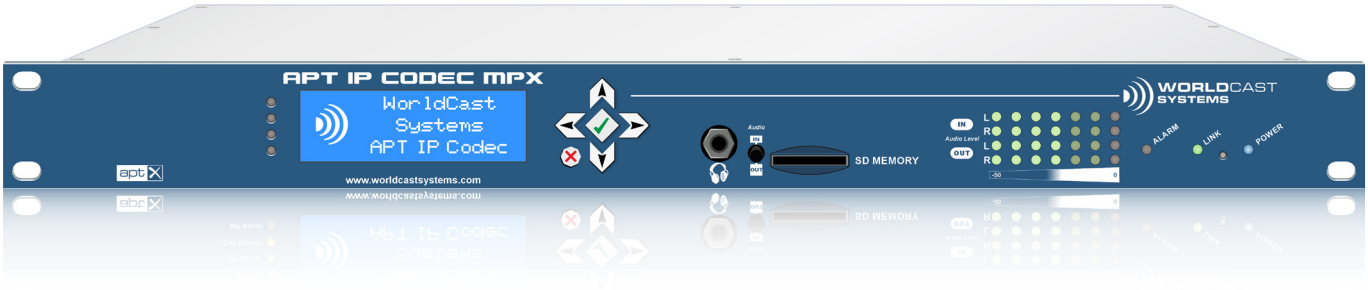
WORLDCAST SYSTEMS

POWERFUL PERFORMANCE CONTROL SAVINGS SERVICES



APT IP Codec - *mpX*

Geared Up For Next-Gen Broadcasting

The APT IP Codec mpX is a state-of-the-art, professional composite/MPX IP Codec equipped with unique, market leading technology to deliver next-generation broadcast performance. The innovative and feature-rich APT IP Codec mpX takes the quality of reliable MPX transmission to an unprecedented level.

With APTmpX, the IP Codec mpX offers the best compression format for composite/MPX signals, and APT's proven SureStream technology guarantees reliable transmission in any network.

The APT IP Codec mpX is perfectly equipped for individual FM feeds as well as multi- and single-frequency broadcasting. The IP Codec mpX is suitable for mission-critical applications.

ScriptEasy's distributed intelligence provides extensive control and monitoring capabilities to manage your audio, data, network conditions and other devices at the transmitter site.

With the APT IP Codec mpX, you know you will enjoy the rock-solid performance upon which APT has earned the trust of countless broadcasters worldwide.

APTmpX | SYNCHROSTREAM | SURESTREAM | SCRIPTEASY

APT IP CODEC Benefits:

MPXoIP Transport Optimization

The APT IP Codec mpX protects your valuable MPX signal against network impairments. With SureStream, packet losses are compensated, and latency fluctuations are eliminated by SynchroStream or the NTP-based Time Alignment feature. The enhanced NAT traversal mode overcomes barriers, and IP packets reliably reach their specified destinations.

Pristine Signal Quality & Performance

With the new APTmpX compression algorithm, the APT IP Codec mpX offers maximum signal fidelity, high-resolution transparency and the lowest coding delay.

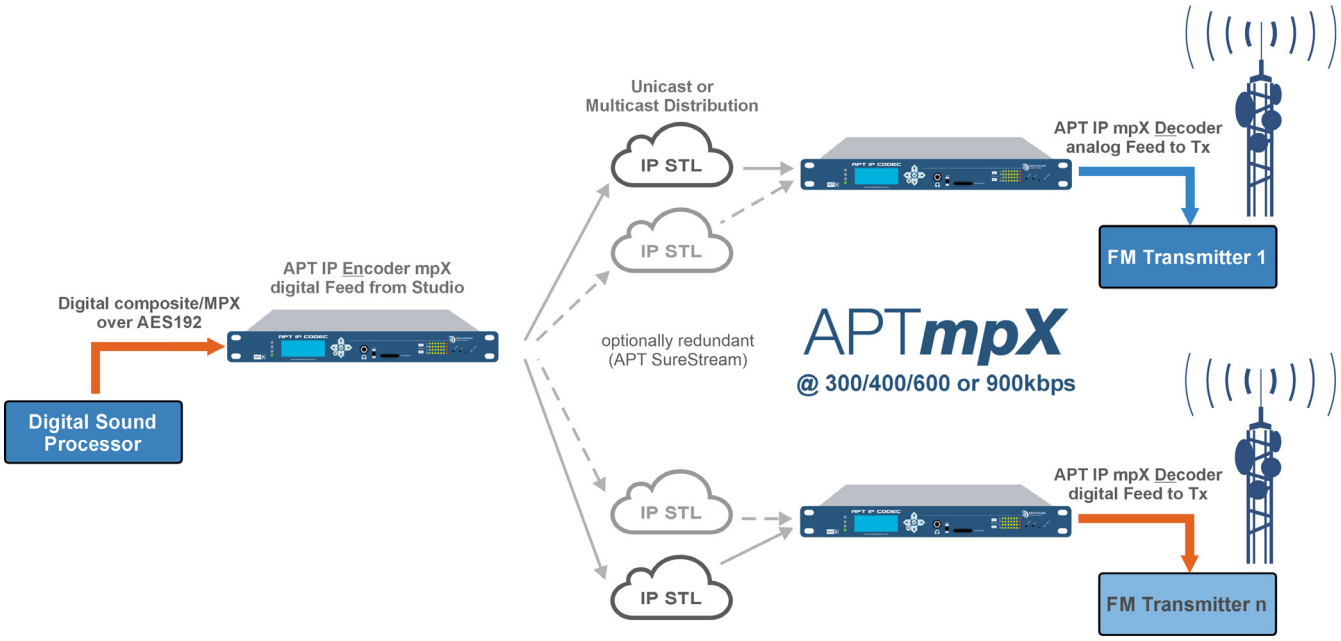
Maximize your Cost Savings

APT products save you money. The SureStream packet redundancy and the innovative APTmpX for low bitrate composite/MPX transmissions constitute an ecosystem that provides highly available and high-quality audio distribution outside of expensive transmission paths.

APT IP CODEC - MPX **Key Applications**

Digital & Analog composite/MPX Distribution

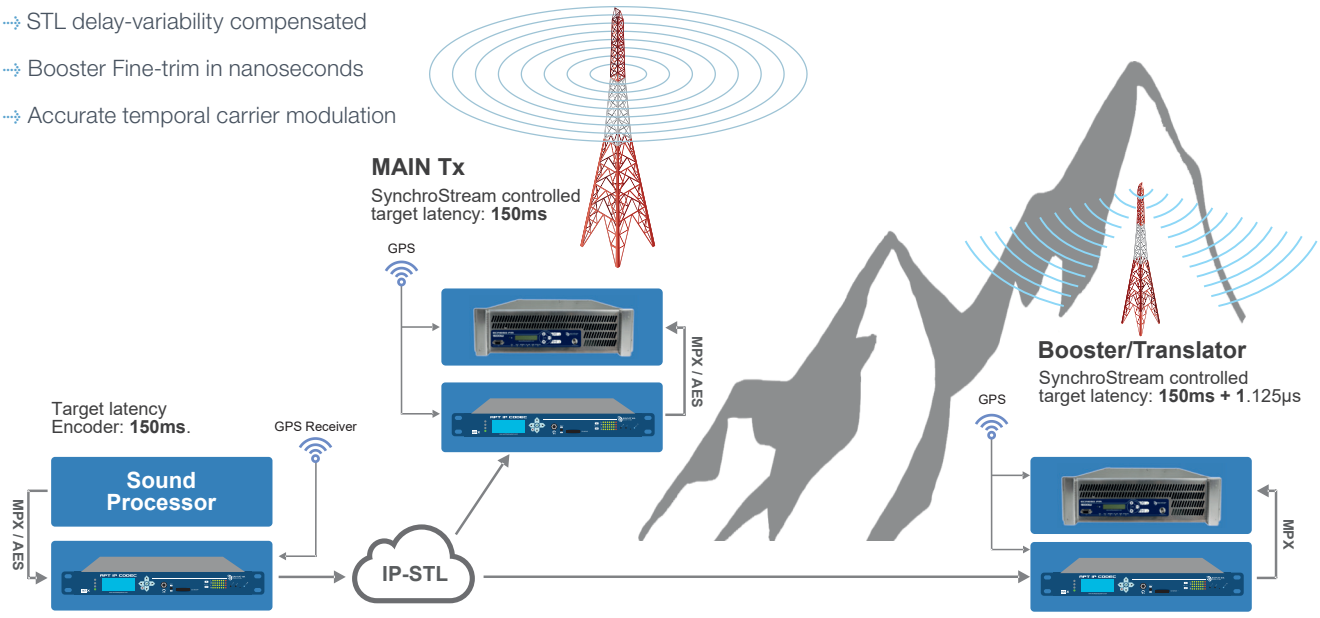
APTmpX for low Bitrate Links



Composite/MPX Distribution in an SFN Application with SynchroStream

to illustrate synchronized MAIN/booster transmitters

- STL Target latency time-aligned
- STL delay-variability compensated
- Booster Fine-trim in nanoseconds
- Accurate temporal carrier modulation



Support Level Agreement

To make sure you reap all the benefits of your broadcast investment, you can rely on the WorldCast Systems' Support Agreement program. The range of services available and with the support of our team of experts, you will benefit from maximum uptime, better performance, and overall improve your Total Cost of Ownership!

Contact your Sales Manager for more information.

APT IP CODEC - MPX **Key Benefits**

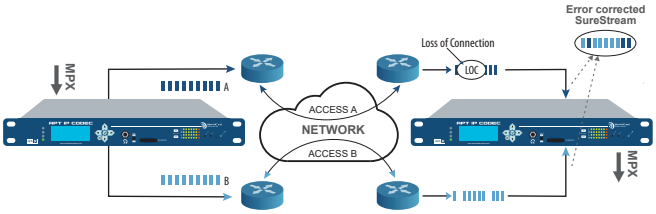
SURESTREAM

+10 Years Experience: Our team of engineers has extensive experience optimizing our algorithm for redundant streaming, making SureStream synonymous with reliable transmission in lossy IP networks.

Low Latency - Low Costs: SureStream enables the broadcaster to turn imperfect, but much cheaper services, into true broadcast-grade, low-latency IP connections.

Scalability and Flexibility: SureStream is the most flexible and scalable solution for content transmission protection, able to combine multiple paths from any combination of MPLS, Satellite, Microwave, xDSL and/or Cellular (4G/5G), creating a unified super robust connection to get your audio from point A to B.

Secure, reliable transport of composite/MPX, with SureStream packet redundancy



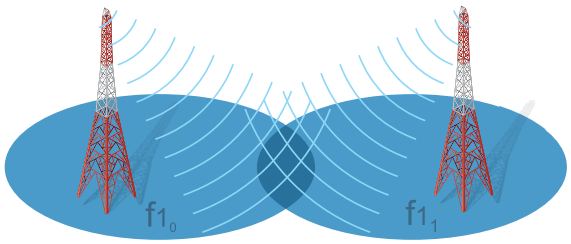
SYNCHROSTREAM

Stable Latency: The GPS-based SynchroStream eliminates variable latencies of an IP network within unprecedented narrow limits. For program transmissions, a temporal synchronized connection appears like a synchronous link.

Complete Control Over Target Latency: SynchroStream requires a single setting on the IP Encoder to define the target latency to each Decoder at a transmitter site. Only one setting is required, and all Decoders are synchronized; accurate and stable to the millisecond. Fine-tuning in the sub-microseconds range is done at the decoders in the array.

Synchronized FM Modulation: Temporal fine-tuning is the key to optimal geographic positioning of overlapping modulations of FM carriers. SynchroStream enables modulation control with the uniquely fine granularity of <50 meters in terrain.

FM-SFN with SynchroStream



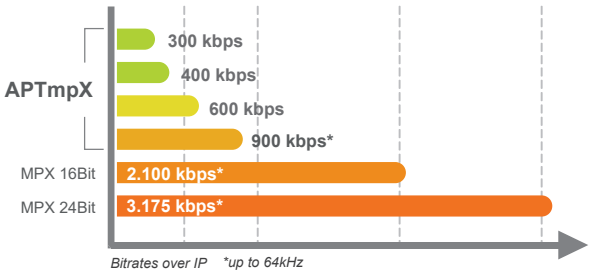
APT*mpX*

Compressed Composite/MPX: APTmpX is the industry's best MPX/composite compression algorithm, that delivers the highest sound transparency over low-bitrate IP transmissions.

Lowest Bitrate, Lowest Delay: With tthe lowest bandwidth requirements at 300/400/600 and 900 kbps, broadcasters no longer need to compromise between low bit rate and high audio quality.

APTmpX thus eliminates the two barriers that usually discourage migration to FM MPX transmission.

Bit Rate savings with APTmpX



SCRIPTEASY

Advanced Telemetry & Facility Management

ScriptEasy is a revolutionary facility control software for connected devices, enabling the automatic correction of any critical errors that may occur. Across its intuitive web interface, ScriptEasy includes management of the GPIO, serial communications, SNMP, logic operators, live user inputs, timers, and more. This enables the "scripting" of site operations for evaluating multiple parameters and automatically engaging back up systems, while simultaneously alerting relevant technical personnel. **Integrated in the APT IP CODEC, ScriptEasy is the core technology that provides the device with its inherent "intelligence".**

Technical specifications

APT IP CODEC mpX rear panel. The illustration may deviate and show optional components.

Composite/MPX & AUDIO	
Asymmetric Encoding/Decoding	Independent encoding and decoding modes for send and receive for analog and digital composite/MPX or digital audio
Analog MPX I/O	Unbalanced, capacitive isolated BNC connectors for composite/MPX, level adjustment in 0.01 dBu steps
Digital Audio I/O	AES3, AES192, 24 Bit, transformer balanced, Imp. 110 Ω, XLR-Connectors
FORMATS	
Multi Algorithm Suite for Digital audio	Eapt-X 16/24 bit, lin. PCM 16/20/24 bit and OPUS
MPX Formats	Analog and digital lin. MPX 16/24 bit, APTmpX @ 300/400/600 & 900 kbps
STREAMING MODES	
Stream Types	Multiple MPX or Audio Tx-Streams, UDP and RTP forwarding, Reply-to-Sender, NAT traversal mode
Unit Clock Modes	Asymmetric, master, slave, NTP-based & high precision GPS clocking (optional)
Jitter Buffer	2 - 5000 ms with packet re-sequencer
QoS	DiffServ (RFC 2474) per stream
Redundant Streaming	SureStream Option, multi-stream packet-by-packet redundancy
Backup Feature	SD Card for file storage
MANAGEMENT	
Front Panel Display with Key navigation	
Web Browser GUI	
APT NMS	
WCS Kybio (SNMP-based Manager)	
SNMPv2c/v3	
API	
ScriptEasy	
MONITORING & ALARMS	
Adjustable Silence Detectors (Inputs & Outputs)	
Event Logs	
Alarm Relays	
SNMP Traps / Notifications	
PHYSICAL INTERFACES	
Analog MPX	Input BNC connectors (Input loop-thru), dual outputs, impedance matched
Digital I/Os on XLR	In/Outputs digital (AES 3, AES192) In/Output, ext. reference Input (AES11)
Headphone	1/4" (6.3 mm) Jack Socket (front) - audio monitoring
AUX Data	D9-way connector
GPIO	D15-way connectors
Network	2x RJ45
GPSDO Input (optional)	2x BNC (10 MHz & 1 PPS)
AC Power	1 + 1 (optional) IEC type
DC Power	1 + 1 (optional) Power D3-way connector

NETWORK	
Dual IP Interfaces	Dual Gigabit Ethernet IEEE 802.3x, Auto MDI-X
Port Configuration	Flexible WAN and/or LAN (Management) configuration
Port Speed Setting	Full auto, restricted auto or manual
VLAN Tagging (IEEE 802.1q)	
Virtual IP Interfaces (IP Aliasing)	
Dynamic DNS	multiple clients supported
Standard Protocols	RTP/UDP, IPv4, DHCP, FTP, HTTPS, ICMP, IGMPv2/v3, SMTP, SNMPv2c/v3, NTP
Security	TLS 1.1 and higher, Service Filter and Firewall
DATA	
Serial Data	RS 232 embedded up to 9,600 Baud, via UDP stream up to 115,200 Baud
GPIO	4 switch Inputs and 4 relays embedded (Eapt-X) and via UDP stream
SYNCHROSTREAM OPTION	
GPS-based precision timing function for perfect IP stream-synchronization in FM-SFN networks.	
Time Base	ext. GPSDO, 10 MHz & 1 PPS
Target Latency	Encoder setting up to 1 sec.
Extended Target Latency	GPS + NTP up to 5 sec.
Timing Stability	< 0.25 µs
Delay Line Adjustment	Increments corresponding to < 50 m field distance
MAIN CHARACTERISTICS	
Dimensions (l x h x d) 19", 1u rack mount	483 cm x 42 mm x 160 mm 19" x 1.75" x 6.3"
Weight	1.5 kg / 3.35 lbs
Mains Power Supply	100-240 VAC / 50-60 Hz
Power Consumption	< 20 VA
Env. Temperatures Operation Storage Humidity	0 °C to +35 °C (fanless) up to +50 °C (internal fan) -30 °C - +80 °C 95 % (non-condensing)

Order information

REF	DESCRIPTION
TF01013-MPX	APT IP Codec mpX with AC PSU
TF01013-DC-MPX	APT IP Codec with DC PSU
CD00123	SureStream Technology license (secure redundant streaming)
SP02701	SynchroStream Kit (precision GPS-based synchronicity)
LC00074	Digital MPX/composite license for linear MPX and APTmpX

This document is not contractual. All specifications are subject to change without notice.

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