

# ASMi-52L

2/4-wire SHDSL Modem



Plastic Enclosure



Rail-mount  
Metal Enclosure

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

- 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)

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.



## 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

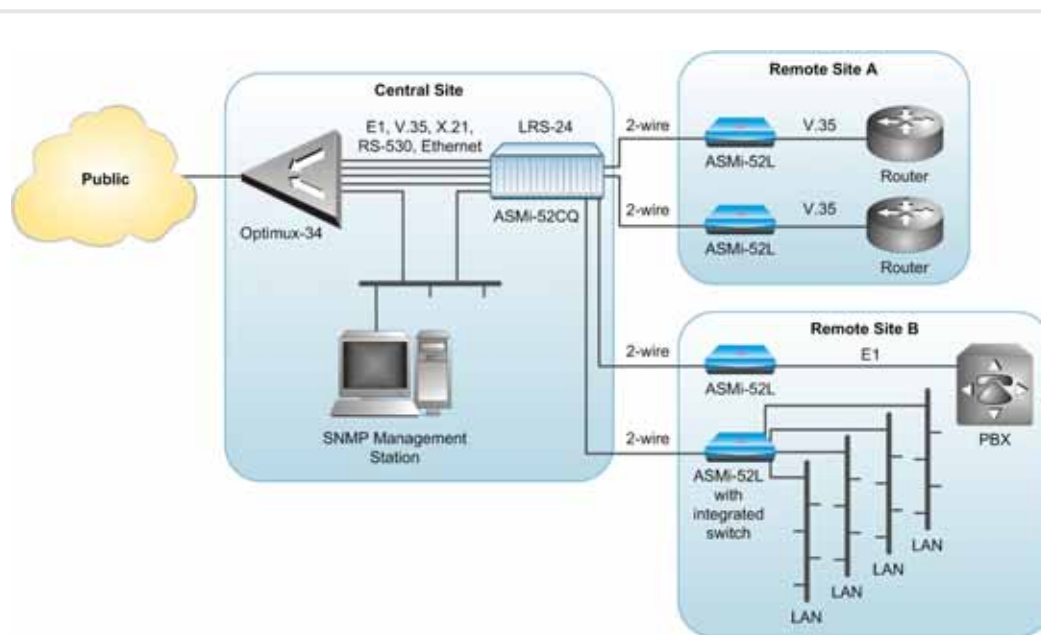


Figure 1. ASMi-52L Modems Operating with ASMi-52CQ Cards over 2-wire Lines

**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 [kbps]	2-wire		4-wire	
	[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 [kbps]	E1 Internal [kbps]	Internal [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

### SPECIAL CONFIGURATION

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 5.7/11 pair with license key)	
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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