APT*mpX*

- **Highest-Fidelity**
- **Lowest-Bitrate**
- **Lowest-Delay**

Engineered by leading experts in Studio-Transmitter-Links

The uncompromising compression algorithm for highest fidelity MPX transmissions

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

The availability of the digital AES192 interface enabled the first end-to-end digital MPX signal chain, marking a significant milestone in simplifying FM broadcasting. By eliminating the number of equipment at each transmitter site, such as sound processors and stereo encoders, it also drives important cost savings.

APT IP codecs support the AES192 interface and allow transmission of linear MPX via the STL. However, until today, the benefits of this approach have been reserved for broadcasters operating a robust broadband IP infrastructure.

With APTmpX, broadcasters in any network infrastructure can benefit from cost-saving FM Multiplex transmission. Even with 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.

300 kbps	400 kbps	600 kbps	900 kbps

Highest Signal Fidelity
APTmpX preserves the high signal fidelity of the processed MPX signal even at 300 kbps and delivers the highest sound transparency. MPX signal characteristics (deviation, MPX power, phases) are delivered transparently by APTmpX to each transmitter site.

Lowest Delay
APTmpX performs on the same level as real-time audio algorithms with low and constant latency. Comparable to the latency of linear PCM, the algorithmic delay is always below 5 ms.
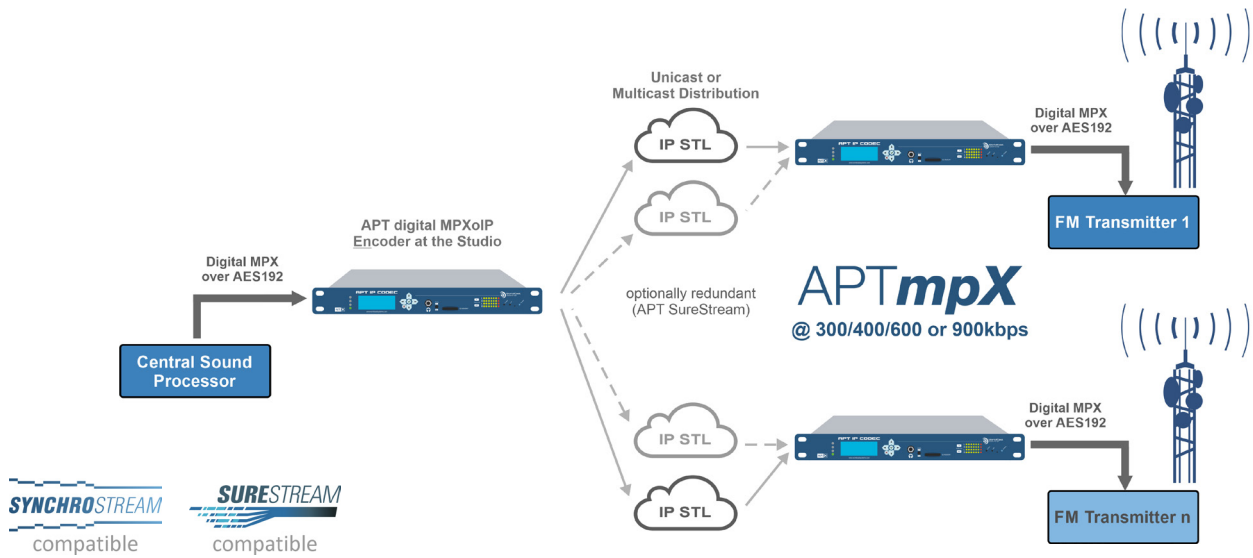
Resilience against Packet Loss
To minimize influences on the MPX signal, the loss of one packet shall not interfere with the decoding capability of the following packet(s). Therefore, small packet sizes and independent packetization reduce any disturbance in the transmission to the respective affected packet.

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APT*mpX* Transmission | Highest Signal Fidelity - Lowest Latency

Multiple broadcasts of the same program with uncolored station sound at all locations.

Diagram labels:
- Central Sound Processor
- Digital MPX over AES192
- APT digital MPXoIP Encoder at the Studio
- Unicast or Multicast Distribution
- IP STL
- optionally redundant (APT SureStream)
- APT*mpX* @ 300/400/600 or 900kbps
- Digital MPX over AES192
- FM Transmitter 1
- FM Transmitter n
- SYNCHROSTREAM compatible
- SURESTREAM compatible

APT*mpX* | Multiple Formats

APT*mpX* comes as a complete suite of multiplex formats and provides various compressed modes. All modes are characterized by providing highest signal quality and low latency.

The versions 300/400/600 kbps and 900 kbps differ by varying sampling rates, bit depths (16/24bit) and the width of the MPX spectrum band.

APT*mpX*
- 300 kbps
- 400 kbps
- 600 kbps

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

Mbps 0.5   1.0   2.0   3.0
Bitrates over IP   *up to 64kHz incl. RDS
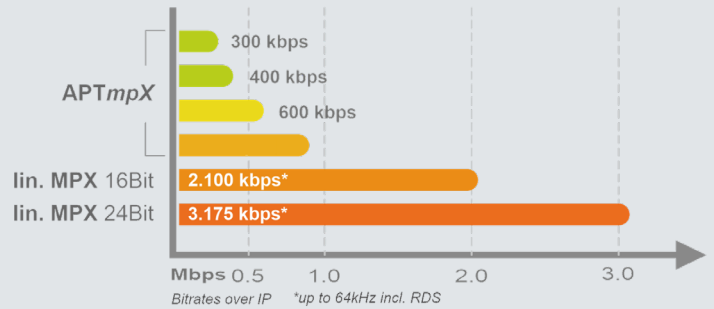
Associated **Features**

RDS Transmission

Each APT*mpX* variation can carry RDS data. Depending on the selected APT*mpX* mode, RDS data is either embedded as serial data (APT*mpX* 300/400/600) or can be included in the MPX input signal on the 57 kHz carrier (APT*mpX* 900).

Timing & Synchronization Capabilities

APT*mpX* does not in itself require synchronization of the encoder and decoder. However, it allows the precise synchronization for SFN interlinking of the transmitters or the content alignment of broadcasts in MFN arrangements.

What our expert says

"With APTmpX, we provide a unique, non-perceptual compression solution for FM MPX/Composite transmission. APTmpX not only enhances our portfolio for MPX solutions, but also marks a milestone in the transition to an MPX/composite environment. We are committed to high quality, low latency, and minimal complexity and this solution meets our brand's quality standards. In the end, the user benefits from significantly lower hardware and distribution costs while maintaining the station sound." - Hartmut Foerster APT Product Manager

APTmpX Characteristics	
APTmpX is available as a license option for APT IP Codec and AoIP Codec Card	
APTmpX 300	300 kbps, 16 Bit, 53 kHz
APTmpX 400	400 kbps, 16 Bit, 53 kHz
APTmpX 600	600 kbps, 24 Bit, 53 kHz
APTmpX 900	900 kbps, 24 Bit, 64 kHz
Techniques applicable	APT SureStream (redundant streaming*) APT SynchroStream (GPS/SFN synchronization*)

* License options for APT Codecs

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