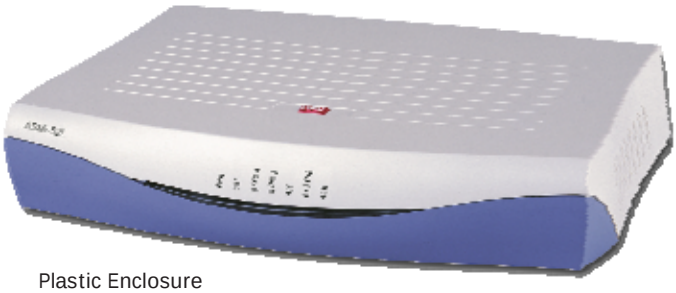
Data Sheet

ASMi-52L

2/4-wire SHDSL Modem



Plastic Enclosure

Rail-mount
Metal Enclosure

- Dedicated managed SHDSL modem
- 2-wire and 4-wire service over any copper infrastructure
- TC-PAM line coding for extended operation range of up to 10 km (6.2 miles) on 24 AWG
- Data rates between 64 kbps and 4608 kbps
- Four levels of QoS based on four VLAN priority queues (Ethernet units only)

Dedicated managed SHDSL modem for 2-wire and 4-wire service over any copper infrastructure

ASMi-52L is an SHDSL modem that operates in full-duplex mode over 2-wire and 4-wire lines.

Multiple data rates in the range of 64 to 4608 kbps are supported. Data rates depend on the line interface, DTE interface types, and operating clock modes.

ASMi-52L employs standard SHDSL TC-PAM technology to extend the transmission range (see *Table 1*) and enable carriers to reach more customers at lower costs.

User ports include X.21 and V.35 and E1 interfaces. A single Ethernet port option includes a 10/100BaseT bridge with VLAN support. A quad Ethernet port option includes a switch with four 10/100BaseT ports and support for VLAN ID transparent and VLAN priority.

RAD
data communications
The Access Company

ASMi-52L

2/4-wire SHDSL Modem

ASMi-52L is available as a standalone plastic enclosure, or a rail-mount metal enclosure with an extended temperature range (4ETH service only).

Full management and monitoring of the remote unit is achieved using an Embedded Operation Channel (EOC). The management channel uses SHDSL overhead bits in compliance with ITU-T G.991.2 requirements, operating without interfering with the data transmission.

Management of Ethernet units is performed via the data port.

ASMi-52L units can operate with ASMi-52CQ cards installed in a centrally located LRS-24 rack (see *Figure 1*).

VLAN priority queues enable up to four levels of QoS (for Ethernet units only).

Up to eight SHDSL repeaters can be installed in line to increase the operation range of the modem. ASMi-52L provides basic management of the repeaters.

Management operations can be performed using an ASCII terminal, a Telnet host, a web-based management application, or RADview-EMS. The latter is a Java-based, client-server, modular, scalable element management system that provides secure configuration and fault management capabilities.

The terminal port supports a dial-up modem connection for remote management of ASMi-52L over telephone lines.

A modem with a 4-wire line interface can be configured to operate over 2-wire lines.

Comprehensive diagnostic capabilities include:

- Real-time alarms to alert the user on fault conditions (reported by the management station)
- V.54 local analog and remote digital loopbacks
- SHDSL statistics collection for 15-minute and 24-hour intervals.

The current configuration can be automatically uploaded and downloaded.

Specifications

LINE INTERFACE

Type
2/4-wire unconditioned dedicated line (twisted pair)

Line Coding
TC-PAM

Range
See *Table 1*

Impedance
135Ω

Connectors
Terminal block

Protection
Per ITU K.21 and UL1950

Standards
ITU-T 991.2, ETSI 101 524, ITU-T.994.1

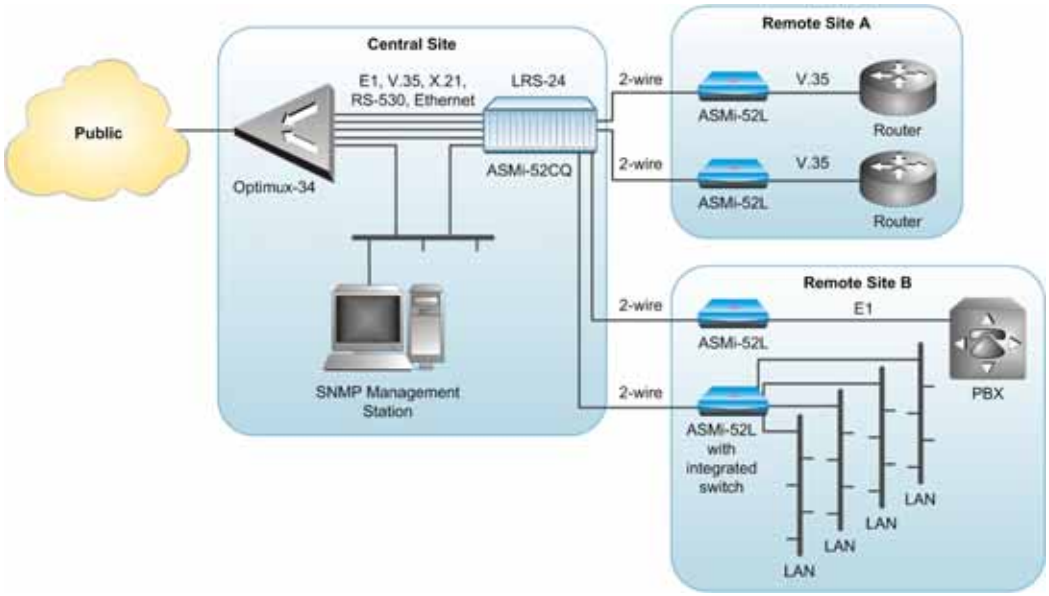


Figure 1. ASMi-52L Modems Operating with ASMi-52CQ Cards over 2-wire Lines

DTE INTERFACE

Types and Connectors
X.21: 15-pin, D-type, female
V.35: 34-pin, female
ETH (10/100BaseT bridge with VLAN support): RJ-45
ETH switch (Four-port 10/100BaseT bridge with VLAN ID transparent and VLAN priority support): 4 × RJ-45

E1 INTERFACE

Coding
HDB3

E1 Line Impedance
Balanced: 120Ω
Unbalanced: 75Ω (via adapter cable)

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.*

Jitter Performance
Per ITU G.823

USER ETHERNET INTERFACE

Interface
10/100BaseT

Connectors
RJ-45

Compliance
IEEE 802.3, IEEE 802.3U

MANAGEMENT

Management Options
Telnet via dedicated 10/100BaseT port
SNMP network management via dedicated 10/100BaseT port (Ethernet options only)
PC, running a Web-based application

***Note**: ASMi-52L cannot be managed with a dedicated E1 timeslot.*

V.24/RS-232 Control Port
Interface: V.24/RS-232 DCE
Connector: 9-pin D-type, female
Format: asynchronous
Baud rate: 9.6 to 115.2 kbps

Ethernet Port (for ETH and 4ETH options only)
Interface: 10/100BaseT
Connector: RJ-45

GENERAL

Data Rate
See *Table 2*

Timing
Internal: from internal oscillator
External: from attached DTE (Serial interface only), E1
Receive: from received signal (CPE only)

Diagnostics
Local analog loopback compliant with ITU V.54
Remote digital loopback compliant with ITU V.54

Performance Monitoring
SHDSL/E1 statistics collection
Compliant with G.826

Indicators
PWR (green) – Power
TST (red) – Test in progress
E1 SYNC (red) – Loss of E1 sync (E1 only)
SYNC A/B (green/red) – Sync status of SHDSL line
DATA (yellow) – Transmit data
ALM (red) – Alarm enters the buffer

Table 1. Typical Ranges (26 AWG)

Data Rate	2-wire		4-wire	
[kbps]	[km]	[miles]	[km]	[miles]
64	7.5	4.6	—	—
128	7.0	4.3	7.1	4.4
256	6.7	4.1	6.8	4.2
384	6.5	4.0	6.7	4.1
512	6.3	3.9	6.6	4.1
1024	5.3	3.3	6.0	3.7
1536	5.0	3.1	5.6	3.5
2048	4.5	2.8	4.7	2.9
2304	4.2	2.6	4.5	2.8
4096	–	–	3.7	2.3
4608	–	–	3.0	1.8

***Note**: Typical ranges are based on error-free lab tests without noise.*
ASMi-52CD/4W operates at data rates up to 4608 kbps, depending on internal or external clock.

Table 2. Data Rates by Clock Mode

Line	External/ Receive	E1 Internal	Internal
	[kbps]	[kbps]	[kbps]
2-wire	n x 64	n x 64 where n = 1 to 32	64, 128, 192, 256, 384, 512, 576, 768, 1024, 1152, 1536, 2048, 2304
4-wire	n x 128	n x 128 where n = 1 to 16	128, 256, 384, 512, 768, 1024, 1152, 1536, 2048, 2304, 3072, 4096, 4608
	where n = 1 to 32, 36		

***Note**: V.35 and X.21 cannot operate with ASMi-52L/E1 at data rates of 64 kbps and 128 kbps.*

ASMi-52L

2/4-wire SHDSL Modem

Power
AC/DC: 100 to 240 VAC,
-48/-60 VDC nominal
24 VDC (rail-mount version only)

Power Consumption
8W max (4-wire)
6W max (2-wire)

Environment
Temperature: 0–50°C (32–122°F)
Extended temperature support (rail-mount version only): -20° to 70°C (-4° to 158°F)
Humidity: Up to 90%, non-condensing

Physical
Plastic enclosure:
Height: 43.7 mm (1.7 in)
Width: 217 mm (8.5 in)
Depth: 170 mm (6.7 in)
Weight: 0.6 kg (1.3 lb)

Rail-mount metal enclosure:
Height: 150 mm (5.9 in)
Width: 70 mm (2.8 in)
Depth: 163 mm (6.4 in)
Weight: 0.9 kg (1.9 lb)

Ordering

STANDARD CONFIGURATION

ASMi-52L/E1/2W
ASMi-52L/E1/4W
ASMi-52L/ETH/2W
ASMi-52L/ETH/4W
ASMi-52L/4ETH/2W
ASMi-52L/4ETH/4W

SPECIALCONFIGURATION

ASMi-52L/*/#
2/4-wire SHDSL standalone modem

ASMi-52L/24V/4ETH/#/RAIL/ETR
2/4-wire SHDSL rail-mount modem with 4ETH user interface, 24 VDC power supply and extended temperature support
Note: *the rail-mount version has TB for the line interface.*

Legend

* User interface:
- **X.21** X.21
- **V.35** V.35
- **E1** G.703 E1
- **ETH** 10/100BaseT port
- **4ETH** 4 x 10/100BaseT with integrated switch

\# Line interface:
- **2W** 2-wire
- **4W** 4-wire

SUPPLIED ACCESSORIES

Power cord

AC/DC adapter for -48 VDC

OPTIONAL ACCESSORIES

CBL-DB9F-DB9M-STR
Control port cable

CBL-RJ45/2BNC/E1
Interface adaptor for converting a balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors

RM-33-2
Hardware kit for mounting one or two ASMi-52L units in a 19-inc

Table 2 Modem Comparison Chart

	ASMi-52	ASMi-52L	ASMi-54	ASMi-54L	ASMi-54LRT
					
Max. data rate (Mbps)	2.3/4.6	2.3/4.6	5.7/11/22	5.7/11.4 (11.4/15 per pair with license key)	5.7/11
Interface	V.35, RS-530, X.21, E1, ETH	V.35, X.21, E1, ETH, 4 x ETH	4 x ETH, E1/4 x E1	4 x ETH, E1	4 x ETH, E1
Router					✓
Line	2W/4W	2W/4W	2W/4W/8W	2W/4W	2W/4W/8W

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RAD data communications
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