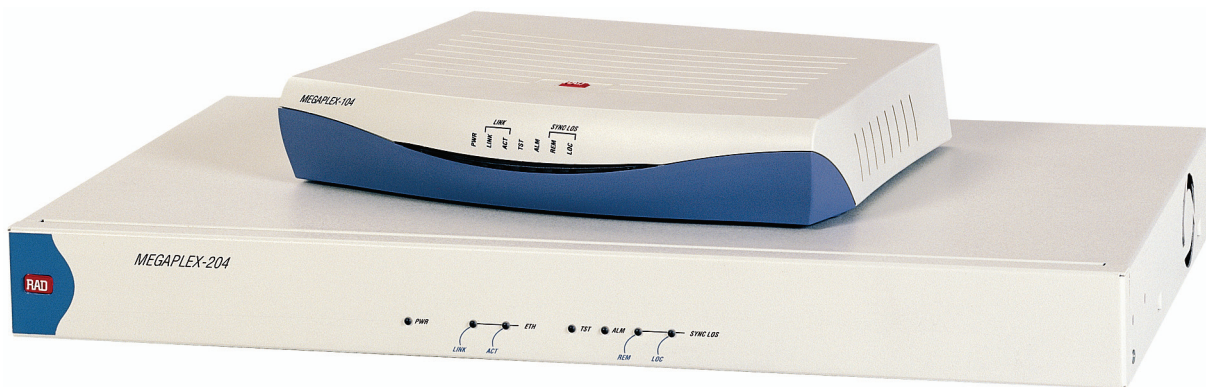


# Megaplex-104, Megaplex-204

## Compact Voice Channel Banks



Cost effective compact channel banks provide analog FXS interfaces for PCM transmission of voice over E1 links

- 8/16 FXS voice channels over a single E1 uplink
- PCM encoding, using A-Law or  $\mu$ -Law companding
- Internal ringer for providing DC feed and ringing voltages to telephones
- Adjustable gain levels per channel, for both receive and transmit directions

Megaplex-104 and Megaplex-204 are cost-effective voice channel banks designed specifically for small point-of-presence (POP) applications, such as wireless connectivity (see *Figure 1*). Both units have a single E1 uplink and provide up to 8 or 16 FXS voice channels, respectively. The channels support various analog voice features that are required by voice service providers.

Encoding and decoding are in full compliance with ITU-T G.713 requirements.

Voice channel companding is selectable for A-law or  $\mu$ -law.

Each 64 kbps PCM voice channel is allocated a timeslot on the Fractional E1 main link in a DS0 compatible format, permitting voice channel switching by digital cross-connect systems (DACS).



**data communications**

Innovative Access Solutions

# Megaplex-104, Megaplex-204

## Compact Voice Channel Banks

In multipoint applications over E1 networks, compact Megaplex-104/204 units at various branch locations communicate with a higher density Megaplex-2100 Modular Integrated Access Multiplexer at the main office, extending PBX services. By cross-connecting timeslots via a DACS, any voice channel at one branch can be connected to any channel at another branch, providing any-to-any connectivity.

In addition to basic loop-start signaling for POTS, each 2-wire FXS port supports reverse polarity and generates 12/16 kHz metering pulse, thus meeting the specifications for public payphones. An internal ringer supplies the required feed and ringing voltages for the connected telephones, without the need for an external DC power source.

FXS interfaces are typically used for direct connection to 2-wire telephones in the following loop-start applications:

- Off-Premises Extension (OPX), where a telephone connected to the local PBX is connected to an off-premises telephone, by dialing only the extension number assigned to the off-premises telephone;
- Private Line, Automatic Ringdown (PLAR) application (also referred to as Hot Line), where two telephones are connected directly via the E1 link. When the telephone on one side goes off-hook, the other telephone rings;
- Direct connection to 2-wire telephones in PSTN applications.

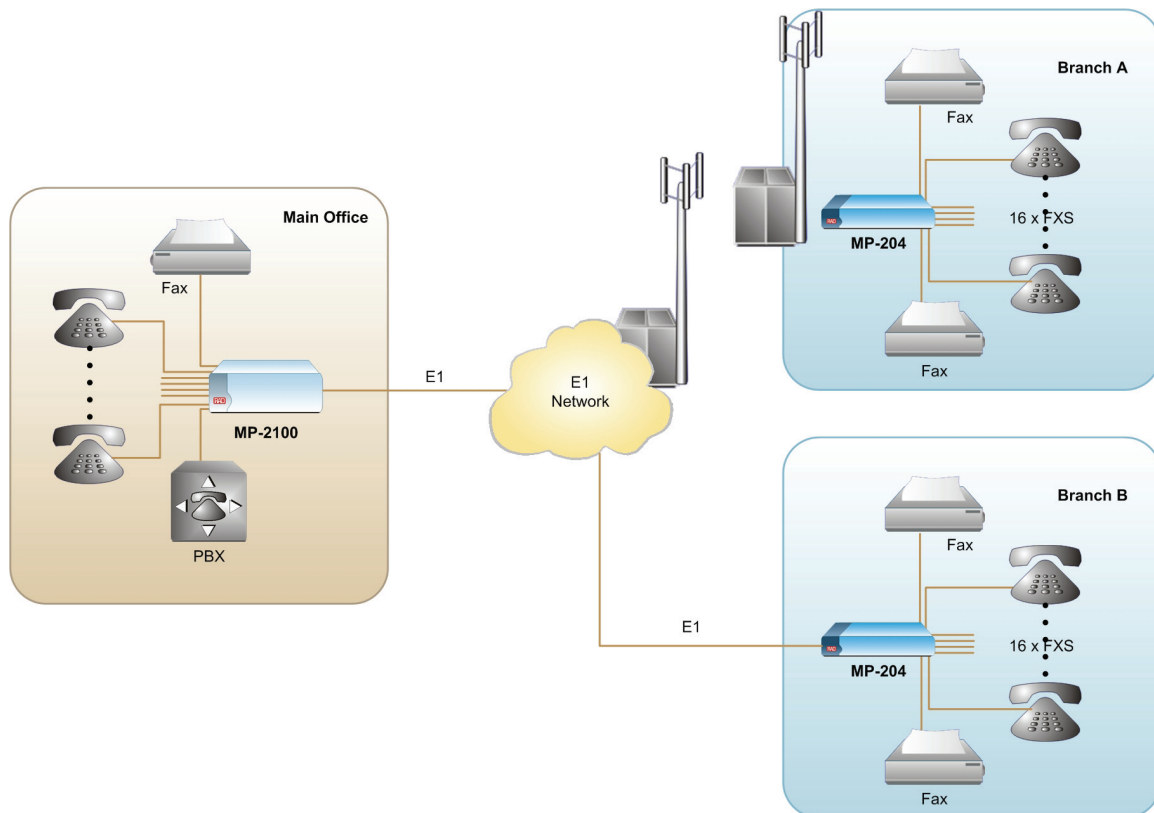


Figure 1. Voice Carrier Environment

Each FXS port supports caller ID, by transparently transferring the FSK modem tones between the incoming rings. With this feature, a customer subscribed to a Caller ID service can see the Caller ID of an incoming or waiting call with any Caller ID display equipment.

Inband fax support for Group III fax machines complies with T.4 and T.30.

The compact size of the units is convenient for small office or residential locations. Megaplex-104 is an 8.5-inch wide, 1U high unit with a plastic chassis. It uses an external power supply (included with unit). Megaplex-204 is a 17-inch wide, 1U high unit with a metal chassis. It features an internal power supply. Both are suitable for desktop operation, wall-mounting or mounting in standard 19" racks.

Megaplex-104 and Megaplex-204 support either loopback timing (LBT mode) or timing from the internal clock (INT mode).

Gain control is software selectable for both the receive and transmit directions, enabling easy installation in all environments.

Diagnostic features include loopbacks on the FXS channels towards the remote user equipment and loopbacks on the E1 link to both the local and remote sides. Test tone injection of 1 kHz, 0 dBm0 towards the remote or local equipment is also available. Monitoring of the E1 link receive and transmit signaling, as well as port statistics are supported.

### CONFIGURATION AND MANAGEMENT

When initially turned on, Megaplex-104/204 operates with a complete default startup configuration. Timeslots are allocated automatically for all connected channels and for channel signaling. This saves time and enables an almost plug & play capability for basic applications.

All operating parameters of the Megaplex-104/204 units are configured using a simple, menu-based software. For upgrades or backup, software upload and download can be performed via TFTP.

Megaplex-104/204 can be configured and monitored via a local ASCII terminal, Telnet, or via an SNMP management system. A dedicated RJ-45 serial port is provided for connecting a local terminal. This port can be directly connected to terminals using the 2m (6 ft) long cable CBL-RJ45/D9/F/6FT, supplied with the device.

Management can also be performed via a user-friendly graphic interface using a Web browser (ConfiguRAD).

Remote management can be transmitted inband (E1 uplink only) or out-of-band via the Ethernet port (TS 31 is automatically allocated for inband management by the startup configuration). All operating parameters are configurable via the management system for both the local and remote units.

# Megaplex-104, Megaplex-204

## Compact Voice Channel Banks

### Specifications

#### VOICE CHANNELS

##### Number of Channels

MP-104: 8 channels

MP-204: 16 channels

##### Bandwidth Requirement

64 kbps (one timeslot) per enabled channel

##### Voice Digitizing Technique

Modulation: PCM per ITU-T G.711 and AT&T PUB-43801

Companding:  $\mu$ -law or A-law

##### Analog Interface

Line type: 2-wire

ITU-T standards: G.713

##### Analog Parameters

Nominal level: 0 dBm

Nominal impedance: 600 $\Omega$

Return loss (ERL) at 300 to 3400 Hz:  
better than 20 dB

Frequency response (Ref:1020 Hz):

- $\pm 0.5$  dB at 300 to 3000 Hz
- $\pm 1.1$  dB at 250 to 3400 Hz

Level adjustment (soft-selectable):

- TX: +5 dBm to -10 dBm
- RX: +5 dBm to -10 dBm
- Steps: 0.5 dB ( $\pm 0.1$  dB), nominal

Signal to total distortion (G.713 Method 2):

- -30 to 0 dBm0: better than 33dB
- -45 to +3 dBm0: better than 22dB

Idle channel noise: better than -70 dBm0 (+20 dBnc)

Transformer isolation: 1500 VRMS

##### FXS Interface

Signaling method:

EIA RS-464 loop-start

##### On-Hook/Off-Hook threshold:

3 to 36 VDC between Tip

and Ring at Off-Hook state

Higher than 38 VDC between Tip

and Ring at On-Hook state

##### Ringer:

Voltage: 50 VRMS ( $\pm 10\%$ ), overload protected

Frequency: 20, 25, or 50 Hz ( $\pm 10\%$ ), soft-selectable

Cadence: 1 second ON, 3 seconds OFF (default); up to 4 different cadencies can be set by the user

##### Metering pulse generation:

Output frequency:

12 or 16 kHz ( $\pm 2$  Hz), soft-selectable

Output level: 1.7 VRMS

##### End-to-End Signaling

Channel Associated Signaling

per ITU-T G.704 para. 3.3.3.2;

500 samples per second

##### Connectors (per channel)

6-pin RJ-12

#### E1 MAIN LINK

##### Compliance

ITU-T Rec. G.703, G.706, G.732, G.823

##### Framing

G.732N

G.732N with CRC-4

G.732S

G.732S with CRC-4

##### Data Rate

2.048 Mbps (nominal)

##### Line Code

HDB3

##### Line Impedance (jumper-selectable)

Balanced: 120 $\Omega$

Unbalanced: 75 $\Omega$

##### Signal Levels

Receive level:

- 0 to -36 dB with LTU
- 0 to -10 dB without LTU

Transmit level:  $\pm 3$ V ( $\pm 10\%$ )

##### Jitter Performance

Per ITU-T G.823

##### Connector

8-pin RJ-45

*Note: An adapter cable can be ordered for converting the main link RJ-45 connector into a pair of BNC connectors for unbalanced coax interface.*

#### ETHERNET MANAGEMENT PORT

##### Interface

10/100BaseT

##### Layer-2 Protocol

MAC

##### Connector

8-pin RJ-45

**SERIAL PORT FOR TERMINAL****Interface**

V.24/RS-232, asynchronous, DTE

**Data Rate**

9.6, 19.2, 38.4, 57.6 or 115.2 kbps

**Connector**

8-pin RJ-45

**GENERAL****Timing Modes**

LBT mode: MP-104/204 uses the clock derived from the E1 link

INT mode: MP-104/204 locks the timing to its internal oscillator

**Timing Accuracy**

Internal accuracy:  $\pm 30$  ppm

Loopback timing:  $\pm 130$  ppm

Station timing:  $\pm 130$  ppm

**Management**

ASCII terminal directly connected to Serial port

Remote terminal via Telnet

RADview SNMP management system

Web-based graphic terminal interface

**Power****MP-104**

Requires external AC power supply (supplied with unit):

100 to 240 VAC, 26 VA

**MP-204**

Includes internal AC or DC power supply:

100 to 240 VAC, 32 VA

-48 VDC, 32W

**Diagnostics**

Per FXS channels:

- Remote analog loopback
- 1 kHz tone injection towards remote and local sides

E1 link:

- Local digital loopback
- Remote digital loopback

**Monitoring (on E1 Link)**

Receive signaling

Transmit signaling

Port statistics

**Indicators**

General:

- Power ON (green)
- Alarm in unit (red)
- Test on unit (yellow)

Ethernet port:

- Packet activity (yellow)
- Connection OK (green)

E1 main link:

- Local sync loss (red)
- Remote sync loss (red)

Per FXS channel:

- Local Off Hook (green)
- Remote Call (green)

**Physical****MP-104**

Height: 4.3 cm (1.7 in) (1U)

Width: 21.7 cm (8.5 in)

Depth: 17.0 cm (6.7 in)

Weight: 0.5 kg (1.1 lb)

External PS: 0.4 kg (0.9 lb)

**MP-204**

Height: 4.3 cm (1.7 in) (1U)

Width: 43.5 cm (17.1 in)

Depth: 24.3 cm (9.6 in)

Weight: 3.2 kg (7.0 lb)

**Environment**

Operating temperature:

0 to 50°C/32 to 122°F

Storage temperature:

-20 to 70°C/-4 to 158°F

Humidity: Up to 90%, non-condensing

## Megaplex Chassis

	MP-104	MP-204	MP-2104	MP-2100	MP-4100
<b>Functionality</b>	Voice channel bank	Voice channel bank	Modular multiservice access multiplexer	Modular multiservice access multiplexer	Modular digital access cross-connect and ADM
<b>Dimensions</b>	4.3*23.7*17 cm	4.3*43.5*24.3 cm	9*44*33 cm	18*44*33 cm	18*44*33 cm
<b>Modularity</b>	N	N	Y	Y	Y
<b>I/O slots</b>	N/A	N/A	5	12	10
<b>Redundancy</b>	N	N	Y	Y	Y
<b>Services</b>	Voice	Voice	LS, HS, Voice, ETH, TDMoIP	LS, HS, Voice, ETH, TDMoIP	LS, HS, Voice, E1/T1, xDSL, STM-1/OC-3
<b>Capacity</b>	512K	1M	8M	8M	160M

# Megaplex-104, Megaplex-204

## Compact Voice Channel Banks

### Ordering

#### MP-104/AC/E1/8/FXS

E1 8-Port Compact Voice Channel Bank

#### MP-204/AC/E1/16/FXS

E1 16-Port Compact Voice Channel Bank  
with AC power supply

#### MP-204/DC/E1/16/FXS

E1 16-Port Compact Voice Channel Bank  
with DC power supply

#### SUPPLIED ACCESSORIES

AC power cord for MP-204

DC adapter for MP-204 (when DC option is  
ordered)

#### P/S-AC/5/3.3/-48

External power supply for MP-104

#### CBL-RJ45/D9/F/6FT

Control port cable with male RJ-45 and  
female DB-9 connectors

#### OPTIONAL ACCESSORIES

#### CBL-RJ45/2BNC/E1

Adapter cable for converting the E1 main  
link RJ-45 connector into a pair of BNC  
connectors for unbalanced coax interface

#### RM-33

Hardware for mounting one MP-104 unit  
with external power supply in a 19-inch  
rack

#### RM-34

Hardware for mounting one MP-204 unit  
in a 19-inch rack

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