ASMi-50

2/4-wire MSDSL Modem with Remote Management

RAD

FEATURES

- 2/4-wire MSDSL modem with remote management, extending data transmission to 8.2 km (5.0 miles)

- Supports multiple data rates between 64 kbps and 1152 kbps

- Utilizes MSDSL 2B1Q line coding for extended range and improved quality

- Provides an out-of-band operation channel for end-to-end system management and supervision

- Supports a variety of digital interfaces:
  - V.24 (64 kbps, 128 kbps)
  - RS-530
  - X.21
  - V.35
  - V.35A
  - V.36/RS-449
  - G.703 Codirectional (64 kbps)
  - Ethernet bridge (IR-ETH)
  - Ethernet bridge with VLAN support (IR-ETH/Q)
  - IP router (IR-IP)
- Automatic rate detection in external clock mode for tail-end applications

- Available as single and dual modem cards for the LRS-24 modem rack with SNMP management or as a single modem card for the ASM-MN-214 modem rack

- Available as a special version for connecting to SDH systems with unstable clock

- Extensive diagnostics, including V.54 loopbacks, BER testing and line quality monitoring

- Setup, control and monitoring via the front panel

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DESCRIPTION

- ASMi-50, Multirate Single Pair Digital Subscriber Line (MSDSL) modem, operates in full duplex over 2-wire or 4-wire lines.

- The modem supports multiple data rates, user-selectable to n x 64 kbps (n=1, 2, ..., 10, 12, 14, 15, 16, 18).

- ASMi-50 employs MSDSL 2B1Q technology to extend the transmission range and provide efficient transmission, even over poor quality lines (see *Table 1* and *Table 2*).

  Operation over 4-wire link results in up to 20% improvement in the maximum range of the modem.

- The modem uses an out-of-band channel for controlling and monitoring the remote unit. The management channel operates without interfering with data transmission.

- ASMi-50 supports a wide range of digital interfaces: V.24 (64 kbps, 128 kbps), RS-530, V.35, V.35A, X.21, V.36/RS-449, G.703 Codirectional (64 kbps). In addition, the modem supports built-in Ethernet bridge (IR-ETH), Ethernet bridge with VLAN support (IR-ETH/Q) and IP router (IR-IP), which allow LAN-to-LAN connectivity using MSDSL technology.

- ASMi-50 is managed via front panel buttons and LCD screen. The ASMi-50C and ASMi-50CD modem cards installed in the LRS-24 modem rack can also be managed via RADview SNMP network management application. The embedded menu-driven management software allows to control the following parameters:
  - Data rate selection
  - Clock source selection
  - Loopback and BERT activation.

- When set to external mode, ASMi-50 automatically detects the clock rate coming from the digital interface and sets the remote unit to the same rate. When the digital interface rate is changed, both local and remote units follow the new rate and synchronize accordingly.

- A special version of ASMi-50 with V.35 and RS-530 interfaces that designed to work with a "high wander" external clock systems, supporting only 5 rates (256, 384, 512, 768 and 1152 kbps). This version can handle clock fluctuations, phase hits, and jitters introduced in large systems, such as hops in SDH networks.

- The ASMi-50 system configuration is stored in Flash memory, minimizing system downtime when power is down or when a remote unit is replaced.

- The out-of-band management channel provides real time alerts for:
  - Data transmission or management channel failure
  - Remote modem failure
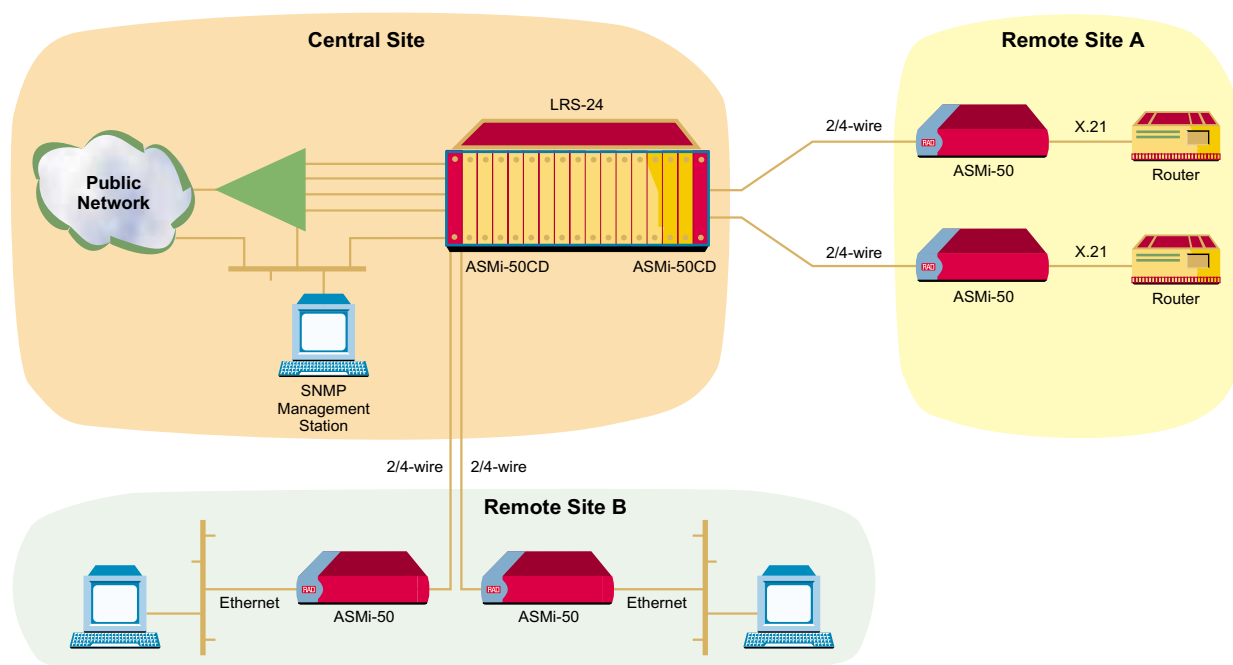 - Loopback activation.

APPLICATIONS

Figure 1. Central Site Application with SNMP Management

2/4-wire MSDSL Modem with Remote Management

- ASMi-50 is available as "master" or "slave" standalone units. The master version includes front panel LCD and control buttons. The slave unit has a blank front panel with a special 20-pin connector for a portable control unit (PCU) connection.

- ASMi-50 is also available as a card for the central office deployment:
  - ASMi-50/R – single modem card for RAD's ASM-MN-214, 19-inch modem rack
  - ASMi-50C – single modem card for RAD's LRS-24, modem rack with SNMP management
  - ASMi-50CD – dual modem card for LRS-24, ensuring higher modem density and reducing cost per port.

- ASMi-50 has comprehensive diagnostics capabilities that include the following test options:
  - V.54 local analog and remote digital loopbacks
  - BER testing as per V.52

SPECIFICATIONS

LINE INTERFACE

- **Line Type**
  2-wire or 4-wire, 19–26 AWG

- **Line Coding**
  2B1Q

- **Range**
  See *Table 1* and *Table 2*

- **Level**
  0, 4, 10 dBm, user-selectable

- **Impedance**
  135Ω

- **Connector**
  RJ-45 (RJ-48C) and terminal block

DTE INTERFACE

- **Type**
  - V.24: via 25-pin D-type, female
  - RS-530: via 25-pin D-type, female
  - V.35: via 34-pin, female
  - V.35A: via 25-pin, D-type female
  - X.21: via 15-pin, D-type, female
  - V.36/RS-449: via adapter cable converting between the RS-530 connector and a 37-pin, D-type, female connector
  - G.703 Codirectional: via RJ-45 or terminal block
  - IR-ETH (Ethernet bridge): via RJ-45
  - IR-ETH/Q (Ethernet bridge with VLAN support): via RJ-45
  - IR-IP (IP router): via RJ-45

 *Note: ASMi-50/R DTE interface terminates in 25-pin D-type female connector*

- **Data Rate**
  64, 128, 192, 256, 320, 384, 448, 512, 576, 640, 768, 896, 960, 1024, 1152 kbps

Table 1. Typical Ranges over 2-wire Line

Data Rate (kbps)	24 AWG km	24 AWG miles	26 AWG km	26 AWG miles
64–320	6.2	3.8	4.5	2.7
384–576	5.7	3.5	4.2	2.6
640, 768	5.5	3.4	4.0	2.4
896	4.6	2.8	3.8	2.3
960	4.2	2.6	3.6	2.2
1024	4.0	2.4	3.2	1.9
1152	3.7	2.2	2.9	1.8

Table 2. Typical Ranges over 4-wire Line

Data Rate (kbps)	24 AWG km	24 AWG miles	26 AWG km	26 AWG miles
64–256	8.2	5.0	6.0	3.7
320, 384	8.0	4.9	5.6	3.4
448, 512	7.8	4.8	5.5	3.4
576	7.5	4.6	5.3	3.3
640	7.3	4.5	5.2	3.2
768	5.7	3.5	4.5	2.7
896	5.6	3.4	4.3	2.6
960	5.3	3.2	4.1	2.5
1024	5.3	3.2	3.9	2.7
1152	4.7	2.9	3.7	2.2
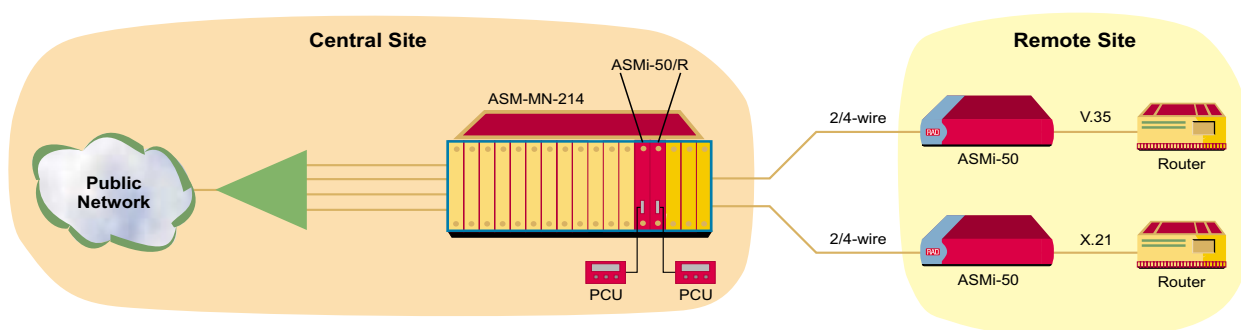
Figure 2. Central Site Application with Basic Management

ASMi-50

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GENERAL

- **Timing**
  Derived from the following sources:
  - Internal oscillator
  - External, from the attached DTE
  - Receive, derived from the received signal

- **Diagnostics**
  Loopbacks:
  Local analog and remote digital loopbacks in compliance with ITU V.54
  BERT:
  Built-in pattern generator and tester in compliance with ITU V.52

- **Indicators**
  PWR (green) – Power
  RTS (yellow) – Request To Send
  DCD (yellow) – Data Carrier Detected
  TD (yellow) – Transmit data
  RD (yellow) – Receive data
  TEST (red) – Test
  ERR (red) – Error
  QLTY (red/green) – Line quality

- **Physical**
  Standalone ASMi-50:
  Height: 4.4   cm / 1.7 in (1U)
  Width: 21.5   cm / 8.5 in
  Depth: 24.3   cm / 9.6 in
  Weight: 1.4   kg / 3.1 lb

  ASMi-50/R, ASMi-50C, ASMi-50CD:
  Fit a single slot of the respective modem rack (ASM-MN-214 or LRS-24)

- **Power**
  AC: 100 to 240 VAC (±10%), 50 to 60 Hz
  DC: 24 VDC (18 to 36 VDC), ±10% or -48 VDC (-36 to -72 VDC), ±10%

- **Power Consumption**
  ASMi-50: 6W
  ASMi-50/R, ASMi-50C: 4W
  ASMi-50CD: 7.75W

- **Environment**
  Temperature: 0–50°C/32–122°F
  Humidity: Up to 90%, non-condensing

ORDERING

ASMi-50-1/M/*/#
2/4-wire MSDSL modem with remote management, master unit

ASMi-50-1/S/*/#
2/4-wire MSDSL modem with remote management, slave unit

ASMi-50-1/R/#
Single modem card for the ASM-MN-214 modem rack

ASMi-50-1CF/#
Single modem card for the ETSI LRS-24 modem rack

ASMi-50-1CB/#
Single modem card for the ANSI LRS-24 modem rack

* Specify power supply:
  AC for 100 to 240 VAC
  24 for 24 VDC
  48 for -48 VDC

Specify DTE interface:
  V24 for V.24 interface
  V35 for V.35 interface
  V35A for V.35 interface with DB-25 connector
  530 for RS-530 interface
  V36 for V.36/RS-449 interface
  X21 for X.21 interface
  703/TB for G.703 Codirectional with terminal block connector
  703/RJ for G.703 Codirectional with RJ-45 connector
  UTP for IR-ETH module
  UTP/Q for IR-ETH/Q module
  IP for IR-IP module
  V35WA for V.35 interface for unstable clock systems
  530WA for RS-530 interface for unstable clock systems

ASMi-50-1CDF/$
Dual modem card for the ETSI LRS-24 modem rack

ASMi-50-1CDB/$
Dual modem card for the ANSI LRS-24 modem rack

$ Specify DTE interface:
  V35 for V.35 interface
  530 for RS-530 interface
  X21 for X.21 interface
  UTP for IR-ETH module

PCU
Portable control unit with protective casing for the slave ASMi-50 or ASMi-50/R card

CIA/&
Connector interface adapter for the ASM-MN-214 modem rack
& Specify connector type:
  V35/1 for adapting one modem rack 25-pin connector to one V.35 34-pin connector
  X21/1 for adapting one modem rack 25-pin connector to one X.21 15-pin connector