APT IP Codec
Geared Up For Next-Gen Broadcasting

The APT IP Codec is a cutting-edge, professional IP stereo codec geared up with unique, market-leading technology to provide next generation broadcast performance. Innovative and feature-packed, the APT IP Codec elevates the quality of reliable, cost-effective, and accurate temporal IP audio and MPX transmission to a level never before achieved.

The proven SureStream redundancy and distributed intelligence of ScriptEasy is extended by the best compression format APTmpX for MPX signals and the highly precise synchronization of IP streams with APT SynchroStream.

The APT IP CODEC is perfectly equipped for individual FM feed as well as multi- and single-frequency broadcasting. It is suitable for mission critical applications and provides extensive control and monitoring functions to manage your audio, data and network conditions, as well as other equipment located at the transmitter site.

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

APT IP CODEC Benefits:

IP Transport Optimization

APT IP CODECS migrate the advantages of a synchronous connection to the IP world. With SureStream, packet losses are compensated, and latency fluctuations are eliminated by SynchroStream or the NTP-based Time Alignment. The enhanced NAT traversal mode overcomes barriers and IP packets reliably reach their specified destinations.

Pristine Audio Quality & Performance

Highest signal fidelity and lowest coding delay, which we established from the beginning with Enhanced aptX, are transferred to composite/MPX transmissions with the new APTmpX algorithm.

Maximize your Cost Savings

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

SURE*STREAM*

+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.

SureStream redundant Streaming packet-by-packet protection

SYNCHRO*STREAM*

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 is done at the decoder(s) 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.
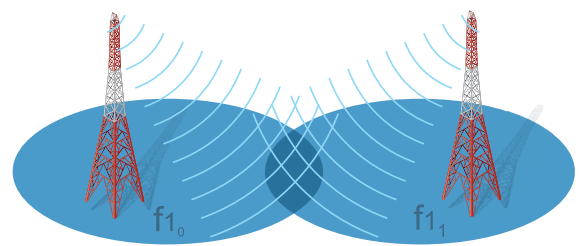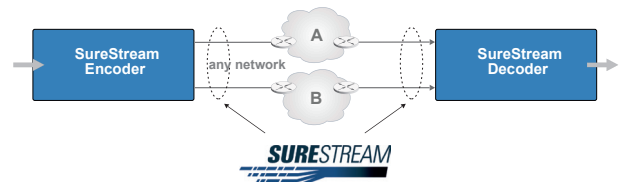

FM-SFN with SynchroStream

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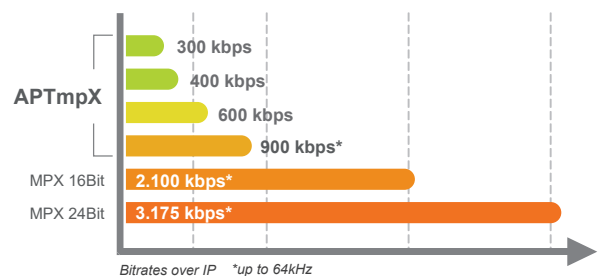
Lowest Bitrate, Lowest Delay: With tthe lowest bandwidth requirements at 300/400/600 and 900kbps, broadcasters no longer need to compromise between low bit rate and high audio quality.

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

APTmpX
- 300 kbps
- 400 kbps
- 600 kbps
- 900 kbps*

MPX 16Bit — 2.100 kbps*
MPX 24Bit — 3.175 kbps*

*Bitrates over IP   *up to 64kHz*

← SCRIPT*EASY* →

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".**

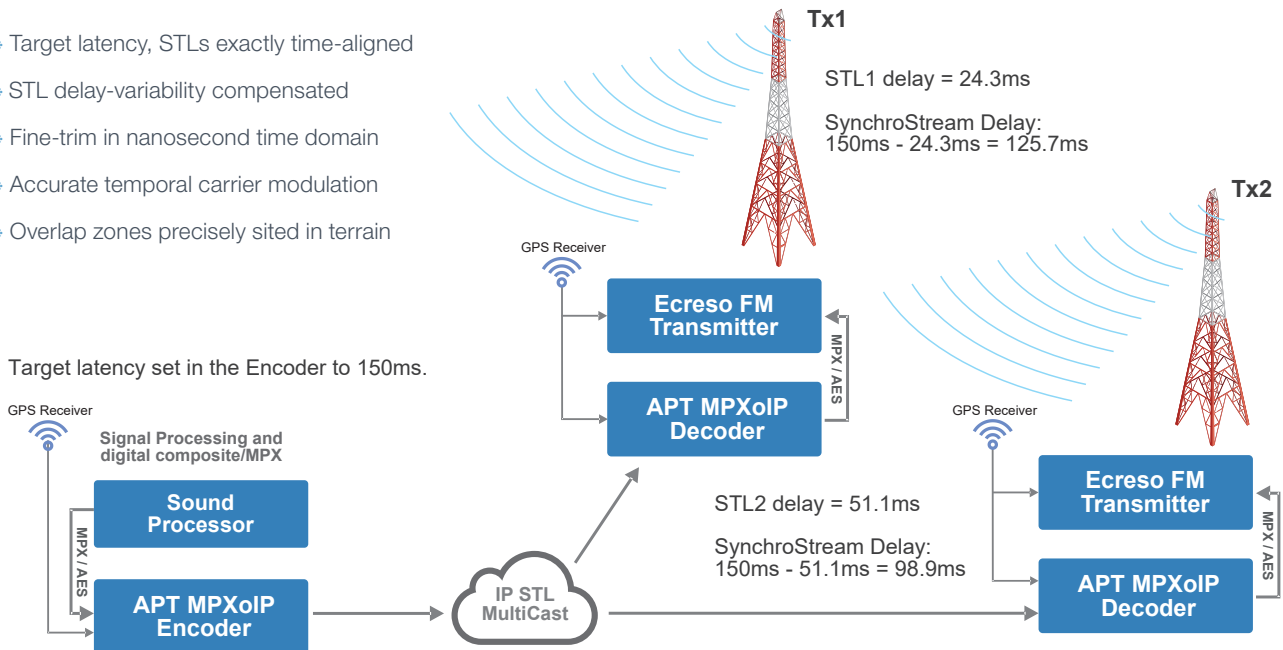## Remote Production - Broadcast from everywhere

SureStream Audio Connection

Remote Studio
(broadcast from home)

Production Studio

Broadcast technology that serves the Talent

⇢ Low delay for perfect dialogs

⇢ Flawless transmission with Audio SureStream

⇢ Pristine audio quality & performance

⇢ Easy connection setup without SIP

⇢ Focus on the mission, not the technology

SFN Application with SynchroStream using composite / MPX over AES

with Ecreso FM transmitters of WorldCast Systems illustrating the synchronized digital broadcast chain:

⇢ Target latency, STLs exactly time-aligned

⇢ STL delay-variability compensated

⇢ Fine-trim in nanosecond time domain

⇢ Accurate temporal carrier modulation

⇢ Overlap zones precisely sited in terrain

Tx1

STL1 delay = 24.3ms

SynchroStream Delay:
150ms - 24.3ms = 125.7ms

Tx2

Target latency set in the Encoder to 150ms.

GPS Receiver

Signal Processing and digital composite/MPX

MPX / AES

Sound Processor

APT MPXoIP Encoder

GPS Receiver

Ecreso FM Transmitter

MPX / AES

APT MPXoIP Decoder

IP STL MultiCast

STL2 delay = 51.1ms

SynchroStream Delay:
150ms - 51.1ms = 98.9ms

GPS Receiver

Ecreso FM Transmitter

MPX / AES

APT MPXoIP Decoder

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

IP CODEC rear panel with precision clock module option

AUDIO	
Asymmetric Audo	Independent audio modes for sent and receive, Tx and Rx clock domains and auto-detection, Reply-to-Sender, NAT traversal mode
Analog I/O	Electronically balanced, capacitive isolated XLR for Left/Right, Imp. Hi/Lo and 600 Ω, level adjustment in 0.1 dBu steps
Digital Audio I/O	AES-3, 24 Bit, transformer balanced, Imp. 110 Ω, XLR-Connectors

AUDIO FORMATS	
Multi Algorithm Suite	Eapt-X 16/24 bit, lin. PCM 16/24 bit, MPEG2/4 AAC LC/LD/ELD, HE-AACv1/2, MPEG1/2 L1/2, OPUS
MPX Formats (AES192)	optional, lin. MPX 16/24 bit APTmpX @ 300/400/600 & 900 kbps

STREAMING MODES	
Stream Types	Multiple stereo Audio, UDP and RTP forwarding, Reply-to-Sender, NAT traversal mode
SIP Modes	Peer-to-peer & SIP-Server mode, multiple SIP user accounts, sym. and asymm. SIP profiles
Unit Clock Modes	Asymmetric, master, slave, NTP-based & high precision GPS (optional)
Jitter Buffer	2 - 5000 ms with packet re-sequenzer
QoS	DiffServ (RFC 2474) per stream
Redundant Streaming	SureStream Option, multi-stream packet-by-packet redundnacy
Backup Feature	SD Card for audio file storage

MANAGEMENT
Front Panel Display with Key navigation
Web Browser GUI
APT NMS
Connect Kybio (SNMP-based Manager)
SNMPv2c
API
ScriptEasy

MONITORING & ALARMS
Adjustable Silence Detectors (Inputs & Outputs)
Event Logs
Alarm Relays
SNMP Traps / Notifications

PHYSICAL INTERFACES	
Audio on XLR	L / R analog In-Outputs digital (AES3) In-Output, ext. AES11 reference Input
Headphone	1/4" (6.3 mm) Jack Socket (front)
AUX Data	D9-way connector
GPIO	D15-way connectors
Network	2x RJ45
GPS Clock (otional)	2x BNC (10 MHz, 1 PPS)
AC Power	1 + 1 (optinal) IEC type
DC Power	1 + 1 (optinal) Power D3-way connector

NETWORK	
Dual IP Interfaces	10/100BaseT / Tx, Ethernet IEEE 802.3x, IP4, Auto MDI-X
Port Configuration	Flexible WAN and/or LAN (Management) configuration
VLAN Tagging (IEEE 802.1q)	
Virtual IP Interfaces (IP Aliasing)	
Dynamic DNS	multiple clients
Standard Protocols	DHCP, FTP, HTTPS, ICMP, IGMP v2/3, SMTP, SNMPv2c, NTP, SMTP
Security	TLS 1.1 and higher, Service Filter and Firewall

DATA	
Serial Data	RS 232 embedded up to 9600 Baud via UDP stream up to 115.200 Baud
GPIO	4 switch Inputs and 4 relays embedded (E-aptX) and via UDP stream

SYNCHROSTREAM OPTION	
GPS-based precision timing function for perfect IP stream-synchronization in FM-SFN networks.	
Time Base	GPS, 10 MHz & 1 PPS
Target Latency	Encoder setting up to 1 sec.
Extendet target Latency	GPS + NTP up to 5 sec.
Timing Stability	< 0.25 µs
Dealy 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
Main power supply	100-240 VAC / 50-60 Hz
Power consumption	< 20 VA
Env. Temperatures Operation Storage Humidity	0 °C - +50 °C -30 °C - +80 °C 95 % (non-condensing)

Order information

REF	DESCRIPTION
TF01013	APT IP Codec with AC PSU
TF01013-DC	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 linerar MPX and APTmpX

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

afaq ISO 9001 Qualité AFNOR CERTIFICATION