



VJG FËJ ÕË

OXÔET ÚÓÖ/ÁÓ) & à^|Á |Á] ^} Õ^æ/Ó @•ã

- openGear Chassis AVC/MPEG 2 Encoder
- AVC 1080P Encode
- MPEG 2 1080i Encode
- 3 Concurrent Streams
- Stream to Edge QAM and IPTV platforms
 - UDP/RTP
- OTT Streaming:
 - RTMP Streaming
 - HLS Streaming
 - SRT Streaming
 - FASP® Streaming
 - Zixi™ Feeder
- WEB UI with SNMP
- Robust embedded platform
- 20 Cards per chassis

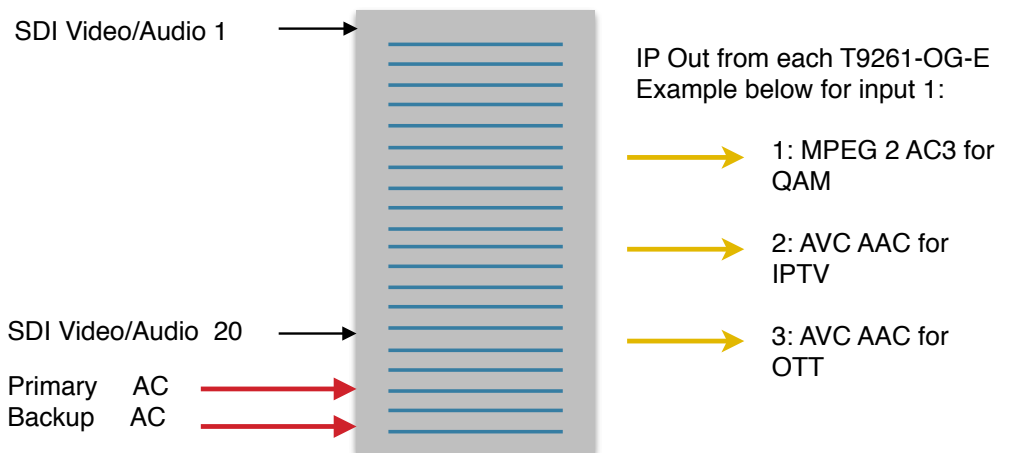
**T-21 devices support
Decoding, Transcoding,
Encoding, Recording and
Network Protocol
Translation of Streaming
Media over private and
public IP networks.**

The T9261-OG-E encodes and streams high quality, low bit rate AVC and MPEG 2 concurrently. Audio encoding support includes 4-pairs of MPEG or AAC. Dolby AC3 audio encoding is optional. Support for 608/708 captioning is standard.

The T9261-OG-E includes three encoding and streaming profiles. Each profile supports a unique streaming protocol, video CODEC with compression parameters, frame size, frame rate and audio CODECs.

Designed for LAN and WAN streaming media distribution and contribution applications, the T9261-OG-E streams to legacy IPTV and Edge QAM infrastructures while concurrently streaming OTT. OTT streaming protocol support includes RTMP, HLS, SRT, Zixi and FASP.

The T9261-OG-E is ideal for broadcast news gathering, sports, corporate, medical, house of worship and IPTV, Cable, Satellite and Terrestrial broadcast distribution applications.



openGear Chassis with 20 T9261-OG-E encoders



VJG FËJ ÕËÒ

OXÔET ÚÒÛÁÇÒ) & à^!Á |Á] ^} Õ^a/Ô@e•ã

Login Page

Navigate to the T9261-OG-E user interface with modern HTML5 browsers, including Chrome, Firefox, Safari, and Edge. T-21 devices support local domain resolution, simply type the device model-serial host name into your browsers URL.

The T9261-OG-E is controlled and monitored with Simple Network Management Protocol (SNMP). By leveraging SNMP as the control foundation, the T9261-OG-E supports local and remote third-party control systems sharing the same commands used by T-21's Web UI.

The T9261-OG-E user interface provides status monitoring, encode and host configuration with embedded help. Graphs and statistics for all encodes are included in the GUI or via SNMP.

STATUS

The T9261-OG-E is a robust IT device with two independent Gigabit Ethernet interfaces for streaming media and management. Its broadcast pedigree includes auto sensing 3G-SDI input with ancillary data support for embedded audio, closed captions and optional KLV data. MPEG 2 video encoding is supported for use with legacy ATSC, DVB and other distribution platforms.



VJG FËJ ÕËÒ

OXÔET ÚÓÖÁGÓ) & à^!Á |Á |^} Õ^æÁÓ@e•ã

Output Protocols

Stream Protocols	Destinations	Notes
UDP/RTP		UDP/RTP unicast or multicast
SRT		SRT Caller, Listener or Rendezvous with network statistics and encryption
RTMP		RTMP Server or Client
HLS		HLS Manifest and Segmenter
FASP®	3 profiles	Aspera FASp Streaming protocol <i>Optional</i>
Zixi™		Zixi receiver for use with Zixi Broadcast in Pull or Push modes with redundancy and encryption support.
TCP		TCP Server
SATA Drive		Capture live to file via optional mSATA internal storage, SAMBA or NAS

Transport

OUTPUTS
VIDEO
AUDIO
ANCILLARY
Ping Address Ping

Encode 1 ⓘ

Protocol	Interface	Address	Port	TTL	Traffic Shaping	
<input type="text" value="UDP"/>	<input type="text" value="Gig 1"/>	<input type="text" value="192.168.1.8"/>	<input type="text" value="8000"/>	<input type="text" value="9"/>	<input type="checkbox"/>	Apply

Video Profile	Audio 1 Profile	Audio 2 Profile	Audio 3 Profile	Audio 4 Profile
<input type="text" value="default"/>	<input type="text" value="default"/>	<input type="text" value="default"/>	<input type="text" value="default"/>	<input type="text" value="default"/>

Audio 1 PID

Encode 2 ⓘ

Protocol	Port	Timeout	Latency(ms)	
<input type="text" value="SRT (Listener)"/>	<input type="text" value="1935"/>	<input type="text"/>	<input type="text" value="500"/>	Apply

Bandwidth Overhead	MTU	TTL	ToS
<input type="text" value="5"/> %	<input type="text" value="1496"/>	<input type="text" value="64"/>	<input type="text" value="0xB8"/>

Input BW (bytes/sec)	Max BW (bytes/sec)	Encryption Type
<input type="text"/>	<input type="text"/>	<input type="text" value="None"/>

Video Profile	Audio 1 Profile	Audio 2 Profile	Audio 3 Profile	Audio 4 Profile
<input type="text" value="default"/>	<input type="text" value="default"/>	<input type="text" value="default"/>	<input type="text" value="default"/>	<input type="text" value="default"/>

Transport, Video and Audio services are configured and saved as named profiles for recall into independent outputs. The transport tab is used to set the overall circuit rate which will carry video and audio components.



VJG FËÜ ÖÈ

OXÔET ÚÖÖÁÓ) & à^!Á[!Á] ^} Ö^a/Ô@e•ã

Video

Video Profiles

default
hisDefault
rtmpDefault

Profile Name: default

PMT PID	Remux Mode	Remux Bitrate
480	constant	6000000
Video PID	Video Mode	Video Bitrate
481	constant	5000000
PCR PID	PCR Interval	
257	30	
GOP	Framing	GOP Size
Open	IBBP	60
Codec	Profile	Level
AVC	High	4.2
Interlace	Frame Size	Frame Rate
Follow	Follow	Follow

[Update Profile](#)
[Restore Defaults](#)
[New Profile](#)

Video CODEC Encode

H.264 AVC

- SD AVC 4:2:0 High Level 3.2
- HD AVC 4:2:0 High Level 4.0
- 3G AVC 4:2:0 High Level 4.2

MPEG 2

- SD MPEG 2 4:2:0 MP@ML
- HD MPEG 2 4:2:0 MP@ML

Audio

Audio Profiles

default
hisDefault
rtmpDefault

Profile Name: default

Codec	Profile	Bitrate
MPEG-4 AAC In ADTS	AAC-LC	128 kbps

[Update Profile](#)
[Restore Defaults](#)
[New Profile](#)

Audio CODEC Encode

- | | |
|--------------------------|------------------------------------|
| MPEG 1 Layer 2 Audio | 2 Pairs |
| AAC-LC Stereo (2.0) | Standard |
| HE AAC V1.0 Stereo (2.0) | 2 Additional Pairs <i>Optional</i> |
| HE AAC V2.0 Stereo (2.0) | 2 Pairs <i>Optional</i> |
| Dolby Digital (2.0) | 2 Pairs <i>Optional</i> |

Ancillary

OUTPUTS

VIDEO

AUDIO

ANCILLARY

Ancillary Passthrough

On

Ancillary Data

Ancillary Data	Notes
Closed Captions	SMPTE 334 . 608 carried in 708 or native 708 captions.
KLV	SMPTE 334 <i>Optional</i>



VJĜ FËJ ÕËÒ

OXÔET ÚÒÕÁGÒ) & à^!Áı |Áı ^} Õ^æÁÓ@e•ã

Statistics

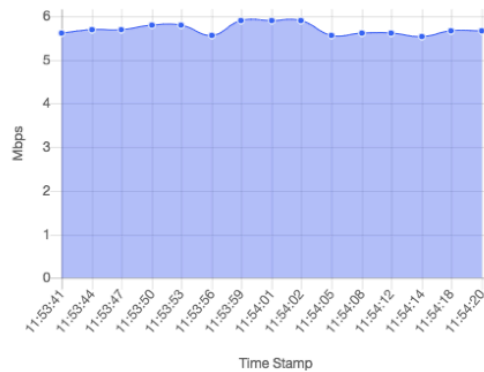
Network throughput, protocol, encoder path, elapsed time, bitrate and packet details are provided for all streams supported by T-21 devices.

STATUS SDI **STATISTICS**

Reacquire SDI Restart Encoder

Encode 1 Stats

Path: udp://192.168.1.8:8000
Elapsed Time: 51 Seconds
Mbps: 5.66 Mbps
Packets: 25736



Encode 2 Stats

Path: srt://:1935
Elapsed Time: 51 Seconds
Mbps: 5.72 Mbps
Packets: 26026



T9261-OG-RM-1

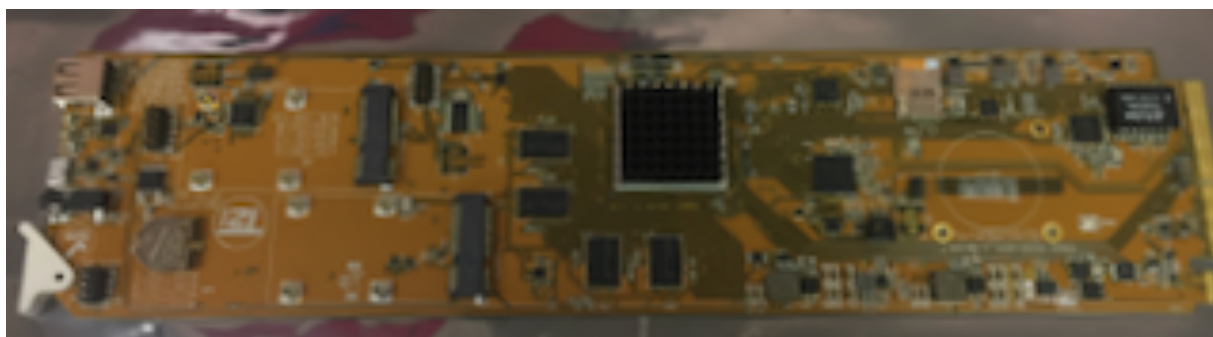


OpenGear chassis dual slot split-panel rear assembly. Supports two T9261-OG-D decoder or T9261-OG-E encoder modules in adjacent openGear chassis slots. Includes mirrored SDI BNC and one HDMI 1.4b baseband outputs for the decoder. SDI Input and SDI loop through for the encoder. External GigE interface and mUSB terminal for each T9261-OG-D/E assembly. Max 10 rear panel modules or 20 cards per openGear v3.0 chassis.

VJG FËU ÕÈÒ

OXÔET ÚÒÕÁÓ) & à^!Á[!Á] ^} Õ^a/Ô@e•ã

T9261-OG-E



T9261-OG-E AV

Baseband Input	Number	Specification	Connector	Notes
3G-SDI	1	SMPTE 424M	BNC In with BNC Loop Out via the T9261-OG-RM-1	1920 x 1080 Progressive at 60/59.94/50/30/24 frames per second
		SMPTE 292M		1920 x 1080 Interlaced or 1280 x 720 Progressive at 59.94/50/29.97 frames per second
		SMPTE 259M		720 x 576 PAL at 25 frames per second. 720 x 480 NTSC at 29.97 frames per second
Embedded Audio	2/2	SMPTE 291M		Encode 2 pairs (2 more optional) embedded audio channels.
608/708 Captions	1	SMPTE 334		Caption preservation via embedded ANC

T9261-OG-E Platform

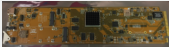

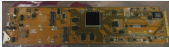

Platform Data IO	Number	Standard	Connector	Notes
ARM Dual core ASIC				Host processor running Linux with AV application specific integrated circuit module
Gigabit Ethernet 1	1	802.03	RGMII openGear Chassis backplane	Via openGear chassis 24 port integrated Gigabit Ethernet switch on the openGear controller card. Single Ethernet connection to the chassis provides management of all 20 T9261-OD-E cards and the openGear chassis.
Gigabit Ethernet 2	1	802.03	RJ-45/Rear	Copper CAT 5/5e/6/6A.
Terminal	1	VT100	mini USB Type B/Front	Serial Terminal at 115,200, 8, 1, N. Not accessible when openGear chassis door is closed
USB2	1	USB 2	USB 2 Standard-A receptacle/Front	USB 2 compliant. Data mount, logging and Firmware load. System recovery disk. Not accessible when openGear chassis door is closed
USB2	1	USB 2	mini USB Type B via T9261-OG-RM-1 Rear	USB 2 compliant. Data mount, logging and Firmware load. System recovery disk.
PCIe	1	PCI Express	52 pin edge connector	Mini PCIe card slot (Host) with USB. Optional WiFi and LTE modules are available.
mSATA	1	min-SATA	52 pin edge connector	Mini SATA card slot. Mass storage available using standard SSD hard drives.
DC	1	DC 12V power via openGear chassis backplane		12 VDC power - 10 watts



VJG FËJ ÕË

OXÔET ÚÓÛÁGÓ) & à^!Á¡ ¡Á] ^} Õ^æÁÛ@e•ã

T-21 products

Product	Description	Image
T9261-OG-E	openGear form factor low power AVC encoder. Encodes 1080P AVC, 1080i MP2, MPEG 1 layer 1, 2, 3 and AAC audio. Two pairs (4 channels) of audio encode supported with an option for 2 more pairs (8 channels). Optional Dolby Digital AC3 encode. Dual GigE interfaces. Baseband 3GSDI input. Supports FILE CAPTURE, UDP/RTP, RTMP, SRT, Zixi, FASP and HLS streaming.	
T9261-E	Small form factor, low power AVC encoder. Encodes 1080P AVC, 1080i MP2, MPEG 1 layer 1, 2, 3 and AAC audio. Two pairs (4 channels) of audio encode supported with an option for 2 more pairs (8 channels). Optional Dolby Digital AC3 encode. Dual GigE interfaces. Baseband 3GSDI input. Supports FILE CAPTURE, UDP/RTP, RTMP, SRT, Zixi, FASP and HLS streaming. External DC power supply included.	
T9261-OG-D	openGear form factor low power decoder with UHD/HEVC* option. Decodes 1080P AVC, 1080i MP2, MPEG 1 layer 1, 2, 3 and AAC audio. Optional Dolby Digital AC3 decode. Two pairs of audio decode standard. Dual GigE interfaces. Baseband outputs include dual 3GSDI and HDMI. Supports FILE CAPTURE, UDP/RTP, RTMP, SRT, Zixi, FASP and HLS streaming.	
T9261-D	Small form factor, low power decoder with UHD/HEVC* option. Decodes 1080P AVC, 1080i MP2, MPEG 1 layer 1, 2, 3 and AAC audio. Optional Dolby Digital AC3 decode. Two pairs of audio decode standard. Dual GigE interfaces. Baseband outputs include dual 3GSDI and HDMI. Supports FILE CAPTURE, UDP/RTP, RTMP, SRT, Zixi, FASP and HLS streaming. External DC power supply included.	
T23	Very small form factor, low power decoder supporting 1080P60 HEVC, 1080P60 AVC, 1080i MP2 and MPEG 1 layer 1, 2, 3, and AAC audio. Optional 4K/HDR/UHD decode and Dolby Digital decode keys available. Dual GigE interfaces. HDMI 2.0b AV output. Supports FILE CAPTURE, UDP/RTP, RTMP, SRT, Zixi, FASP and HLS streaming. External DC power supply included.	