



The Mediatrix Liaison combines a VoIP gateway and an ADSL broadband modem to offer an all-in-one solution for residential and SOHO customers. The Mediatrix Liaison allows a rapid and cost efficient deployment of VoIP services by providers already offering ADSL broadband connection, while preserving the end-users' existing analog phone and fax investment.

### Key Benefits

#### Voice Functionalities

- Carrier-grade voice quality
- T.38 support
- PSTN bypass option available for emergency calls

#### Ease of configuration and management

- Automatic firmware and configuration file download
- SNMPv3 and web management
- TFTP or HTTP auto-provisioning

#### Network functionalities

- NAT / NAT / Firewall
- Dual PVC support (bridge mode)
- PPPoA, PPPoE and DHCP client
- Interoperable with equipment from leading industry vendors
- Call Forward / Call Transfer / Conference Call / Call Waiting support
- Optional PSTN Bypass on power failure / loss of WAN / special number dialing

#### Enhanced ADSL Features

- ADSL, ADSL2, ADSL 2+, ADSL G-lite
- Internal splitter included to separate voice and DSL traffic (with PSTN bypass option)
- VPN pass-through support with bridging

## Mediatrix® Liaison 2-port ADSL VoIP Access Device



### Mediatrix Liaison Overview

**The Mediatrix Liaison connects up to two analog phones and/or faxes, as well as a PC or a home router to an IP network.**

With a diverse set of management tools, the Mediatrix Liaison facilitates the deployment of VoIP network applications. Service providers as well as enterprise promoting teleworking can take advantage of this all-in-one product to connect residential and SOHO workers.

As all other Mediatrix devices, the Liaison provides a convenient web interface, giving users access to the unit for initial set-up. The device can also auto-provision its configuration by fetching its encrypted profile from a TFTP or HTTP server, thereby making installation secure and transparent to the end-users. To further facilitate deployments, factory loaded configurations are possible.

In addition, an optional intelligent PSTN bypass allows the Mediatrix Liaison user to make emergency calls and maintain its phone service in the event of a power outage or network failure. The bypass can be activated automatically when a specific digit sequence is dialed, such as 911.

## Functional Description

### FXS Ports

The Mediatrix Liaison is equipped with Central Office quality SLICs (Subscriber Line Interface Circuit) supporting all the BORSCHT (Battery feed, Overvoltage protection, Ringing, Signaling, Coding, Hybrid, Testing) functions and thus meeting most worldwide telephony standards. Station line length can reach up to 450m in the 2-wire "loop start" signaling arrangement.

The FXS ports support On-Hook audio transmission, thus providing many advanced CLASS features such as message waiting indication, Caller-ID FSK transmission and such.

The sinusoidal ringing signal frequency can be modified by software. Typical values range from 20 to 50 Hertz, 20 Hertz being the default frequency (for North America only). Each port provides its own ring generator and is capable of supplying up to 4 RENs (Ringer Equivalence Number).

Default settings for the FXS ports are such that BellCore/North American standards are met. On request, port settings may be modified to comply with other known international standards. Software-configurable port setting for international requirements is available.

### Fax Interface

The Mediatrix Liaison can handle G3 fax transmissions at speeds up to 14.4 kbps. Automatic fax mode detection is also available on all ports, as well as Real-Time Fax-Over IP with T.38 protocol stack. Data handling and synchronization formerly T.4 and T.30 protocols, are processed by the embedded DSP and CPU.

Quality of T.38 fax transmissions is dependent upon the system configuration, type of call control system

### Back view of the Mediatrix Liaison



used, type of Mediatrix units deployed, as well as the model of fax machines used. Should some of these conditions be unsatisfactory, performance of T.38 fax transmissions may vary and be reduced below expectations.

### ADSL Interface

The Mediatrix Liaison offers an integrated ADSL modem supporting ADSL, ADSL2 and ADSL2+. This

allows service providers to generate additional revenues by adding VoIP to their offering.

### LAN port

The Mediatrix Liaison is equipped with a LAN port on all models, for connection to a PC or router. An embedded DHCP server and NAT/NAPT support make the Mediatrix Liaison the ideal all-in-one product for Broadband access, home routing needs, and VoIP service. As an alternative to NAT, the Mediatrix patent pending technology on transparent IP address sharing can also be used. The technology allows the Mediatrix Liaison unit to share the same public IP address with the PC connected to the LAN port. This feature removes the need for users to reconfigure their unit each time a new application is added or altered on their PC. The Mediatrix Liaison intelligently selects which packets are intended for the telephones and sends them through. It then directs all other packets directly to the PC. For single PC configurations, transparent address sharing is a convenient and non-disruptive option.

### PSTN Bypass

In addition to the two phone/fax ports, the Mediatrix Liaison has a third RJ-11 port. This third RJ-11 port is present on certain Ethernet WAN models and connects a PSTN Bypass line. An internal splitter is present on certain ADSL models, and allows the RJ-11 port to also be used as a PSTN bypass line, in addition to an ADSL line. During normal operation, this PSTN line is not used. The first FXS port of the Mediatrix Liaison gets connected to the PSTN line through a commuting relay, if one of the three following conditions occurs: 1) Power is removed from the Mediatrix Liaison; 2) The IP network is down; 3) The user dials a pre-configured digits sequence (e.g. "911") indicating to the Mediatrix Liaison that the user wants to make an emergency call.

Consequently, a user on port one can place phone calls through this PSTN Bypass line. Port one stays connected to the PSTN line until: 1) Power is back; 2) The IP network is back up; 3) No active call is taking place. This ensures that following a return to normal conditions, an on-going call does not get disconnected from the PSTN.

The PSTN bypass feature embeds the Mediatrix patent-pending technology on intelligent VoIP routing, which includes the ability to automatically redial a number over the PSTN. To obtain a unit with a PSTN bypass, the corresponding Mediatrix Liaison models must be ordered.

### Housing and Power

The Mediatrix Liaison is designed to be a desktop installation and can be wall-mounted as well. The unit is powered by an external 12 Vdc wall plug power supply.

## SIP Specific Features

The Mediatrix Liaison supports the SIP signaling protocol as an endpoint entity. It can communicate directly with other endpoints (direct IP call) or register to a SIP call agent should the user request to.

### Full Integration with the Mediatrix *DiaL* IPCS Communication Server

When a number is dialed, the Mediatrix Liaison contacts the *DiaL* IPCS Communication Server and the server searches through its internal database to translate the dialed number to a corresponding IP address. If there is no match, the server will locate a gateway and place the call on the public switched telephone network (PSTN).

## Additional Features

### Fully Configurable “PSTN-Like” Experience

The Mediatrix Liaison generates all the familiar tones commonly heard on a standard telephone network. For example, a dial tone is heard as soon as the handset is lifted. Call progress tones such as ringback and busy are also supported.

The Mediatrix Liaison can be configured to accept almost any type of telephone number. Service providers can configure the Mediatrix Liaison to behave like the PSTN. For example users can dial “1” and ten numbers when placing a long distance call in North America, or numbering formats common to European countries can be implemented, to emulate the PSTN as much as possible.

### Remote Configuration / Easy Management

The Mediatrix Liaison can be integrated seamlessly within an existing administrative environment. SNMP support allows device-related adjustment parameters to be modified and polled remotely. Implementation of a web interface provides user-friendly access to common parameters. Firmware upgrade (CPU and DSP code) and configuration files are downloaded via a TFTP or HTTP server. Auto-provisioning of Mediatrix units is performed with added security through configuration file encryption and HTTP digest authentication.

### Industry Standard Protocols

The Mediatrix Liaison is designed to support all major industry standards used today, as well as those that will be implemented at a later date. Because of this specific design characteristic, the Mediatrix Liaison integrates with existing telephone, fax and data equipment such as PCs and routers.

## Supported Standards

- |                                      |   |
|--------------------------------------|---|
| <b>Vocoders</b>                      | <ul style="list-style-type: none"> <li>● G.711 (a-law, <math>\mu</math>-law) with optional VAD support</li> <li>● G.723.1</li> <li>● G.726</li> <li>● G.729a</li> </ul>   |
| <b>IP Telephony Protocols</b>        | <ul style="list-style-type: none"> <li>● SIP – RFC3261, RFC3262, RFC3263</li> </ul>   |
| <b>Real-Time Transport Protocols</b> | <ul style="list-style-type: none"> <li>● RTP/RTCP – RFC1889, RFC1890, RFC2833, RFC3389</li> </ul>   |
| <b>Network Management Protocols</b>  | <ul style="list-style-type: none"> <li>● SNMPv3</li> <li>● DHCP – RFC2131, RFC2132</li> <li>● TFTP – RFC1350, RFC2347, RFC2348, RFC2349</li> <li>● Syslog – RFC3164</li> <li>● HTTP 1.0 – RFC1945</li> <li>● HTTP 1.1 – RFC2616</li> <li>● HTTPS</li> <li>● Basic and digest HTTP authentication – RFC2617</li> </ul>   |
| <b>ADSL standards</b>                | <ul style="list-style-type: none"> <li>● ADSL/G.992.1</li> <li>● ADSL G.lite/G.992.2</li> <li>● ADSL2/G.992.3</li> <li>● ADSL2+/G.992.5</li> <li>● Data rates:               <ul style="list-style-type: none"> <li>● G.dmt downstream: up to 8Mbps</li> <li>● G.dmt upstream: up to 832 Kbps</li> <li>● G.lite downstream: upto 1.5 Mbps</li> <li>● G.lite upstream: up to 512 Kbps</li> </ul> </li> </ul>   |
| <b>Data Features</b>                 | <ul style="list-style-type: none"> <li>● RFC1332, RFC1661, RFC1334, RFC1994, RFC2516, RFC1471, RFC1472, RFC1473, RFC1877. .</li> <li>● TFTP or HTTP auto-provisioning</li> <li>● Transparent IP address sharing (Mediatrix patent pending technology allowing the same IP address to be shared between both Ethernet ports and distinguishing voice traffic from data traffic)</li> <li>● DHCP server</li> <li>● NAT</li> <li>● STUN client</li> <li>● Bridged Ethernet over ATM – RFC2684</li> <li>● PPP over ATM – RFC2364</li> </ul> |
| <b>QoS</b>                           | <ul style="list-style-type: none"> <li>● ToS</li> <li>● DiffServ</li> <li>● 802.1p</li> <li>● 802.1Q</li> <li>● WFQ</li> </ul>  |
| <b>Security</b>                      | <ul style="list-style-type: none"> <li>● PPTP/L2TP/IPSec pass-through</li> <li>● Network Address/ Port translation (NAPT)</li> <li>● DoS (UDP/TCP), detection of known attacks</li> <li>● ID password authentication</li> </ul>   |

## General Specifications

### Display

- Ready LED
- In-Use LED
- LAN activity LED
- Power status LED
- ADSL uplink LED

### Interfaces

- 2 RJ-11 connectors, analog phone/fax (FXS) interface.
- 1 RJ-11 connector, for ADSL connection
- 1 Optional RJ-11 connector for PSTN bypass connection. 1 RJ-45 LAN connector, 10/100 BaseT Ethernet access.

### Power

- External 12 Vdc power supply (wall plug or desktop, based on country/area model).
- Seamless switch over period if the client UPS detects a power loss and activates within 8 ms.
- Country-specific models

### Casing / Installation

Casing: Desktop (Plastic ABS UL94 V0).  
Installation: The Mediatrix Liaison is designed for the desktop or can be wall-mountable.

### Product Architecture Details

- Supports two concurrent communications using any vocoders.
- DSP-based DTMF detection and generation.
- DSP-based fax relay
- Embedded IPv4 TCP/IP stack with configurable QoS implemented by:
  - a) ToS byte at Network layer 3
  - b) 802.1p at Data Link layer 2
- Network parameters assigned via DHCP

### Real Time Fax Router Technical Specifications

Automatic selection between voice and fax

<b>Ethernet</b>	10/100 BaseT Ethernet
<b>Data Link</b>	Ethernet, ADSL
<b>Network</b>	IP (Internet Protocol)
<b>Transport</b>	TCP / UDP
<b>Protocols</b>	Group 3 Fax Clear channel (G.711), G.726 or T.38 Real Time Fax Over IP protocol Stack
<b>Fax Data Compression</b>	MH
<b>Fax Transmission</b>	Up to 14.4 kbps

### Analog Line Interface (FXS)

- Direct connection to a fax machine or telephone
- RJ-11 connectors
- DC feeding of the access line protected for over voltage
- Loop current detection and hook flash detection capable
- Generation of Selective Ring

<b>Trunk Type</b>	Loop Start
<b>Ring Source</b>	45 VRMS max @ 20 up to 50 Hz (selectable) sine signal
<b>Nominal Impedance</b>	BellCore compliant 600/900 ohms default setting.
<b>Ring Drive Capacity</b>	Up to 4 ringer equivalents (4 RENs) per port
<b>Loop Current Range</b>	15 to 32 mA factory set. Default 20 mA regulated
<b>Ring Trip Detection Time</b>	2 ring cycles max
<b>On Hook Voltage</b>	-48 VDC
<b>Freq. Response</b>	200 Hz to 3400 Hz $\pm 3$ dB (Tx/Rx)
<b>Return Loss</b>	600-3400 Hz: 30 dB

### Miscellaneous Audio Specifications

- Software input and output level adjustable within the range of -36 dB to +12 dB.
- Software-adjustable dynamic and static jitter buffer protection.
- Programmable by country: Call progress tone generation including dial tone, busy tone, ring back and error tones.
- Silence detection/suppression level software adjustable.

### DTMF Tone Detection

<b>16-Digit DTMF Decoding</b>	0 to 9, *, #, A, B, C, D
<b>Permitted Amplitude Tilt</b>	High frequency can be +2 dB to -8 dB relative to low frequency
<b>Dynamic Range</b>	-35 dBm to +3 dBm per tone
<b>Frequency Accept</b>	$\pm 1.5\%$ of nominal frequencies
<b>Minimum Tone Duration</b>	40 ms, can be increased with software configuration
<b>Interdigit Timing</b>	Detects like digits with a 40 ms interdigit delay

## DTMF Tone Generation

<b>Per Frequency Nominal</b>	-6 dBm to -4 dBm
<b>Frequency Deviation</b>	Less than 1%

## Standards Compliance

<b>Agency Approvals</b>	<ul style="list-style-type: none"> <li>● UL</li> <li>● CE Marking</li> <li>● Anatel</li> <li>● NOM</li> <li>● A-Tick</li> <li>● FCC</li> </ul>
<b>Safety Standards</b>	<ul style="list-style-type: none"> <li>● UL60950-1</li> <li>● CAN/CSA-C22.2 No. 60950-1</li> <li>● AS/NZS 60950-1</li> <li>● IEC 60950-1:2001, with all national deviations</li> <li>● Resolution 238:2000</li> <li>● NOM-019-SCFI-1998</li> </ul>
<b>Emissions</b>	<ul style="list-style-type: none"> <li>● FCC Part 15 (1998) Class B</li> <li>● EN55022 (1994) Class B, with amendments A1 and A2</li> <li>● AS/NZS CISPR 22 Class B</li> <li>● EN61000-3-2 (2000)</li> <li>● EN61000-3-3 (1995) with amendment A1</li> <li>● Resolution 237:2000 (Title II))</li> </ul>
<b>Immunity</b>	<p>EN55024 (1998), with amendments A1 and A2 including the following:</p> <ul style="list-style-type: none"> <li>● EN61000-4-2 (1995), ESD</li> <li>● EN61000-4-3 (1996), Radiated RF</li> <li>● EN61000-4-4 (1995), Burst Transients</li> <li>● EN61000-4-5 (1995), Surge</li> <li>● EN61000-4-6 (1996), Conducted RF</li> <li>● EN61000-4-11 (1994), Voltage Dips and Interruptions</li> <li>● Resolution 237:2000 (Title II)</li> </ul>
<b>PSTN Bypass</b>	<p>FCC Part 68:Subpart D</p> <ul style="list-style-type: none"> <li>● Industry Canada CS-03 Issue 8 Part 1</li> <li>● TBR 21:January 1998</li> <li>● AS/ACIF S002 – 2001</li> <li>● AS/ACIF S003 – 2001</li> <li>● AS/ACIF S043</li> <li>● Cofetel</li> </ul>

## Power Consumption

Measurements at the DC input

**Ringin Mode at 12Vdc** I = 950 mA P = 10.5 W  
(worst case, 4 REN load)

## Operating Environment

<b>Operating Temperature</b>	0°C to 40°C
<b>Humidity</b>	Up to 85 %, non-condensing
<b>Storage</b>	-20°C to +70°C

## Dimensions and Weight

<b>Unit Dimensions</b>	4.9 cm x 22.0 cm x 17.6 cm 1.9 in. x 8.7 in. x 6.9 in.
<b>Unit Weight</b>	545 g
Other measurements available on request.	

## Models

The Mediatrix Liaison comes in the following models:

**512:** 2 FXS; 1 ADSL WAN; 1 RJ-45 LAN.  
**522:** 2 FXS; 1 Bypass; 1 ADSL WAN; 1 RJ-45 LAN.

## Warranty

All Mediatrix products carry Mediatrix Telecom's standard one-year warranty. An extended warranty is also available.

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