

ASMi-52

2/4-wire SHDSL Modem/Multiplexer



Dedicated managed SHDSL modem for Ethernet, E1 and serial services over 2- or 4-wire copper lines

- SHDSL modem for effective provisioning of TDM and Ethernet data services at rates of up to 4.6 Mbps
- Ethernet and E1 or serial data services multiplexed over SHDSL
- Operating range of up to 7.5 km (4.6 miles) on 26 AWG
- Data rates between 64 kbps and 4608 kbps
- Special rail-mount metal chassis for railways applications



ASMi-52

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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.

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 features a built-in 10/100BaseT bridge Ethernet port with VLAN functionality.

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.

4-wire line interface modems 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 with centrally located LRS-24 racks with ASMi-52CD or ASMi-52CQ cards (see Figure 1), DXC-8R/10A/30 chassis with D4SL/D8SL modules, MP-2100 chassis with MSL-8 modules or MP-4100 chassis with the M8SL modules.

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

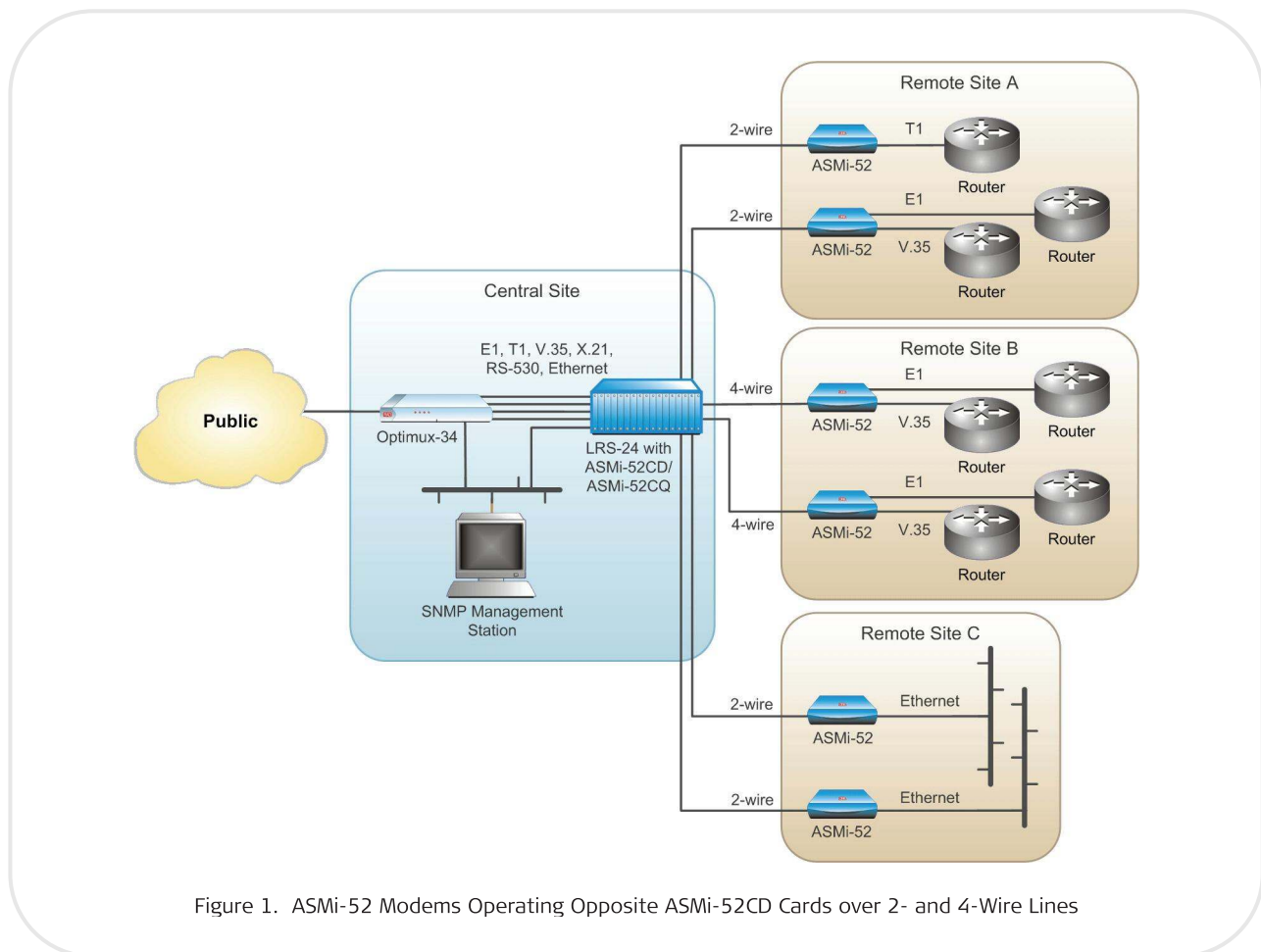


Figure 1. ASMi-52 Modems Operating Opposite ASMi-52CD Cards over 2- and 4-Wire Lines

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

QoS is enhanced by prioritizing the LAN packets to the DSL line according to four levels of VLAN priorities. The user can enable or disable the VLAN priority, and each VLAN priority (0-7) tag can be assigned to one of four priority levels.

ASMi-52 is available as standalone plastic, metal, and rail-mount metal 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

Both ASMi-52CD and ASMi-52CQ cards include serial, Ethernet and E1 interfaces. In addition, ASMi-52CQ cards also feature a T1 interface option.

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 operate in internal, external and system timing modes.

MANAGEMENT

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-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 with only the 10/100BaseT port, it is used to transfer the user and management data.

DIAGNOSTICS

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.

BER test can be performed by the ASMi-52CQ cards and multiplexer standalone units on each serial interface.

The BERT generates and receives four different test patterns.

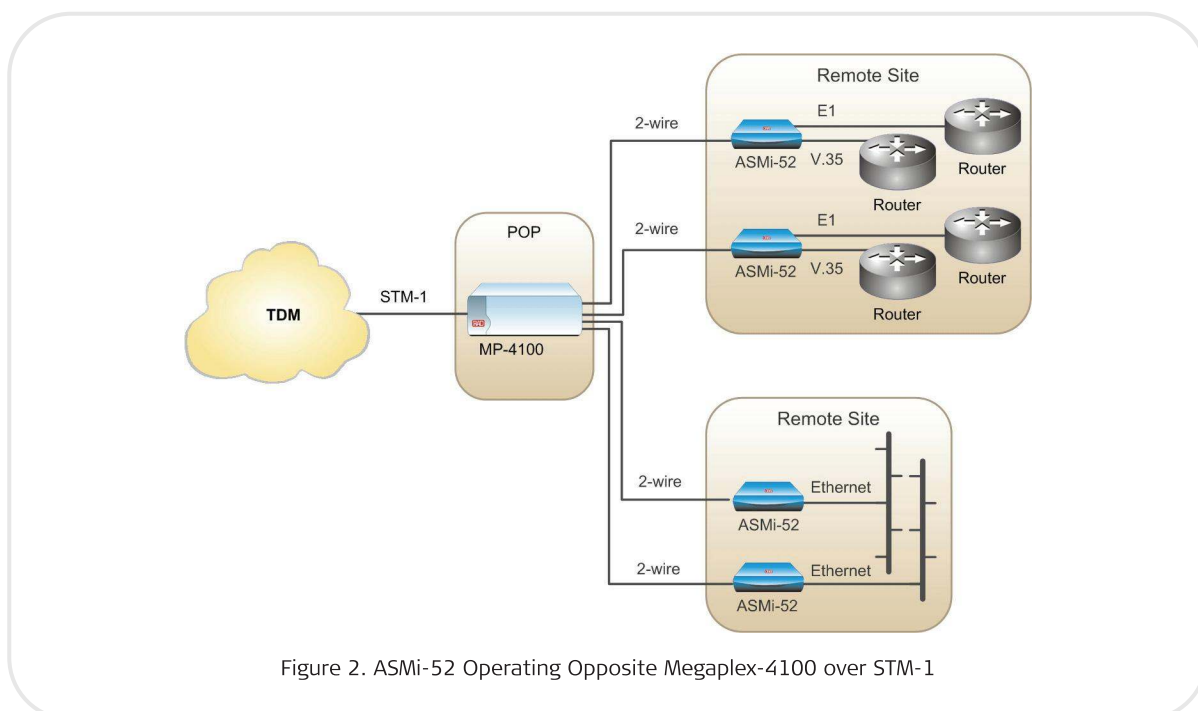


Figure 2. ASMi-52 Operating Opposite Megaplex-4100 over STM-1

ASMi-52

2/4-wire SHDSL Modem/Multiplexer

Specifications

LINE INTERFACE

Type

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

Line Coding

TC-PAM

Range

See *Table 1*

Impedance

135Ω

Compliance

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

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 operates at 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)

Interface and Connectors

Standalone

X.21: 15-pin, D-type, female

V.35: 34-pin, female

RS-530: 25-pin, D-type, female

E1: RJ-45

T1: RJ-45

ETH (10/100BaseT 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): TB

E1 balanced: 4 × RJ-11

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

T1: 4 × RJ-11

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 of up to 4608 kbps, depending on internal or external clock.

E1/T1 INTERFACE

Data Rate

E1: 2048 kbps

T1: 1544 kbps

Coding

E1: HDB3

T1: B8ZS or AMI

Line Impedance

Balanced E1: 120Ω

Unbalanced E1: 75Ω (via adapter cable)

Balanced T1: 100Ω

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 E1 coax interface.

E1 Jitter Performance

As per ITU G.823

USER ETHERNET INTERFACE

Interface

10/100BaseT

Connectors

RJ-45

Frame Size

1580 bytes

Compliance

IEEE 802.3, 802.3U

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




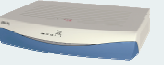

Type

Dry relay contacts for major and minor alarms

Connector

9-pin D-type female

Table 2. Modem Comparison Chart

					
Feature	ASMi-52	ASMi-52L	ASMi-54	ASMi-54L	ASM-61
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)	10
Interface	V.35, RS-530, X.21, E1, IP, ETH	V.35, X.21, E1, ETH, 4 x ETH	4 x ETH, E1	4 x ETH, E1	ETH
Line	2W/4W	2W/4W	2W/4W/8W	2W/4W	2W

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

Remote loopback at the SHDSL repeater

BER test on ASMi-52CQ cards and
multiplexer standalone units

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)

Compliant 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 4-wire: 7W max

Standalone 2-wire: 6W max

ASMi-52CD: 10W max

ASMi-52CQ: 8.5W max

Note: *The maximum number of ASMi-52 cards
supported by LRS-24 depends on their power
consumption.*

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)

Metal enclosure:

Height: 43.7 mm (1.7 in)

Width: 215.5 mm (8.5 in)

Depth: 153 mm (6.0 in)

Weight: 0.7 kg (1.5 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)

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

@ Power supply (Default=wide-range AC/DC power supply):

24V 24 VDC

* DTE interface:

X21 X.21

V35 V.35

E1 E1

*Note: For E1 unbalanced interface, order cable **CBL-RJ45/2BNC/E1**.*

RS530 RS-530

ETH 10/100BaseT

T1 T1

Line interface:

2W 2-wire

4W 4-wire

% Second interface (Default=single DTE interface):

ETH 10/100BaseT (only for models with 1st E1, T1 or serial DTE interfaces)

Note: In the T1 interface units, this port is for management only.

V.35 V.35 (only for models with 1st E1 or serial DTE interfaces)

\$ Alarm relay port (Default=no alarm relay)

AR Alarm relay port (6-pin)

? Enclosure (Default=plastic enclosure)

ME Metal enclosure

+ Temperature (Default=0°–50°C (32°–122°F))

ETR Extended range: -20°–70°C (-4°–158°F)

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/ε

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

Legend

^ Chassis:

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-52CQ only)

E1B E1 balanced interface

E1UB E1 unbalanced interface

UTPQN IR-ETH/QN interface (ASMi-52CD only)

ε Line interface connector for ASMi-52CQ cards:

RJ RJ-11

TB terminal block

RJ45 RJ-45

Note: ASMi-52CQ cards with E1, T1 or ETH interface are available with terminal block line connectors only.

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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**

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

Cables for ASMi-52CD**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

Cables for ASMi-52CQ**CBL-CQ-RS530**

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

CBL-CQ-V35/BTA

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

CBL-CQ-X21

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**

Hardware kit for mounting one or two plastic ASMi-52 units in a 19-inch rack

RM-35/@

Hardware kit for mounting one or two metal ASMi-52 units in a 19-inch rack

Legend

@ Rack mount kit (Default=both kits):

P1 Mounting one unit

P2 Mounting two units

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