TVU networks®

TVUPack® TM8200

The smallest and lightest available 3G/4G uplink backpack

"TVUPack has proven to be a valuable tool for our news departments to deliver live and non-real-time video content across our television, Web and mobile platforms. With TVUPack, our stations will have the ability to deliver more content from more diverse locations than ever before." - Michael Doback, vice president, engineering, Scripps Media

TVUPack◊ is winning over broadcasters around the world with its portable lightweight design, support for multiple 3G/4G wireless uplink connections, ease-of-use, and low latency transmission. With TVUPack, you can capture and transmit a broadcast quality picture from locations your ENG or OB van cannot reach.

Multiple 3G/4G Connections	Simple One Button Set Up	Fast Start Up	Resilient Video Quality	Low Transmission Latency	On-Demand Video Retrieval
TM8200 features an easily accessible and removable external modem module that supports up to six 3G/4G, WiMax and BGAN connections and includes dedicated WiFi and HotSpot ports. The TVUPack system aggregates all available transmission connections to broadcast live in SD or HD up to 1080i.	TVU pioneered the single button start on a backpack style transmitter. No manual in-field configuration is required. Just plug in your camera and push the green button to go live.	TVUPack starts up in 20 seconds from a cold start. The pack automatically establishes all available wireless connections, giving you the ability to broadcast live in no time.	TM8200 combines Qualcomm RaptorQ, the world's most advanced Forward Error Correction technology with our proprietary Inverse StatMux and enhanced H.264 encoding for a stable, reliable and resilient picture. As a result, TVUPack requires fewer 3G/4G wireless connections compared to other cellular uplink transmitters to deliver a resilient, stable video transmission.	TVUPack can transmit with as low as sub-one second delay. More importantly, TVUPack gives you the flexibility to use optimized preset latency and bit-rate options or to adjust them yourself based on network conditions and the shooting setting.	With an on-board SSD hard drive capable of capturing up to 5.5 hours of continuous video footage in HD, TVUPack ensures that your footage is safe and easily retrievable when you need it.

Features You Need

Encrypted Transmission

TVUPack features a proprietary protocol that delivers a secure and encrypted transmission between the TVUPack and the TVUPack Receiving terminal. Each TVUPack Transmitter is paired with a specific Receiving Terminal, ensuring that there is no way to receive the video signal without authorization.

Hotspot Functionality

TVUPack not only delivers live HD signal back to the broadcast facility, it can also act as a gateway to the Internet. With the optional hotspot feature, any laptop computer or wireless device can access the Internet through TVUPack's wireless connections. The Hotspot feature enables video crews to edit a finish story on a laptop in the field and send the finished story back to the broadcast facility over the pack's multiple wired and wireless Internet connections.

IFB (Interruptible Feedback)

TM8200 has IFB capabilities, enabling news operations centers to speak directly to a headphone equipped cameraman or talent in the field and avoid the disruption of using a cell phone.

Multipath Technology for HD Conversion

TVUPack offers a cost-effective multipath solution for broadcasters looking to retrofit their legacy ENG equipment to deliver live HD video from the field. TVUPack is only a fraction of the cost of a fully-equipped SNG van, and enables broadcasters to minimize the cost of converting to HD. Additionally, operating costs are low due to TVUPack's simple, zero-configuration design and transmission over wireless Internet connections lessens dependence on expensive satellite links.

Sony XMPilot Metadata Integration

TVUPack supports Sony XMPilot Metadata when connected to a supported Sony camera. TVUPack wirelessly receives the Metadata from the camera and transmits it with the video footage to the TVUPack Receiver. The Metadata information is displayed with the accompanying video footage on the Receiver interface.

Dual Hot Swappable Batteries

TVUPack uses a dual battery system with industry standard Gold Mount design. Batteries can be hot-swapped while the unit is operating, allowing for continuous operation and effectively providing TVUPack users with unlimited running time.

Field Monitoring and Control

TVUPack provides an option for wireless monitoring and control from a variety of wireless mobile smart devices, including Android, iPod, and iPhone. This enables camera operators to monitor the transmission, line quality, battery level, and other pack statuses from the field in real time.

Broadcast Quality Picture You Want

Proprietary Inverse StatMux Technology

To address the limited bandwidth and instability of the 3G/4G environment, TVU engineers developed Inverse StatMux technology, which dynamically segments a live video signal and transmits the segments through multiple independent 3G/4G connections. This technology ensures that TVUPack delivers stable, professional quality picture regardless of network conditions.

World's Most Advanced Forward Error-Correction

TVUPack incorporates Qualcomm RaptorQ FEC technology. Compared to traditional FEC, RaptorQ protects against packet loss by efficiently recovering missing data packets without the need to completely resend the data, which results in unmatched reliability in data networks. RaptorQ maximizes the available throughput over each connection, which helps deliver low latency and the flexibility to dynamically send video over multiple paths.

Advanced H.264 Video Encoding Engine

TVUPack features an advanced proprietary video encoding engine to ensure that the best picture quality is delivered in the 3G/4G environment. With this advanced encoding engine, TVUPack is capable of delivering a vivid broadcast-quality video with low latency, even in conditions with limited bandwidth.

Variable Bit-Rate Encoding Technology

With TVUPack's enhanced Variable Bit-Rate (VBR) encoding technology, camera operators do not need to manually adjust the pack's settings under changing bandwidth conditions. TVUPack's VBR automatically adjusts the bit-rate according to the total available bandwidth. With enhanced VBR, TVUPack always uses the full available bandwidth to deliver the best possible picture under the given conditions.

FCC and CE Compliance

TVUPack has completed testing outlined for ENG mobile systems and holds a certificate of compliance. Additionally, the data modems used in TVUPack are commercially available modems that have been FCC and carrier certified.

TVUPack 8200 Technical Specifications*

	SDI Configuration	HDMI/Analog Configuration
Video/Audio Input	HD/SD-SDI (BNC) input - 1080-59.94i/50i, 720-59.94p/50p, 480-59.94i, 576-50i w/ embedded 2-ch. Audio, HD/SD-SDI (BNC) loop out	HDMI (Type A) - 1080-59.94i/50i, 720-59.94p/50p, 480-59.94i, 576-50i w/ embedded 2-ch. Audio, HD/SD-SDI (BNC) loop out
Data I/O Interface	Up to 6 USB data card interfaces (2.5G/3G/4G/WiMax). Plus dedicated port for Hotspot and WiFi	Up to 6 USB data card interfaces (2.5G/3G/4G/WiMax). Plus dedicated port for Hotspot and WiFi
Storage	80 GB embedded SSD (Up to 5.5 hours continual recording)	80 GB embedded SSD (Up to 5.5 hours continual recording)
Battery System	Hot swappable dual battery packs compatible with industry standard Gold Mount and Anton Bauer batteries or optional V-mount configurations. Low power consumption to extend battery life to up to 2.5 hours per battery.	Hot swappable dual battery packs compatible with industry standard Gold Mount and Anton Bauer batteries or optional V-mount configurations. Low power consumption to extend battery life to up to 2.5 hours per battery.
External Battery	14.8V, Minimum 100W, Gold Mount or optional V-mount configuration	14.8V, Minimum 100W, Gold Mount or optional V-mount configuration
Battery Run Time	2.4 hours dual battery packs, up to 4 hours on extended	2.4 hours dual battery packs, up to 4 hours on extended
Weight	4 lbs/1.8 kg without bag or batteries	4 lbs/1.8 kg without bag or batteries
Backpack Dimensions	7 3/4" (D) x 11" (W) x 13.5" (H)/ 19.6 cm (D) x 27.9 cm (W) x 34.2 cm (H)	7 3/4" (D) x 11" (W) x 13.5" (H)/ 19.6 cm (D) x 27.9 cm (W) x 34.2 cm (H)
Operating Temperature	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)

TVUPack Receiver Terminal Specifications*

Electrical	Line Voltage: 100-240V AC, 50/60Hz 5.2-2.6A
Configuration	1RU, standard 19" rack mount (inc. slide rails for round or square-hole mount)
Audio / Video Output	BNC – SD/HD - SDI
Genlock	BNC - Tri-Level or BB
Display	VGA and DVI or HDMI
IFB Input (optional)	External USB audio input with level control (mic/line), & XLR
Network I/O	2 independent 10/100/1000 BASE-T RJ45 Ethernet Interfaces, 2 x USB2.0
Dimensions	~42.4cm (H) x 43.4cm (W) x 61.0 (D)/1.67" (H) x 17.10" (W) x 24" (D)
Operating Environment	10 - 35°C (50 - 95°F), Humidity 20%

The TVUPack Receiving Terminal is a compact 1U rack-mount server that receives broadcast signals from multiple TVUPack transmitters. The TVUPack Receiving Terminal was built with the professional broadcaster in mind. It can store content in its on-board storage and output it over SDI audio/video connections. The intuitive interface provides complete control over the TVUPack system, freeing the cameraman in the field from worries about configuration. In a multiple Receiving Terminal setup, each can act as a hot standby. Paired with the TVUPack Transmitter, the TVUPack Receiving Terminal gives the newsroom a constant reliable source for instant live news coverage.

*Specifications and features are subject to change without notice.