

ASMi-52

2/4-wire SHDSL Modem/Multiplexer



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

- Managed SHDSL modem operates over 2-wire and 4-wire lines, over any copper infrastructure
- Multiplexes two data streams (E1, Ethernet, Serial) over SHDSL
- TC-PAM line coding extends the operation range up to 10 km (6.2 miles) on 24 AWG
- Operates at multiple data rates between 64 kbps and 4608 kbps
- X.21, V.35, RS-530, G.703/G.704 E1/T1, and Ethernet interfaces

ASMi-52 is an SHDSL modem/multiplexer for data and voice 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. The data rates depend on the line interface, DTE interface types, and operating clock modes.

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



data communications

The Access Company

ASMi-52

2/4-wire SHDSL Modem/Multiplexer

The following DTE interfaces are available: X.21, V.35, RS-530, and G.703/G.704 E1 or T1. For LAN to-LAN connectivity using SHDSL technology, the modem supports a built-in 10/100BaseT bridge Ethernet port with VLAN support.

When equipped with two interfaces, the standalone ASMi-52 units combine and multiplex user traffic over the SHDSL link. The following DTE combinations are available:

- Serial Port (V.35, X.21, RS-530) + LAN
- E1 + LAN
- E1 + serial port (V.35, X.21, RS-530)

Note: T1 multiplexer units are not available.

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

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

ASMi-52 units can operate opposite centrally located LRS-24 racks with ASMi-52CD or ASMi-52CQ cards installed (see *Figure 1*), or opposite a DXC-8R/10A/30/30E chassis with D4SL, D8SL cards installed.

User-configurable low-speed mode is available for units with serial and LAN interfaces. In this mode ASMi-52 supports 64/128 kbps (2-wire) and 128/256 kbps (4-wire) data rates when operating opposite devices with E1 DTE interface. The maximum data rate in the low-speed mode is 2048 kbps.

Up to eight SHDSL repeaters can be installed in line to increase the operation range of E1 based modems. ASMi-52 provides basic management of the repeaters.

The minor and major alarms can be relayed to a remote alarm device via an optional terminal block port.

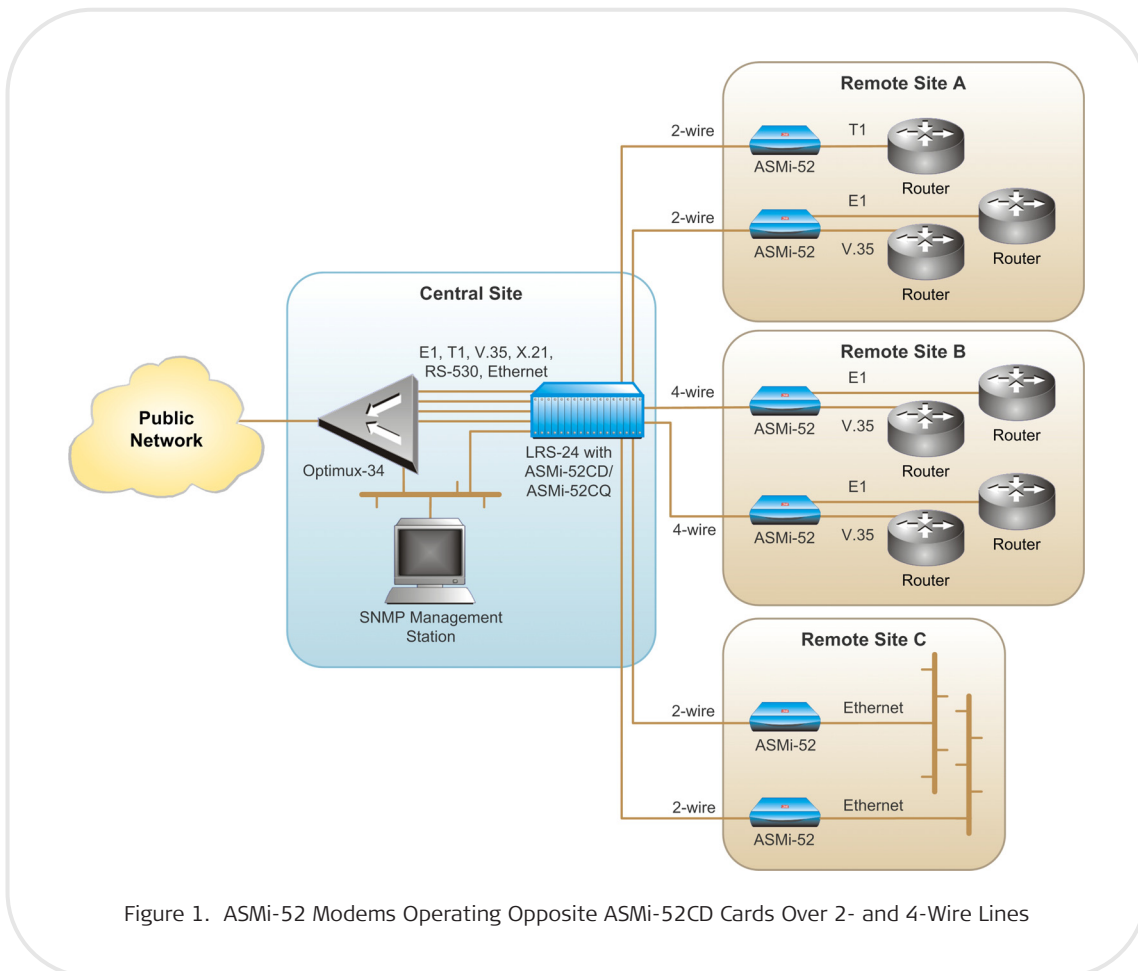


Figure 1. ASMi-52 Modems Operating Opposite ASMi-52CD Cards Over 2- and 4-Wire Lines

VLAN priority enhances the QoS by enabling prioritization of the LAN packet to the DSL line according to four levels of VLAN priorities. The user can enable or disable the VLAN priority, and each VLAN tag priority (0-7) can be configured to one of four classes of priority level.

BER test can be performed by the multiplexer units on each serial interface. The BERT generates and receives four different test patterns.

ASMi-52 is available as standalone plastic, metal, and metal rail-mount enclosures, and dual- or quad-modem cards for installation in LRS-24 racks. The plastic and metal enclosures are also available in extended temperature versions (by special request).

ASMi-52 CARDS

The ASMi-52CD and ASMi-52CQ cards support serial, Ethernet, and E1/T1 interfaces.

ASMi-52CD contains two SHDSL modems that operate over 4-wire lines. ASMi-52CQ contains four SHDSL modems that operate over 2-wire lines.

ASMi-52CD and ASMi-52CQ feature internal, external and system timing modes.

MANAGEMENT

Supervision and configuration activities are performed using an ASCII terminal, IP hosts using the Telnet protocol, Web-based ConfiguRAD, 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-52 over telephone lines.

SNMP management can be performed via a 10/100BaseT port or a dedicated E1/T1 timeslot.

Notes: When ASMi-52 is ordered only with the 10/100BaseT port, it is used to transfer the user and management data.

The comprehensive diagnostic capabilities include:

- Real-time alarms to alert the user on fault conditions
- V.54 local analog and remote digital loopbacks
- SHDSL and E1/T1 statistics collection for 15-minute and 24-hour intervals.

Table 1. Typical Ranges (26 AWG)

Data Rate [kbps]	2-wire		4-wire	
	[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.

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.

Connectors

ASMi-52: RJ-45

ASMi-52CD: Two RJ-45

ASMi-52CQ: Four RJ-11 or terminal block

DTE INTERFACE

Data Rate

Depends on the DTE/line interface type and clock mode:

2-wire: 64 to 2304 kbps (ext. clock)

64 to 2048, 2304 kbps (int. clock)

64 to 1536 kbps (T1)

4-wire: 128 to 4608 kbps (ext. clock)

128 to 4096, 4608 kbps (int. clock)

64 to 1536 kbps (T1)

Note: The multiplexer option supports up to 2048 kbps only.

ASMi-52CD/4W:

128 to 4608 kbps (ext. clock)

128 to 4096, 4608 kbps (int. clock)

128 to 2048 kbps (system. clock)

ASMi-52CQ/2W:

64 to 2304 kbps (ext. clock)

64 to 2048, 2304 kbps (int. clock)

64 to 2048 kbps (system. clock)

64 to 1536 kbps (T1)

Coding

E1: HDB3

T1: B8ZS or AMI

Line Impedance

Balanced E1: 120Ω

Unbalanced E1: 75Ω (via adapter cable)

Balanced T1: 100Ω

E1 Jitter Performance

As per ITU G.823

Interface and Connectors

Standalone:

X.21 – 15-pin, D-type, female

V.35 – 34-pin, female

RS-530 – 25-pin, D-type, female

G.703/G.704 E1 – RJ-45

T1 – RJ-45

ETH (10/100BT bridge with VLAN support) – RJ-45

ASMi-52CD:

V.35, X.21, RS-530 – 2 × SCSI-26

IR-ETH/QN (10/100BaseT bridge with VLAN support) – 2 × RJ-45

E1 balanced – 2 × RJ-11

E1 unbalanced – 25-pin, D-type, female

ASMi-52CQ:

V.35, X.21, RS-530 – SCSI-68

ETH (10/100BT bridge with VLAN support) – RJ-45

E1 balanced – 4 × RJ-11

E1 unbalanced – 25-pin, D-type, female

T1 – 4 × RJ-11

MANAGEMENT PORTS

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

Interface: 10/100BaseT

Connector: RJ-45 shielded

ALARM PORT

Type

Dry relay contacts for major and minor alarms

Connector

9-pin D-type female

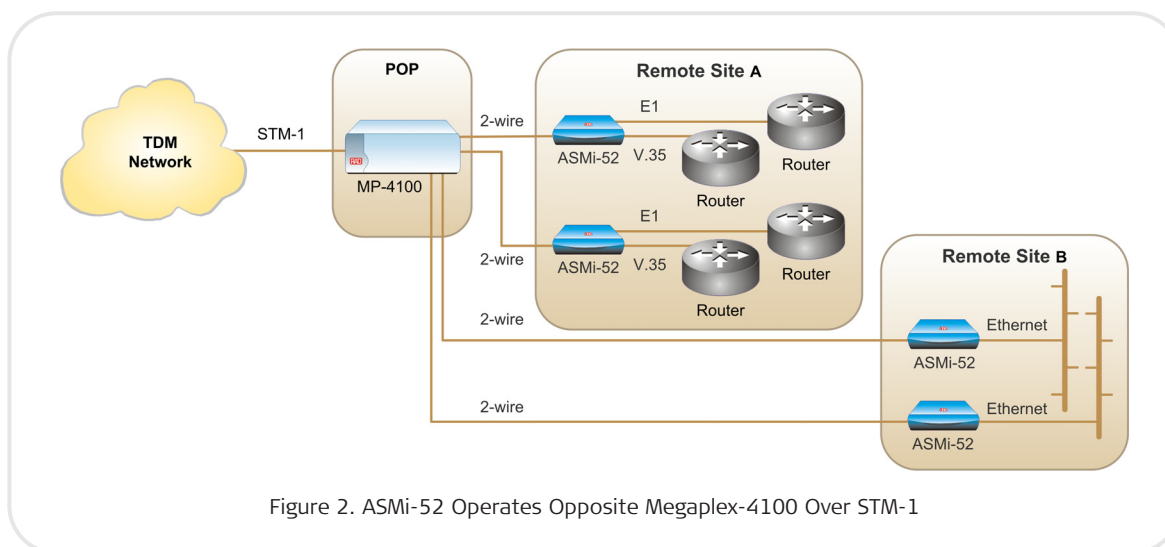


Figure 2. ASMi-52 Operates Opposite Megaplex-4100 Over STM-1

ASMi-52

2/4-wire SHDSL Modem/Multiplexer

GENERAL

Timing

Standalone:
Internal, from internal oscillator
External, from attached DTE
Receive, from received signal (CPE only)

ASMi-52CD, ASMi-52CQ:

Internal, from internal oscillator
External, from attached DTE
Station, from external clock source via LRS-24

Diagnostics

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

Performance Monitoring

SHDSL statistics collection
E1 with CRC-4 or T1 with ESF framing (per ITU G.706)
E1 without CRC-4 or T1 with SF framing (BPV)
Compliance with G.826

Indicators

PWR (green) – Power on
DATA (yellow) – Transmit data (except E1 or T1 interface)
SYNC A/B (green/red) – Sync status of DSL line
E1 or T1 SYNC (red) – Loss of E1 or T1 sync (E1 or T1 interface only)
AIS (yellow) – “All 1s” string is received (E1 or T1 interface only)
ALM (red) – Alarm enters the buffer
TST (red) – Test in progress

Power

100–240 VAC, 50/60 Hz or 48/60 VDC nominal (40 to 72 VDC)
24 VDC nominal (18 to 36 VDC)

Power Consumption

Standalone:
7W max (4-wire)
6W max (2-wire)

ASMi-52CD:

10W max

ASMi-52CQ:

8.5W max

Physical

Plastic enclosure:
Height: 4.37 cm (1.7 in)
Width: 21.7 cm (8.5 in)
Depth: 17.0 cm (6.7 in)
Weight: 0.5 kg (1.1 lb)

Metal enclosure:
Height: 4.37 cm (1.7 in)
Width: 21.5 cm (8.4 in)
Depth: 15.3 cm (6.0 in)
Weight: 0.7 kg (1.5 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)

The cards fit in a standard LRS-24 chassis

Environment

Standard temperature:
0°–50°C (32°–122°F)
Extended temperature:
–20°–70°C (–4°–158°F)
Card temperature:
0°–45°C (32°–113°F)
Humidity:
Up to 90%, non-condensing

Ordering

ASMi-52/@/*/#/%/\$/?/+

2/4-wire SHDSL standalone modem

Legend

- @ **24V** for 24 VDC option
Note: Do not specify @ for the default VAC or -48 VDC option.
- * DTE interface:
X21 X.21 interface
V35 V.35 interface
E1 E1 interface
Note: For E1 unbalanced, order cable CBL-RJ45/2BNC/E1/X.
RS530 RS-530 interface
ETH 10/100BaseT interface
T1 T1 interface
- # Line interface:
2W 2-wire interface
4W 4-wire interface
- % Second interface type:
ETH 10/100BaseT interface (only for models with 1st E1 or serial DTE interfaces)
V.35 V.35 interface (only for models with 1st E1 or serial DTE interfaces)
- \$ **AR** for 6-pin alarm relay port
- ? **ME** for metal enclosure
- + Extended temperature:
ETR –20° to 70°C (–4° to 158°F) range (according to special request)

Table 2. Modem Comparison Chart

Sync Modem	Max Data Rate [Mbps]	Interface	2W/4W/8W	Approx Range* @ 26 AWG	
				[km]	[mi]
ASMi-52	2.3/4.6	V.35, RS-530, X.21, E1, Ethernet	2/4	4	2.5
ASMi-54	5.7/11/22	Ethernet	2/4/8	2.9	1.8
ASM-60	10	Router, Ethernet, HSSI	4	2.0	1.2
ASM-61	10	Ethernet	2	1.2	0.7

* Maximum distance for maximum rate over single pair, free of noise

ASMi-52

2/4-wire SHDSL Modem/Multiplexer

ASMi-52/24/ETH/4W/ME/AR/RAIL

4-wire SHDSL rail-mount modem, 24 VDC power supply

ASMi-52/ETH/4W/ME/AR/RAIL

4-wire SHDSL rail-mount modem, wide-range AC/DC power supply

Note: Rail-mount versions have TB for the line interface.

ASMi-52CD^*/4W/RJ-45

Dual-modem, 4-wire, card version for LRS-24 modem rack

ASMi-52CQ^*/2W/⊗

Quad-modem, 2-wire, card version for LRS-24 modem rack

Legend

^ Chassis type:

- F ETSI-type LRS-24 rack
- B ANSI-type LRS-24 rack

* DTE interface:

- X21** X.21 interface
- V35** V.35 interface
- RS530** RS-530 interface
- ETH** 10/100BaseT interface (ASMi-52CQ only)
- T1** T1 interface (ASMi-52CD only)
- E1B** E1 balanced interface
- E1UB** E1 unbalanced interface
- UTPQN** IR-ETH/QN interface (ASMi-52CD only)

⊗ Line interface connector for ASMi-52CQ cards:

- RJ** RJ-11
- TB** terminal block
- RJ45** RJ-45

Note: with E1 or T1 interface are available with terminal block line connectors only.

SUPPLIED ACCESSORIES

Power cord

AC/DC adapter plug (when -48 VDC is ordered)

PLUG-DC/TB-S

DC adapter plug (when 24 VDC is ordered)

OPTIONAL ACCESSORIES**Cables for Standalone ASMi-52****CBL-RJ45/2BNC/E1/X**

Interface adapter for converting a balanced E1 RJ-45 connector into a pair of BNC unbalanced coaxial connectors

CBL-DB9F-DB9M-STR

Control port cable

ASMi-52CD Cables**CBL-SCS26/530/F**

Converts one SCSI-26 to one female RS-530 (DB-25) connector

CBL-SCS26/X21/F

Converts one SCSI-26 to one female X.21 (DB-15) connector

CBL-SCS26/V35/F

Converts one SCSI-26 to one female V.35 (34-pin) connector

CBL-LRSI25/DB25/UB/M

Converts one DB-25 to four male BNC coax connectors

ASMi-52CQ Cables**CBL-CQ-RS530/F**

Converts one SCSI-68 to four female RS-530 (DB-25) connectors

CBL-CQ-V35/F

Converts one SCSI-68 to four female V.35 (34-pin) connectors

CBL-CQ-X21/F

Converts one SCSI-68 to four female X.21 (DB-15) connectors

CBL-LRSI21/DB25/UB/M

Converts one DB-25 to eight male BNC coax connectors

CBL-LRSI21/DB25/UB/F

Converts one DB-25 to eight female BNC coax connectors

Rack Mount Kits**RM-33-2**

Kit for mounting 1 or 2 dual interface unit/s (plastic enclosure) in a 19-inch rack

RM-35/@

Kit for mounting 1 or 2 units (metal enclosure) in a 19-inch rack

Legend

@ Rack mount kit type:

- P1** Mounting one unit
- P2** Mounting two units

WM-35

Hardware for mounting one unit on the wall

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