Configuration for bulk processing 
Front Panel Configuration: Management LAN network connection 
Front Panel Management: Graphical configuration and status; Video of all mux inputs 
Front Panel Video: Front panel controls with video monitor, Web interface 
QVGA, H.264, and MPEG-2 decode and scaling

Physical & Power
Size – 1 RU (WxDxH): 17.41 x 12.92 x 1.72 inches (442.2 x 328.2 x 44 mm) 
Input Voltage: 100- 240 VAC, 50-60 Hz 
Power: Less than 80 watts – Configuration dependent 
Weight: Less than 6 lbs. (2.72 kg) 
Shipping Weight: Configuration dependent 
Operating Temperature: 0° - 45°C (32°-113°F) 
Non-operating Humidity: 10 - 95% RH, non-condensing 
Cooling: Fan cooled. Positive pressure, ~20 cfm air flow front to back 
Cabling: Power cord included 
Conformities: FCC class A/CE (TBD)