

Feature Overview and Model Description

*This chapter describes the core features available on the **Prima LT***

1 **Prima LT** Overview

The **Prima LT** is an audio codec that is used to encode and decode audio for transmission over a digital facility such as ISDN, dedicated data service, and satellite. Along with its audio compression capabilities, the **Prima LT** has a rich set of monitor and control (M&C) features made possible by a powerful on-board control processor and special command language. These M&C capabilities give you unique capabilities you will not find in audio-only codecs.

Below is a chart of the **Prima LT** features:

Prima LT Algorithms	
CCS MUSICAM®	✓
Low Delay ISO/MPEG Layer II	✓
ISO/MPEG Layer II	✓
ISO/MPEG Layer III	✓
Independent Mono Operation	✓
CCITT G.722	✓
16, 24, 32 & 48 kHz sampling rates	✓

<i>Prima LT Features</i>	
24 Bit A/D and D/A converters	✓
Gold plated Neutrik® XLR connectors	✓
AES/EBU or S/PDIF digital audio I/O	option
Asynchronous ancillary data	✓
ISDN/X.21/RS422/V.35 DIF modules	✓
Windows® remote control software	option
Psychoacoustic parameter adjustment	option
ITU-T J.52 error protection	✓
68020 Integrated Support Processor	✓
Software update via RS232	✓
H.221 transport protocol	✓
Extensive on-line help for remote control	✓
Full remote control via RS232 or RS485	✓
Virtual control lines connecting each unit	12
Programmable summary alarm relay	✓
Bit error rate detector	✓
Out-of-frame detector	✓
Storage for 20 TA configurations	✓
System Snapshot' Speed-Dial editing	✓
User Profile' custom system defaults	✓

<i>Prima LT Mechanical Features</i>	
Dimensions: 19" rack mount or table-top	2U
All steel chassis	✓
Digital Interface Module slots	1
World Power Supply, rear power switch	✓
Extra-large dial and control keypad	✓
Large backlit LCD display	✓
Adjustable display contrast	✓
Keypad beeper and audible alarm, switchable	✓
Line connect, frame state and error LEDs	✓
Audio present and clip LEDs	✓

1.1 ***Prima LT*** Features

The rich feature set contained in the ***Prima LT*** makes it one of the most versatile audio codecs available anywhere.

1.1.1 Mechanical Features

The **Prima LT** is housed in an attractive 19" all steel chassis that can be used as a table-top unit or can be rack mounted using the provided mounting brackets. The **Prima LT** is convection cooled and requires no forced-air cooling as long as proper ventilation is provided. The **Prima LT** contains an international power supply that does not require jumper or switch setting adjustments for voltage or frequency changes. The power switch is located on the rear panel to prevent accidental shutoff.

The **Prima LT** has a large, backlit alphanumeric LCD display for viewing and changing system settings. The display contrast can be adjusted over a wide range for ease of viewing from any angle. The **Prima LT** can be configured and used from the large, built in keypad with tactile and audible feedback. In addition to the alphanumeric dialing keypad, there are keys for cursor control, speed-dial directory maintenance, status displays and two user programmable function keys.

The front-panel includes 8 LED indicators for connect state, framed state, bit errors and audio present and clip.

1.1.2 Audio Features

The **Prima LT** uses 24-bit Analog-to-Digital (A/D) and Digital-to-Analog (D/A) converters for high quality, low noise and low distortion audio conversions. Extra care has been taken in designing the analog audio section to provide the best possible audio performance. In addition, high quality gold plated Neutrik® XLR connectors are used for analog audio I/O. The **Prima LT's** +18 dBu maximum input level assures ample headroom for all applications without the need for audio limiters. Maximum input and output levels can also be set to +12 or +15 dB for connecting to consumer-grade audio equipment. Professional quality AES/EBU or consumer-grade S/PDIF digital audio input and output, with internal high-quality rate converters, is available as an option.

1.1.3 Ancillary Data

The **Prima LT** can transmit asynchronous ancillary data to the remote location along with the compressed audio data. Ancillary data can be data input to the rear panel ancillary data connector, virtual events, switch closures, etc. Ancillary data is encoded along with the audio and sent to the far end, where it is decoded and demuxed to the proper

location. Unlike other codecs that support ancillary data, all data is split evenly between left and right channels to assure equal fidelity.

Direct ancillary data; i.e., data that is not multiplexed with other data, can be sent at bit rates up to 38,400 bps. Multiplexed ancillary data can be up to 19,200 bps. The ancillary data can be used for remote control of peripheral equipment at the far end; for example, tape recorders can be stopped and started using ancillary data. Since the ancillary data is sent in the audio bit stream, the bits used for the ancillary data are not available for audio data. Therefore it is not advisable to use a high ancillary data rate with a low transmission rate. One key feature, however, is that if no ancillary data is present, no bits are robbed from the audio data, even if the **Prima LT** is configured to send ancillary data. Bandwidth is used only as needed.

1.1.4 Audio Compression

MUSICAM USA's new low-delay MPEG Layer II decoder yields 50% lower delay at any bit and sample rate for all single-line connections

The premier audio compression algorithm available in the **Prima LT** and all other MUSICAM USA models is MUSICAM USA's enhancement of industry standard ISO/MPEG Layer II coding, known in the USA as MUSICAM®. Since the enhancements apply to the encoder side only, using the MUSICAM USA algorithm allows all MPEG Layer II decoders to reproduce MUSICAM-enhanced audio.

Industry standard MPEG Layer III, industry standard MPEG Layer II, and ITU G.722 encoding and decoding is also supported. In addition, the **Prima LT** codec can communicate with a variety of codecs manufactured before industry standardization. Since encoding and decoding is accomplished in software, your new **Prima LT** can be upgraded in the field as algorithms improve.

Audio sampling rates of 16, 24, 32 and 48 kHz are standard. Note that not all algorithms support all sampling rates, and the **Prima LT** cannot be configured to an invalid combination.

The psychoacoustic parameters used by the MPEG Layer II compression algorithm, such as those mentioned in the **CDQPrima Technical Reference Manual**, can be fine-tuned by the user when using the optional Windows Remote Control program, a MUSICAM USA exclusive.

1.1.5 Control Features

The **Prima LT** can be configured and controlled from the front panel using the built in LCD display and soft-touch keypad. The basic keypad contains the cursor, alphanumeric, dial and speed dial keys required for all setup and control functions. In addition, Quick-Status and two user-programmable function keys are provided.

Full RS232 or RS485 remote control is possible using an external computer or terminal connected through the **Prima LT**'s remote control port. A Windows® setup and control program is also available for friendly point-and-click configuration and control of the **Prima LT**, and includes many special features. When using an external terminal or computer for control, full on-line help is available.

Far end remote control is possible using the ancillary data features available on the **Prima LT**. There are also twelve virtual control lines connecting each **Prima LT** unit. Directly entered commands can be sent to the far end **Prima LT**, as well as automatic control commands generated internally as 'Virtual Actions' in response to internal events. Internal events include bit-error, out-of-frame, or any one of four internal timers.

The **Prima LT** can not only be controlled remotely, but can also be used to control external devices. Commands can be sent to external equipment as ancillary data or virtual actions.

1.1.6 Pre-Programmed Quick-Configurations

The **Prima LT** Speed Dial Directory is used to create and store Quick Configurations. Since any Speed Dial entry contains all the information needed to configure and complete a link to a far end codec, you can use a non-dialing Speed Dial entry to instantly configure all line, algorithm and rate parameters. You can therefore completely change the configuration of your **Prima LT** with as little as one button press, even if you are *not* using an internal terminal adapter.

We have pre-programmed your **Prima LT** with more than three dozen of the most popular configurations, detailed in Chapter 6. In addition, you can instantly create your own Quick Configurations and store them for later use. You can also use one of the Quick Configurations as a template for creating your own Speed Dial entries. Simply edit a configuration, adding actual numbers to dial, change the name, and save it as your own.

In addition, the **Prima LT** comes pre-loaded with our 24-hour Music Line numbers. You can now confirm your **Prima LT** configuration and set up simply by speed-dialing our Music Line numbers at either 56 or 64 kb/s monaural, or 112 or 128 kb/s joint stereo. For accessing the Music Line numbers from outside North America, simply edit the appropriate speed dial entry and add the appropriate United States international dialing code to the numbers that are already present.

1.1.7 Auto Detection of Incoming Calls

The **Prima LT** can be programmed to detect incoming call algorithms and formats and reconfigure accordingly. This can be an invaluable feature when the receiving **Prima LT** is in an unattended location.

Using the power of Prima Logic Language (PLL) with its Event-to-Action Logic and Virtual Actions, it is possible to program your **Prima LT** to auto configure on up to four different device formats. This ability has *not* been pre-programmed into your **Prima LT**; however, using the example shown in the [CDQPrima Technical Reference Manual](#) (available from MUSICAM USA or on-line at www.musicamusa.com) as a guide, you may implement this feature if desired.

1.1.8 On-Site Software Upgrades

One of the most important features of your **Prima LT** is remote software updates via RS232 or RS485. Units do not need to be returned for software upgrades. New software can be loaded either from an attached terminal, or from a remote location through a modem.

1.1.9 Digital Interface Modules

The **Prima LT** architecture uses plug-in modules to interface to the digital transmission network. The **Prima LT** can hold one module. Modular architecture allows for application flexibility, and helps prevent obsolescence. Currently ISDN, X.21, RS422 and V.35 Digital Interface Modules are available. See Chapter 5 and the [CDQPrima Technical Reference Manual](#) for a description of the available DIMs.