PROFESSIONAL COMPOSITE MPX OVER IP

MPX-LINK

FIVE STREAM PROFILES

One Studio.
Every Transmitter.



The complete FM multiplex signal over IP, from a central studio to a network of transmitter sites.

THE SYSTEM IN BRIEF

Create centrally.
Distribute efficiently.

Five MPX-over-IP streaming profiles. With Pulse+192 and a dedicated router, one studio encoder provides the foundation for centralised MPX distribution.

01 / THE CONCEPT

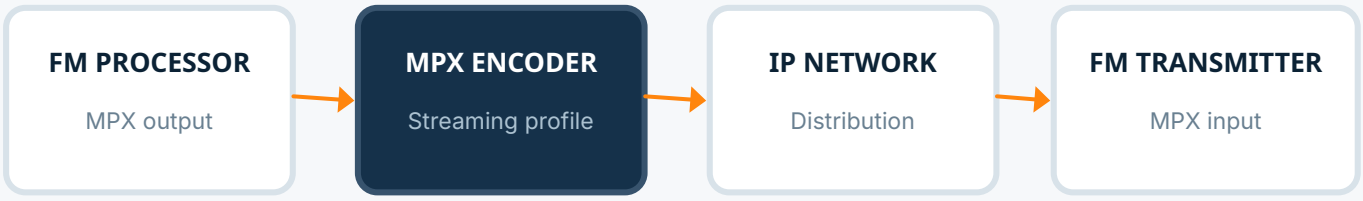
More than just audio.

MPX-LINK carries the composite FM multiplex signal rather than separate left/right audio channels. Stereo information and RDS therefore remain part of the MPX signal chain.

WHAT DOES AN MPX SIGNAL CONTAIN?

L+R	**Mono baseband**	0–15 kHz
19 kHz	**Stereo pilot**	Synchronisation
L–R	**Stereo information**	38 kHz subcarrier
57 kHz	**RDS data**	PI / PS / RadioText

THE BROADCAST SIGNAL CHAIN



WHY THIS MATTERS

Audio processing, stereo generation and RDS can remain centralised at the studio. At the transmitter site, the receiver supplies MPX to a suitable FM transmitter input.

02 / STREAMING PROFILES

Five ways to stream MPX.

MPX-LINK offers five streaming profiles, ranging from linear transmission to MPX coding with different bandwidth and forward-error-correction settings.

01 LINEAR MAX

192 kHz / 24-bit

Linear MPX transmission at 192 kHz / 24-bit, designed for direct signal representation on networks with ample bandwidth.

02 PULSE 320 HQ

RC24 / FEC 64+8

Pulse 320 with a lighter FEC setting, suited to IP links with relatively stable packet delivery.

03 PULSE 320 SAFE

RC24 / FEC 64+16

Pulse 320 with increased FEC protection against packet loss.

04 PULSE 320 ROBUST

RC24 / FEC 128+32

Pulse 320 using larger FEC blocks and a robust error-correction configuration.

05 PULSE+ 192

192 kbit/s / 480 B per 20 ms

The Pulse+192 codec transports MPX over IP at a 192 kbit/s payload rate. A dedicated distribution router is provided for this profile.

Choose the streaming profile that matches your network and MPX signal requirements.

03 / SELECTION & CONFIGURATION

Match the stream to the network.

The appropriate settings depend on available uplink bandwidth, network stability and the required error correction. The profile must match at both ends.

STREAMING PROFILE GUIDE

PROFILE	TECHNOLOGY	TRADE-OFF	APPLICATION
Linear Max	192 kHz / 24-bit	High bandwidth	Linear MPX
Pulse 320 HQ	RC24; FEC 64+8	Lower FEC	Stable link
Pulse 320 Safe	RC24; FEC 64+16	Higher FEC	Added loss protection
Pulse 320 Robust	RC24; FEC 128+32	Robust FEC	Loss-prone links
Pulse+ 192	192 kbit/s	Low codec bitrate	Bandwidth-efficient

IMPORTANT CONSIDERATIONS

Use the same profile at the studio and receiver

Check the selected codec, FEC settings, receive buffer and available bitrate.

Pulse+192: central encoding and distribution

The fan-out router forwards the Pulse+192 stream to configured IP destinations.

Available bandwidth, IP configuration and receiver buffering matter with every profile.

04 / PRACTICAL APPLICATIONS

What can you do with it?

MPX-LINK is designed for FM broadcasters that want to deliver their complete MPX signal over an IP network to one or more transmitter sites.

01

MULTIPLE FM FREQUENCIES

Deliver the same MPX programme to FM transmitters operating on different frequencies.

02

REGIONAL TRANSMITTER NETWORKS

Use a central MPX source as the starting point for several transmitter sites.

03

FILL-IN TRANSMITTERS / RELAYS

Feed an additional FM transmitter with the same composite signal from the studio.

04

STL / BACKUP STL

Use MPX over IP as a studio-to-transmitter link or as a separate transport path.

05

CENTRALISED EQUIPMENT

Keep processing, stereo generation and RDS at the studio where the signal chain allows.

06

TECHNICAL MONITORING

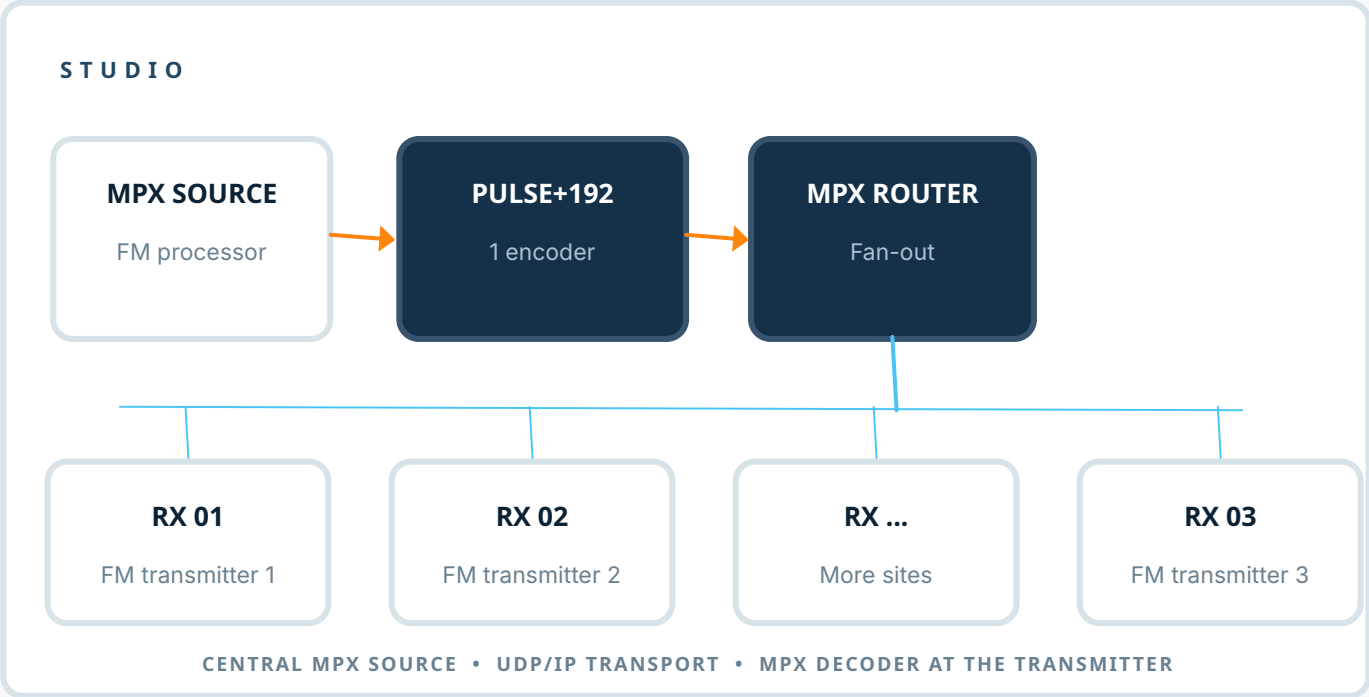
View reception status, signal information and RDS data through the available monitoring facilities.

One central MPX programme, with a suitable decoder at each receiving transmitter.

05 / SYSTEM ARCHITECTURE

From studio to multiple receivers.

With Pulse+192, encoding and network distribution are separate. The encoder generates the MPX stream, while a dedicated router forwards it to the configured IP destinations.



BENEFITS OF THIS ARCHITECTURE

One central MPX source

The complete FM composite signal is generated in the studio and streamed to the receiving site.

Flexible destinations

The router uses configured IP destinations, with no additional MPX encoder required for each route.

Separate media transport and management

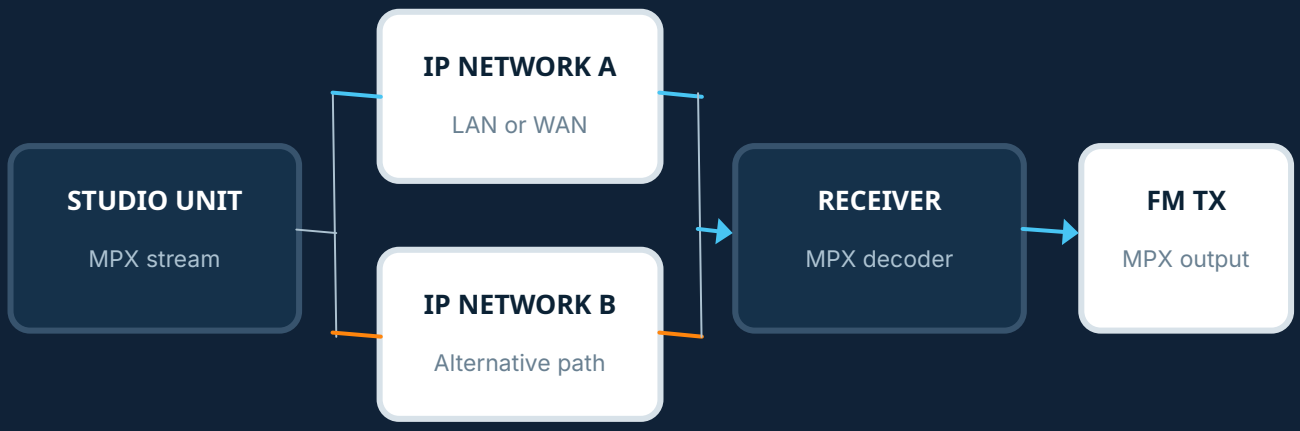
The media stream and technical reception monitoring serve separate purposes.

06 / IP TRANSPORT

MPX across IP networks.

MPX-LINK uses UDP/IP to carry the encoded MPX signal. Reliable delivery requires adequate bandwidth and correctly configured IP addresses and ports.

EXAMPLE: TWO POSSIBLE IP CONNECTIONS



The selected network path depends on the installation and IP configuration.

IP NETWORK REQUIREMENTS

Sufficient bandwidth

Choose an IP connection with enough capacity for the selected MPX profile.

UDP and port configuration

Configure the receiver IP address, UDP port and any firewall or NAT rules correctly.

Connection information

Use status and reception data to monitor the condition of the stream.

Required network capacity exceeds the codec bitrate because of UDP/IP overhead.

07 / MONITORING & CONTROL

Monitor the signal and the link.

Available reception and system information lets operators monitor the MPX signal, from stereo and RDS to connection status and technical diagnostics.

MPX / STEREO

MPX level and stereo pilot information help monitor the FM composite signal.

RDS DECODER

RDS lock and data such as PI, PS, PTY and RadioText provide visibility into the RDS content.

NETWORK QUALITY

Packet and connection information can assist in diagnosing IP reception problems.

RECEPTION STATUS

Information on the incoming stream and connection status.

SYSTEM STATUS

An overview of active services and technical status data for diagnostics.

WEB CONTROL & OLED DISPLAY

Web-based configuration and monitoring, complemented by a built-in OLED display for local status information.

The available information may vary with the selected streaming profile and system configuration.

08 / SETUP & INSTALLATION

What do you need?

The basic system consists of an MPX source at the studio, a suitable IP connection and an MPX receiver at the FM transmitter.

01 STUDIO

An FM processor or other MPX source, plus an encoder for the selected streaming profile.

02 IP CONNECTIONS

Reachable UDP destinations, sufficient bandwidth and correctly configured firewall/NAT rules.

03 TRANSMITTER SITE

A compatible MPX receiver with an MPX output to the FM transmitter and local status monitoring.

KEY TECHNICAL SPECIFICATIONS

Signal	Complete FM composite / MPX, including stereo pilot and RDS
Streaming profiles	Linear Max; Pulse 320 HQ/Safe/Robust; Pulse+ 192
Pulse+192	192 kbit/s codec payload; excluding UDP/IP overhead
Pulse+192 packets	480 bytes every 20 ms = 50 packets per second
IP transport	UDP/IP; dedicated router designed for Pulse+192
Distribution	Central encoder; IP destinations via network router
Network	Correct UDP ports, IP reachability and bandwidth
Hardware	Internal cooling and integrated OLED status display
DMPX / SFN	Provision for future DMPX / SFN integration

Required link capacity is higher than the codec payload rate due to IP overhead and the chosen network configuration.

09 / MPX-LINK AT A GLANCE

One complete MPX signal. Five streaming profiles.

MPX-LINK connects the studio MPX source over an IP network to an MPX receiver at the FM transmitter. Choose the profile best suited to the transmission environment.

SIGNAL & STREAMING PROFILES

- FM composite signal over IP
- Stereo pilot and RDS within MPX
- Linear Max: 192 kHz / 24-bit
- Pulse 320 HQ: FEC 64+8
- Pulse 320 Safe: FEC 64+16
- Pulse 320 Robust: FEC 128+32

CONNECTIVITY & SYSTEM

- Pulse+192: 192 kbit/s payload
- MPX transport over UDP/IP
- Encoder at the studio
- MPX decoder at the FM transmitter
- Status information and RDS monitoring
- Web interface for system management

MPX-LINK

One Studio. Every Transmitter.

Five stream profiles. Professional MPX over IP.

Built-in cooling · OLED status display · Prepared for future DMPX / SFN integration