

# Megaplex-4, Megaplex-2100/2104 HS-RN

## 4-Channel Low-Speed Data Module



- Low-speed data multiplexing employing V.110 or HDLC rate adaptation
- Programmable data rates from 0.6 to 64 kbps (sync) or 38.4 kbps (async)
- Connection of individual channels to different links (using different timeslots)
- Transparent end-to-end control signal transfer
- IEEE-1613 compliant option

The Megaplex HS-RN module features four independent V.24/RS-232 full-duplex sync/async low-speed data channels. Each of the four channels can operate at programmable data rates of 0.6 to 64 kbps for synchronous interfaces, and 0.6 to 38.4 kbps for asynchronous interfaces. Multiplexing and rate adaptation techniques are employed.

**Note:** Lower async data rates can be supported using an oversampling technique over sync transport mode. For details, contact your local RAD Partner.

The module is offered in two versions:

- **HS-RN/V.110:** optimized for both bandwidth and latency, and interoperates with other V.110 devices
- **HS-RN/HDLC:** utilizes a proprietary HDLC-protocol.

All available data rates are allocated 16, 32 or 64 kbps per channel on the E1/T1 network. When the data rates of all four channels are 9.6 kbps or less, they can be placed on a single timeslot (64 kbps). For higher data rates, the four channels occupy up to four full timeslots. Timeslots are allocated by the user for each channel.

HS-RN allows each channel to be independently connected to a different main link. This requires placing each channel on a different timeslot.

The module rate adaptation and encapsulation method can be selected in accordance with the specific application requirements as follows:

- **Bandwidth Optimized** – enables optimal uplink bandwidth utilization (by using split timeslot assignment for all the rates up to, and including, 19.2 kbps) in applications less sensitive to latency.
- **Latency Optimized** – enables minimum end-to-end data latency. In this mode, split timeslot assignment is not used, and the uplink bandwidth needed by each channel is a full timeslot (64 kbps per channel).

- **3-Bit Transitional** – provides transitional encoding to transmit asynchronous data at rates up to 19.2 kbps over 64 kbps, which improves the latency and enables interoperability with 3<sup>rd</sup> party multiplexers supporting 3-bit transitional encapsulation.

**Note:** When used together, both HS-RN modules must be of the same type (V.110 or HDLC). In addition, both modules must operate in the same encapsulation mode.

# HS-RN

## 4-Channel Low-Speed Data Module

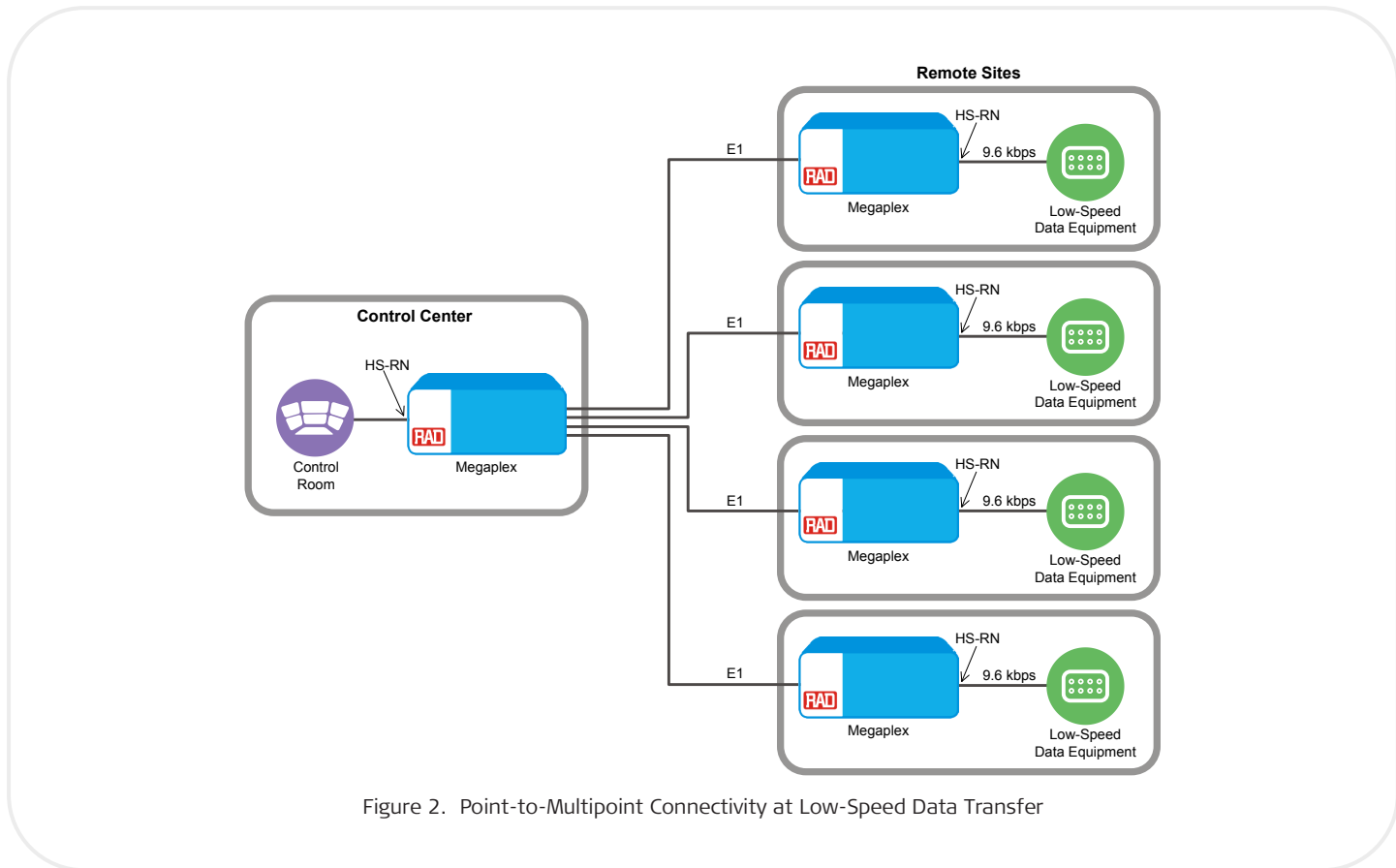
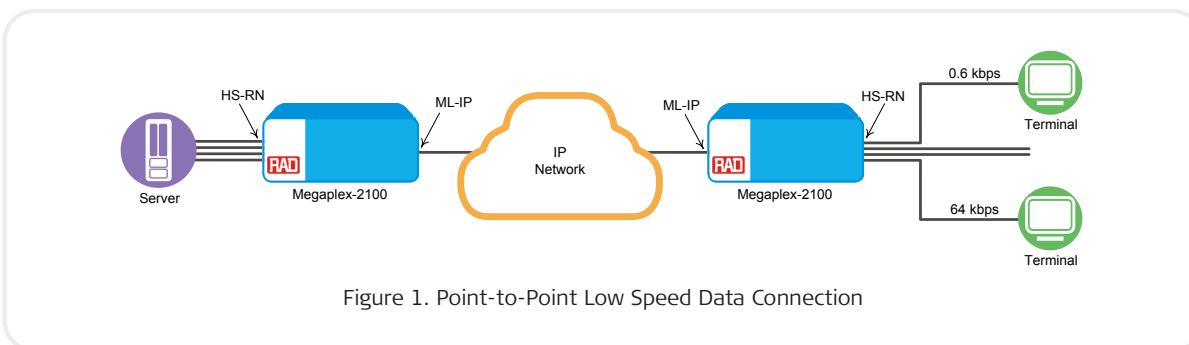
Control signals are transparently transferred end-to-end. For data rates of up to 38.4 kbps, two control signals are passed from one side to the other (RTS as DCD and DTR as DSR). At 56 or 64 kbps rates, no end-to-end signal transfer is used.

Sync channels can operate in either DCE or EXT-DCE (DTE1) mode. EXT-DCE mode is suitable for tail-end modem applications. The timing mode for each channel can be selected by the user.

Diagnostics include hardware self-tests and both local and remote loopbacks.

Each pair of channels (1-2; 3-4) terminates on a separate 25-pin D-type connector. Y-cables are available to split each channel connector into two separate 25-pin connectors for direct connection to DTE equipment (see *Ordering*).

All module operating parameters are soft-selectable through the Megaplex management.



## Specifications

### CHANNEL INTERFACE

#### Number of Channels

4

#### Interface

ITU-T V.24/V.28, EIA RS-232

#### Signal Format

Asynchronous or synchronous, full duplex

#### Data Rates

0.6, 1.2, 2.4, 4.8, 7.2, 9.6, 14.4, 19.2, 28.8, 38.4, 56, 64 kbps

#### Notes:

- 56 and 64 kbps rates are supported with sync signal format only.
- 7.2, 14.4 and 28.8 kbps rates are supported by the HDLC model only.

#### Async Character Format

Length: 5,6,7,8

Parity bit: yes, no

Stop bits: 1,2

#### Connectors

2 x 25-pin D-type, female  
(one for each pair of channels)

#### Control Signals

(for rates of up to 38.4 kbps)

- RTS is passed as DCD to the remote side
- DTR is passed as DSR to the remote side
- CTS follows RTS, or constantly ON (space)

### TRUNK INTERFACE

#### Bit Mapping (Switching)

2 bits for: 0.6 to 9.6 kbps

4 bits for: 14.4 to 19.2 kbps

8 bits for: 28.8 to 64 kbps

#### Timeslots Used

4 x 0.6 to 9.6 kbps on one TS

4 x 14.4 to 19.2 kbps on two TS

4 x 28.8 to 64 kbps on four TS

#### Buses

4 (each channel can be allocated to a timeslot on a different bus)

### GENERAL

#### Clock Modes

**DCE:** HS-RN channel provides both RX and TX clocks to the user DTE.

**EXT-DCE (DTE1):** HS-RN channel provides RX clock to the user while receiving TX clock from the user. Used for tail-end applications.

#### Indicators (per channel)

**LOS (red):** On when the main link loses synchronization or the corresponding channel loses protocol synchronization to the remote end (not used for 64 and 56 kbps)

**TST (yellow):** On when a test is activated

#### Diagnostics

Per channel:

- Local digital loopback
  - Remote digital loopback
- Auto self-test upon power-up

#### Configuration

Programmable via the Megaplex management system

#### Environment

Operating temperature: -10°C to +55°C  
(14°F to 131°F)

Storage temperature: -20°C to +70°C  
(-4°F to +160°F)

Humidity: up to 95%, non-condensing

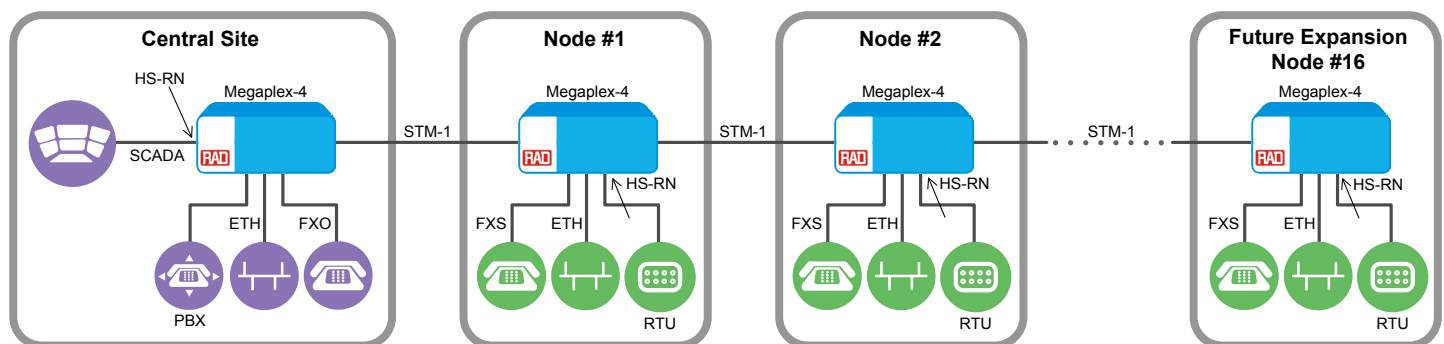


Figure 1. Bidirectional Broadcast over SDH Daisy Chain Using Megaplex-4

## HS-RN

## 4-Channel Low-Speed Data Module

## Ordering

## RECOMMENDED CONFIGURATIONS

**MP-2100M-HS-RN/V110**

4-Channel Low-Speed Data Module with  
V.110 rate adaptation

## SPECIAL CONFIGURATIONS

Please contact your local RAD partner for  
additional configuration options.

## OPTIONAL ACCESSORIES

**CBL-HSR/\***

Y-cables for splitting each of the HS-RN  
module's 25-pin channel connectors  
into two separate 25-pin connectors

*Note: A separate cable is required for each of the  
two HS-RN channel connectors.*

## Legend

- \* Connector
- F** Female
- M** Male

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