MEGAPLEX-2200 Module

HS-U-12

12-Channel ISDN "U" Interface Data Module

FEATURES

- Supports 12 sync/async data channels
- Programmable channel data rates from 1.2 to 128 kbps (sync) or 115.2 kbps (async)
- Each channel has an integrated LT providing 2-wire, 2B1Q, "U" interface with range up to 5.5 km (3.4 miles)
- Each channel can operate as either LT or NT ("I" mode)
- Operates as ISDN BRI repeater over ISDN facilities ("I" mode)
- Transparent ISDN (2B+D) extension ("I" mode)
- Operates opposite RAD's ASM-31 and ASMi-31 modems with automatic configuration download to ASMi-31 ("1" mode)
- Extended loopback and diagnostic capabilities
- Supports phantom power feeding to the remote end

DESCRIPTION

- The HS-U-12 module supports 12 data channels, each operating at rates up to 128 kbps. Each channel incorporates an integrated "U" interface Line Termination (LT), enabling data transmission to a remote Network Termination (NT) over 2-wire unconditioned line, at distances up to 5.5 km (3.4 miles).
- Each HS-U-12 channel can be independently configured to operate in either of two modes:
  - "I" mode is for extension of ISDN lines over non-ISDN infrastructure. Each channel can be independently configured to operate as either NT or LT;
  - "1" mode, for serving as an LT, utilizes built-in modems to work opposite ASMi-31 modems or other units with "U" interface.
- HS-U-12 channels can be independently configured to support data rates of:
  - Sync: 1.2, 2.4, 4.8, 9.6, 16, 19.2, 32, 38.4, 48, 56, 64 and 128 kbps;
  - Async: 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6 and 115.2 kbps.

  The multiplexing and rate adaptation technique is according to ITU-T I.460.
- The integrated LTs use 2B1Q line coding and advanced adaptive echo cancellation techniques, to transmit full-duplex data over a 2-wire twisted-pair. The 2B1Q line coding provides the specified operating range over lines with a maximum attenuation of 42 dB at 40 kHz, and 1300Ω resistance.
- When operating in LT mode, the remote NT can be provided by RAD's ASM-31 and ASMi-31 short range modems. The HS-U-12 channel supplies the clock to the remote NT, which should operate in slave (loopback timing) mode.
- When operating in NT mode ("I" mode operation only), the HS-U-12 channel timing is taken from the remote LT equipment. This channel can become the external clock source for the Megaplex-2200.
- "I" mode channel configuration enables the Megaplex-2200 to transfer ISDN Basic Rate (2B+D) lines transparently over a network.
- When configured for "1" mode, the channel can serve as an LT for leased lines opposite the ASM-31, ASMi-31, or third party modems. Since this mode is intended for leased lines, only the B channels of each port are supported (D channels are ignored).
- In "1" mode, the HS-U-12 channels also provide configuration download capability compatible with the ASMi-31 modem. This enables configuration changes made to the local HS-U-12 channel (such as data rate), to be automatically updated on the ASMi-31 that is connected to that channel.
- HS-U-12 diagnostics include both local and remote loopbacks.
- HS-U-12's phantom feeding function enables it to power the remote equipment to which it is connected. HS-U-12 can provide various phantom feeding voltages, ranging up to 120 VDC. The DC power source for the HS-U-12 can be an external Ringer-2000 or Ringer-2200 power supply unit. See Ringer data sheets for more information.

  Note: for -48 VDC phantom feeding only, a -48 VDC powered MP-2200 chassis does not require a Ringer.

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SPECIFICATIONS

"U" INTERFACE

- **Number of Data Channels**
  12
- **Signal Format**
  Full duplex, 2B1Q per ANSI T1.601, ETSI DTR/TM3002
- **Framing**
  2B+D
- **Line Type**
  Unloaded twisted pair cable
- **Impedance**
  135Ω
- **Loop Loss**
  42 dB max @ 40 kHz
- **Range**
  5.5 km (3.4 miles) over 26 AWG (0.4 mm)
- **Data Rates (per channel)**
  Sync: 1.2, 2.4, 4.8, 9.6, 16, 19.2, 32, 38.4, 48, 56, 64 and 128 kbps
  Async: 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6 and 115.2 kbps
- **Connectors**
  6-pin RJ-12 (one per channel)

TRUNK INTERFACE

- **Bit Mapping**
  According to data rate

1.2 to 16 kbps:	2 bits
19.2 to 32 kbps:	4 bits
38.4 to 64 kbps:	8 bits
115.2 to 128 kbps:	16 bits (over 2 TSs)

- **B Channel Timeslot Allocation**
  4 x 1.2 kbps to 16 kbps in one TS
  2 x 19.2 to 32 kbps in one TS
  1 x 38.4 to 64 kbps in one TS
  1 x 115.2 to 128 kbps in two TSs
- **D Channel Timeslot Allocation**
  4 x D channels (16 kbps) in one TS, or each in a different TS

GENERAL

- **Timing**
  NT mode:
  HS-U-12 is linked to the incoming clock from the remote LT (e.g. ISDN switch)
  LT mode:
  Transmit timing of the HS-U-12 interface is locked to the system nodal timing clock and passed to the remote NT unit (e.g. ASMi-31). Receive timing is recovered from the remote NT unit
- **Diagnostics (per channel)**
  Local loopback
  Remote loopback
- **Indicators (per channel)**
  LOS (red) – loss of sync
  TEST (yellow) – in test mode
- **Configuration**
  Programmable via Megaplex-2200 management system

ORDERING

MP-2200$-HS-U-12
12-channel ISDN "U" interface data module for MP-2200

$ Specify chassis type:
BM for MP-2200B chassis
FM for MP-2200F chassis

APPLICATIONS

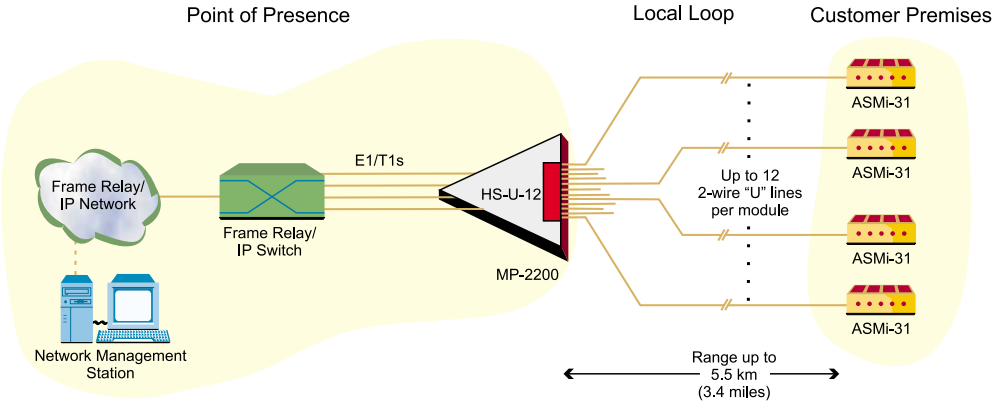

Figure 1. Feeder mux with built-in 2-wire modems, for connection to Frame Relay/IP switch over E1/T1, including management capabilities for customer premises ASMi-31 modems ("1" mode)

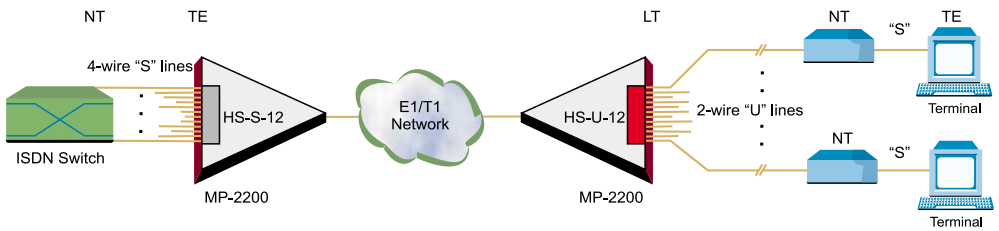

Figure 2. ISDN extension over non-ISDN infrastructure ("I" mode)

RAD data communications

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