

# ASMi-52

2/4-wire SHDSL Modem/Multiplexer

Plastic Enclosure



Metal Enclosure



Rail-mount  
Metal Enclosure

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

### 2/4-wire SHDSL Modem/Multiplexer

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-102 racks with ASMi-54C/N modules, DXC-8R/10A/30 chassis with D4SL/D8SL modules, MP-2100/2104 chassis with MSL-8 modules or MP-4100 chassis with the M8SL or ASMi-54C/N 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.

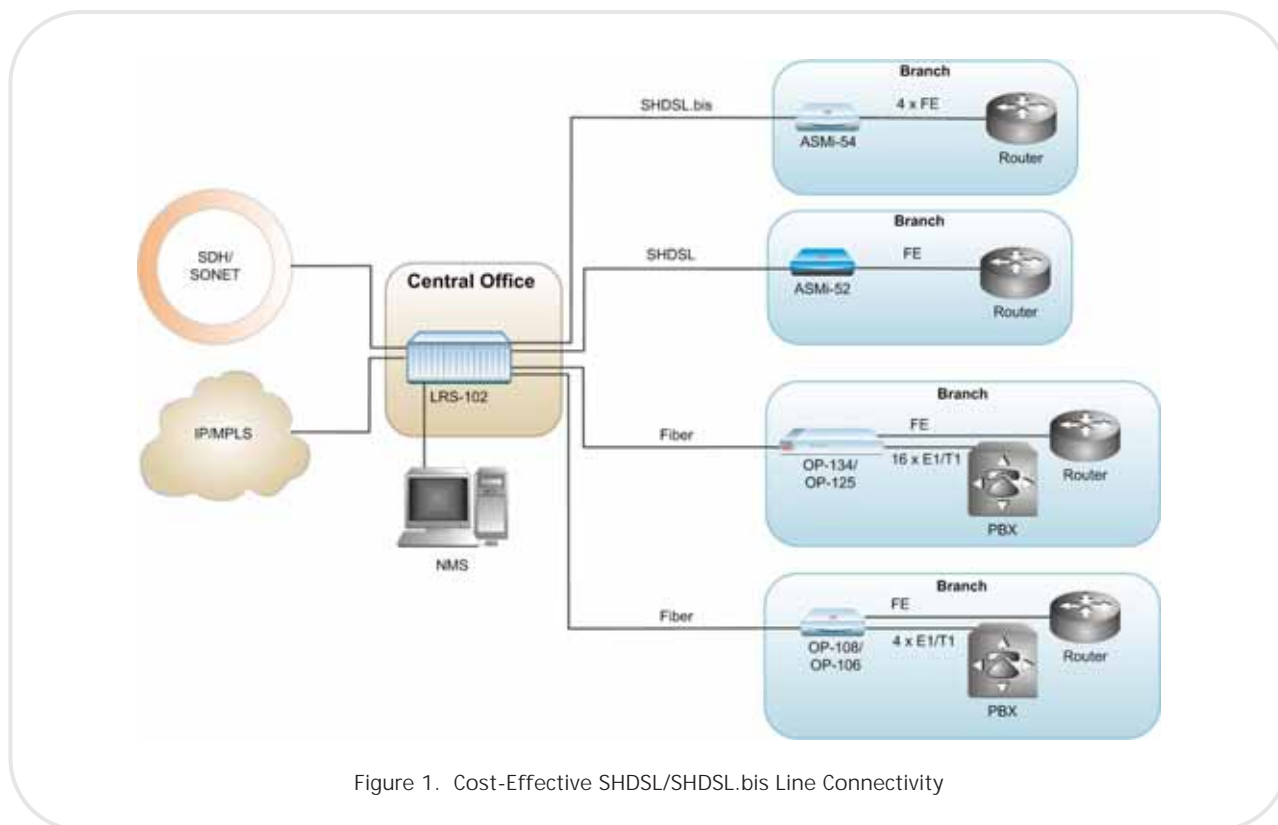


Figure 1. Cost-Effective SHDSL/SHDSL.bis Line Connectivity

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 or metal enclosures, and rail-mount metal enclosures. The plastic and metal enclosures are also available in extended temperature versions (by special request).

## 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.

When ASMi-52 is ordered with only the 10/100BaseT port, it can be used to transfer both 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 multiplexer units on each serial interface. The BERT generates and receives four different test patterns.

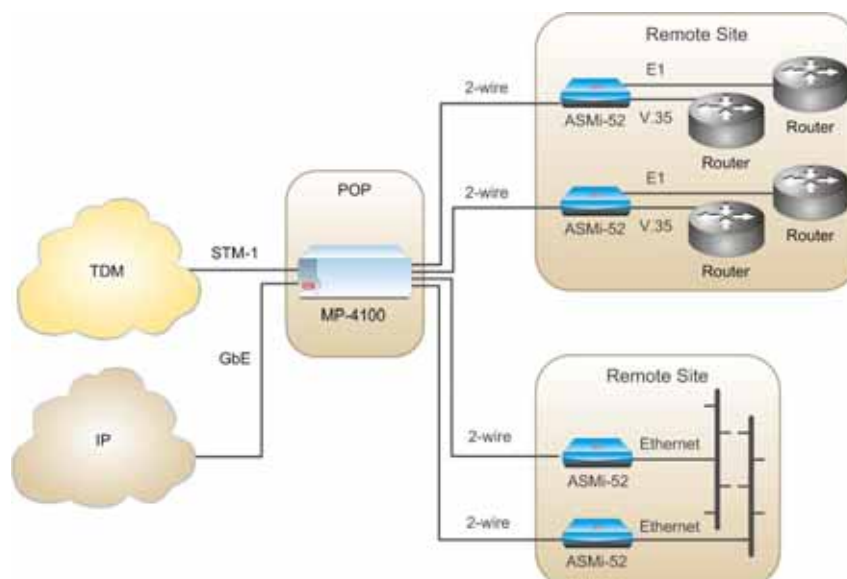


Figure 2. ASMi-52 Operating Opposite Megaplex-4100 over STM-1

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

**Connector**  
RJ-45

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.*

**Interface and Connectors**  
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

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: The typical ranges are based on error-free lab tests without noise.*

**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

Modem Comparison Chart

	<b>ASMi-52</b> 	<b>ASMi-52L</b> 	<b>ASMi-54</b> 	<b>ASMi-54L</b> 	<b>ASMi-54LRT</b> 
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

# ASMi-52

## 2/4-wire SHDSL Modem/Multiplexer

### GENERAL

#### Timing

Internal, from internal oscillator

External, from attached DTE

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

Remote loopback at the SHDSL repeater  
BER test on multiplexer 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

4-wire: 7W max

2-wire: 6W max

#### 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)

#### Environment

Standard temperature: 0° to 50°C  
(32° to 122°F)

Extended temperature: -20° to 70°C  
(-4° to 158°F)

Humidity: Up to 90%, non-condensing

## Ordering

### STANDARD CONFIGURATIONS

ASMI-52/E1/2W/ETH

ASMI-52/E1/4W/ETH

ASMI-52/ETH/2W

ASMI-52/ETH/4W

ASMI-52/E1/2W

ASMI-52/E1/4W

ASMI-52/V35/2W/ETH

ASMI-52/V35/2W

### SPECIAL CONFIGURATIONS

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

**RS530** RS-530

**ETH** 10/100BaseT

**E1** E1

*Note: For E1 unbalanced interface, order*

*CBL-RI45/2BNC/E1 adaptor cable*

**T1** T1

# Line interface:

**2W** 2-wire

**4W** 4-wire

% Second interface (Default=single DTE interface):

**ETH** 10/100BaseT (only for models with 1<sup>st</sup> 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 1<sup>st</sup> E1 interface)

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

**AR** Alarm relay port (6-pin)

? Enclosure (Default=plastic enclosure)

**ME** Metal enclosure

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

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

#### ASMI-52/ETH/4W/ME/AR/RAIL

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

#### ASMI-52/24/ETH/4W/ME/AR/RAIL

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

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

## ASMi-52

## 2/4-wire SHDSL Modem/Multiplexer

## 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

**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

## 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

**WM-35-TYPE4**

Hardware kit for wall mounting 8.5" units in metal enclosure

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