ASMi-52L

2/4-wire SHDSL Modem

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 interfaces include X.21 and V.35 DTEs, and E1 interface. For LAN-to-LAN connectivity using SHDSL technology, the modem features a built-in 10/100BaseT bridge with one Ethernet port and VLAN support or a 10/100BaseT switch with four Ethernet ports and VLAN ID transparent and VLAN priority support.

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

RAD
data communications
The Access Company

Full management and monitoring of the remote unit is achieved by 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 opposite a centrally located LRS-24 rack with ASMi-52CQ cards installed (see *Figure 1*).

VLAN priority enables up to four QoS priority levels (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.

Supervision and configuration activities are performed using an ASCII terminal, IP hosts using the Telnet protocol, or RADview-EMS (Java-based modular client-server scalable element management system) providing 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.

Automatic configuration allows the current configuration to be uploaded and downloaded from a configuration file.
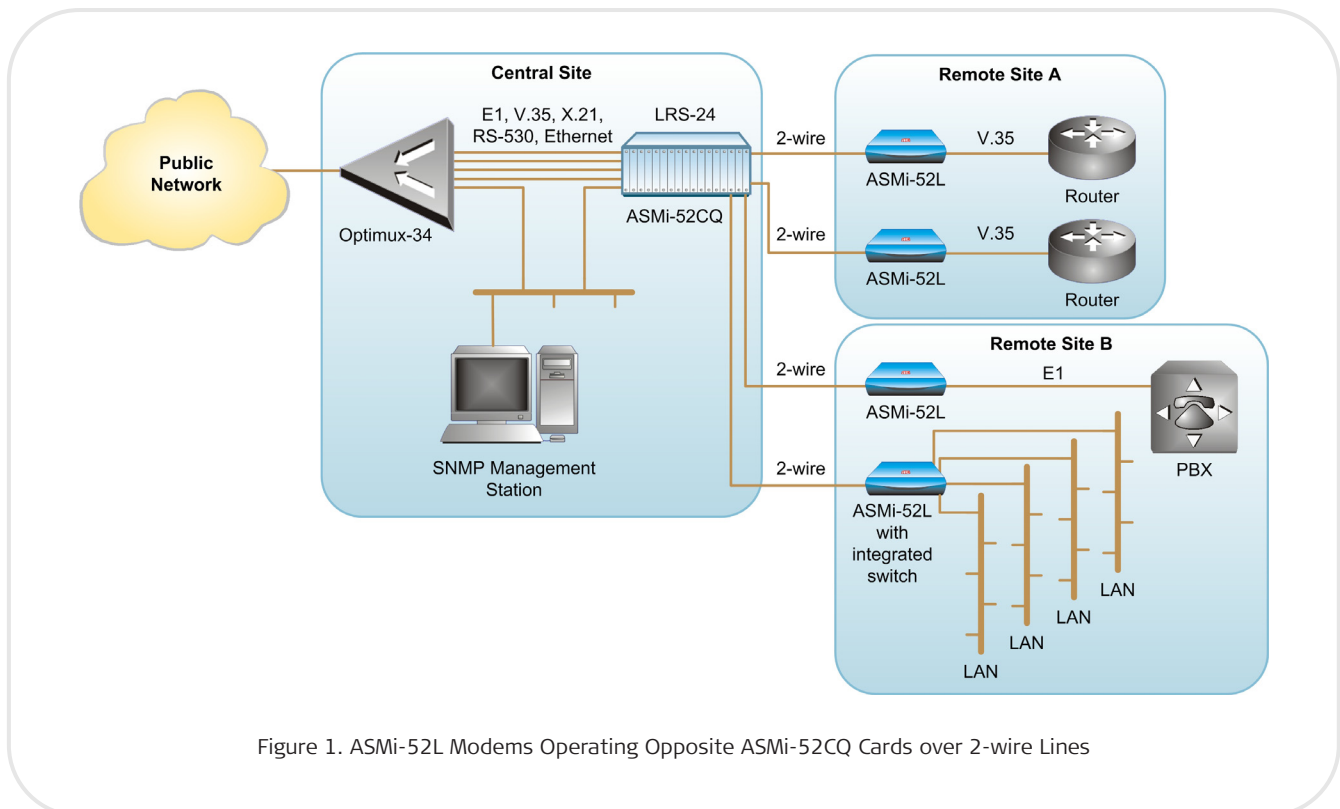

Figure 1. ASMi-52L Modems Operating Opposite ASMi-52CQ Cards over 2-wire Lines

Specifications

LINE INTERFACE

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

Line Coding
TC-PAM

Range
See *Table 1*

Impedance
135Ω

Standards
ITU-T 991.2, ETSI 101 524

Protection
Per ITU K.21 and UL1950

Connectors
Terminal block

DTE INTERFACE

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

MANAGEMENT

Management Options
Telnet via dedicated 10/100BaseT port
SNMP network management via dedicated
    10/100BaseT port (Ethernet options
    only)
PC, running a Web browsing application
Note: ASMi-52L cannot be managed with a
dedicated E1 timeslot.

V.24/RS-232 CONTROL Port
Interface: V.24/RS-232 DTE
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

Table 1. Typical Ranges (26 AWG)

Data Rate	2-wire		4-wire	
[kbps]	[km]	[mi]	[km]	[mi]
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: The 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

Wires	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 opposite ASMi-52L/E1 at data rates
of 64 kbps and 128 kbps.

ASMi-52L
2/4-wire SHDSL Modem

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 in compliance with
ITU V.54
Remote digital loopback in compliance
with ITU V.54

Performance Monitoring
SHDSL/E1 statistics collection

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

Power
AC/DC: 100–240 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 (1.70 in)
Width: 217 mm (8.54 in)
Depth: 170 mm (6.70 in)
Weight: 0.5 kg (1.1 lb)

Rail-mount metal enclosure:
Height: 7.0 cm (2.7 in)
Width: 15.0 cm (5.9 in)
Depth: 16.3 cm (6.4 in)
Weight: 0.75 kg (1.65 lb)

Ordering

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/X
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-inch rack

Table 3. Sync Modem Comparison Chart

Feature	ASMi-54	ASMi-52	ASMi-52L	ASM-60	ASM-61
Max. data rate (kbps)	5.7/11.4/22 Mbps	2.3/4.6 Mbps	2.3/4.6 Mbps	10 Mbps	10 Mbps
Interface	4 x ETH	V.35, RS-530, X.21, E1/T1, ETH	V.35, X.21, E1, ETH, 4 x ETH	Router, ETH, HSSI	ETH
2W/4W	2/4/8	2/4	2/4	4	2

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