MUSICAM USA

CDQ**Prima**® Digital Audio Codecs
Models 110, 120, 210, 220 & 230

Intelligent codecs for remote digital audio – with the world's best sound

CDQPrima

- Full Duplex Bi-Directional 20 kHz Stereo
- Best Digital Audio Quality for Broadcast, Pro Audio, Recording and Voice-Over
- ISDN, Satellite, T1, E1 and Dedicated Lines
- **CCS MUSICAM**® Enhanced Compatible ISO/MPEG Layer II
- ISO/MPEG Layer III and G.722
- SMPTE Timecode
- Multiple Ancillary Data Streams
- Built-In Automatic Smart Features
- Up to 384 kb/s Contribution Quality

More Connectivity For The Most Compatibility

CDQPrima®, the first intelligent multi-algorithm platform for remote digital audio, offers the highest quality with the most connectivity for maximum compatibility with CCS MUSICAM®, Layer II, Layer III and G.722.

The digital audio codec that provides the best audio quality and the widest range of features also has the most connectivity. MUSICAM USA's **CDQPrima** series codecs not only offer **CCS MUSICAM,** the enhanced ISO/MPEG IRT-certified Layer II, but also feature ISO/MPEG Layer III, as well as G.722.

CDQPrima Sounds Better

When quality audio is your most important product, you need a CDQPrima. We´ve designed every CDQPrima model to give you the best possible audio performance:

- Dynamic range of better than 92 dB
- Ultra-low distortion of less than 0.01%
- AES/EBU digital inputs and outputs (an option on Model 110)
- 24 bit A/D converters
- Gold plated Neutrik® connectors for long lasting system performance
- Sophisticated audio metering and headphone monitoring circuits
- Full contribution quality at bit rates up to 384 kb/s

Exclusive CCS MUSICAM For the Best Sounding Layer II

CCS MUSICAM is praised as a world standard for its pristine sound. CCS MUSICAM is our enhanced version of ISO/MPEG Layer II encoding. It has been certified by the IRT[1] as fully compatible with all ISO/MPEG Layer II decoders. CDQPrima encoding improves the sound of any Layer II decoder.

- Standard of the world's largest broadcasting networks and satellite systems
- All MPEG modes and options plus CCS' enhanced coding algorithms
- Worldwide compatibility with more than 20,000 CCS MUSICAM audio codecs installed, and compatibility with most other codec brands
- Exclusive MUSICAM USA enhancements to Layer II encoding yield audible improvements

The Best Sounding Layer III

The efficiency of Layer III's low bit rates combine with the exquisite design of CDQPrima for the best sounding ISO/MPEG Layer III and maximum compatibility.

- Best digital audio at the lowest bit rates available
- FhG[2] certified Layer III guarantees compatibility with other Layer III codecs
- Full independent stereo at bit rates up to 320 kb/s – Layer III's maximum bit rate
- Layer III provides 15 kHz mono audio on a single ISDN "B" channel (64 kb/s)

1 Institute für Rundfunktechnik
2 Fraunhofer Gesellschaft

CDQ*Prima*

CDQ**Prima Does More**

Easy To Use Built-In, Automatic Features

Broadcast and audio professionals have come to expect superior quality and the most advanced features from CDQPrima. Simple to set-up and operate, CDQPrima comes with automatic factory presets and Quick Configurations built in. On-board intelligent systems automatically recognize the calling codec, set appropriate bit rates and operating modes – even operate remote equipment at the far end connection.

● Programmable for "one touch" automatic dialing and instant networks

● Free software upgrades available on our Web Site

● Dial on audio/hang up on silence for hands-free connections

● Automatic STL (Studio-to-Transmitter Link) backup and restore

● Instantly reconfigures bit rates, stereo mode and algorithm – automatically
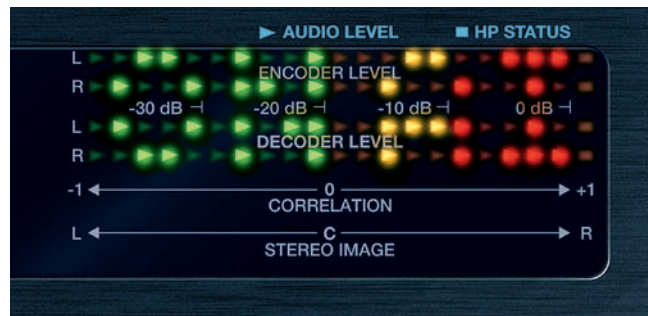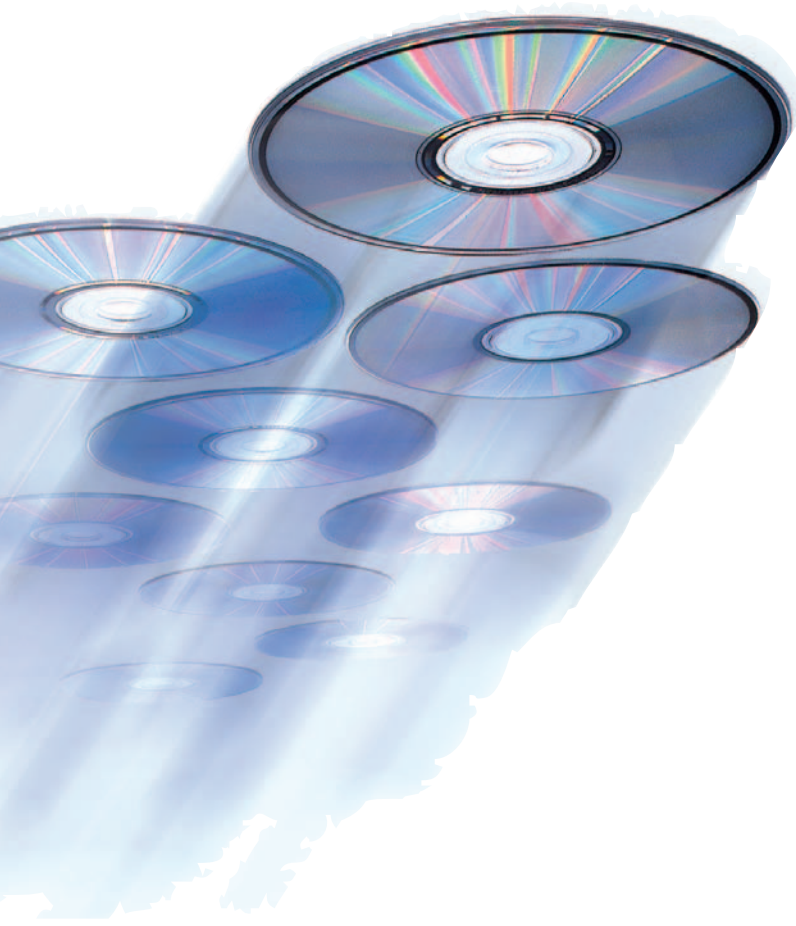
A World Of Connectivity At Your Fingertips

CDQPrima anticipates your requirements for all types of remote audio applications. Built-in intelligence matches bit rates, stereo or mono audio and all parameters. CDQPrima is versatile enough to be your primary STL or your STL back-up, connect automatically for same-time-every-day feeds, close relays to trigger automation at the far end or interface with any satellite system.

● Two stereo audio channels, SMPTE timecode, two RS232 ancillary data streams, RS485, up to eight opto-isolated inputs and eight dry floating relay outputs, scrolling text messages and command and control for the far end unit – all on one ISDN BRI

● CDQPrima is ideal for ISDN with 256 full-configuration speed dial memory locations, each with six ISDN "B" Channel numbers

● CDQPrima's optional intelligent on-board ISDN Terminal Adapter stores ten sets of ID and SPID numbers for easy portability

● Broadcast to up to three stereo locations or six mono with no additional hardware

● "Dual Channel Send" lets you send two separate mono programs to two separate locations – simultaneously

● ISDN Terminal Adapter supports various D-channel protocolls for worldwide usage

● CDQPrima features J.52 for multiline ISDN IMUX (BONDING)

● Optional X.21 and V.35 Digital Interface Modules interface easily with dedicated data lines, satellite, T1 and E1

● CDQPrima is the perfect choice for radio, TV, audio and video post production

● CDQPrima does everything from superb voice-overs to full fidelity digital mastering

There Is a CDQPrima Model To Fit Every Need

There are five CDQPrima models, varying from the economy single slot Model 110 to the deluxe, three slot Model 230. All models give you the same unsurpassed audio quality and basic functionality. All are bi-directional stereo, and all contain a 256-address ISDN speed dial memory system.

CDQ 110

Economy, ideal for unattended operation, full time dedicated STL, STL backup, satellite receive site, etc. 1x interface module slot for ISDN, X.21/ RS422 or V.35 digital interfaces.

CDQ 120

Ideal for attended operations and studio remotes connected to one ISDN BRI. Includes VU meters, status LEDs, AES/EBU I/O, headphone and front panel R/C jacks – one interface module slot.

CDQ 210

Economy, ideal for unattended operation. Includes XLR AES/EBU and RS485 port – three interface module slots for up to three ISDN BRIs (six ISDN "B" channels) or mixed digital interface modules.

CDQ 220

Ideal for attended operations and studio re-motes with connection to up to three ISDN BRIs. Includes VU meters, status LEDs, AES/EBU I/O, headphone and front panel R/C jacks, RS485 port - 3x interface module slots.

CDQ 230

Our deluxe model, for studio head end use and critical monitoring locations. Includes all features listed above, plus graphics LCD, spectrum analyzer, X-Y phase display, extended keypad with assignable hot keys and enhanced status display – 3x interface module slots.
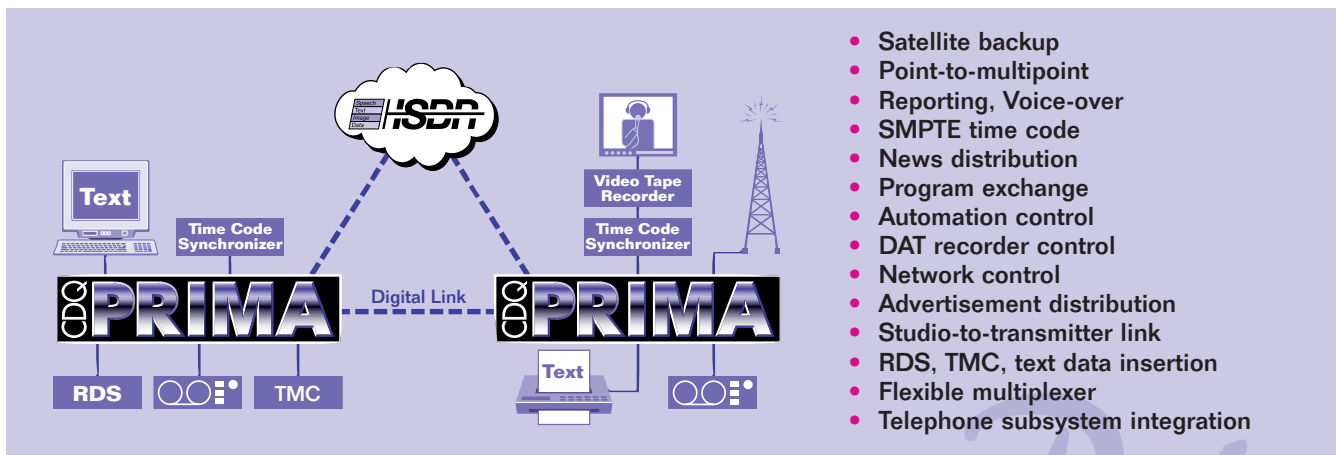
- Satellite backup
- Point-to-multipoint
- Reporting, Voice-over
- SMPTE time code
- News distribution
- Program exchange
- Automation control
- DAT recorder control
- Network control
- Advertisement distribution
- Studio-to-transmitter link
- RDS, TMC, text data insertion
- Flexible multiplexer
- Telephone subsystem integration

CDQ Prima

CDQPrima Model	110	120	210	220	230
▶ **Mechanical Features**					
Dimensions: 19 inch (48.3 cm) Rack Mount	1U high	1U high	2U high	2U high	2U high
Digital Interface Module slots	1	1	3	3	3
World Power Supply, rear power switch	X	X	X	X	X
Dial and control keypad with audible beep	X	X	X	X	X
Backlit LCD display with variable contrast	character	character	character	character	graphic
Digital LED average & peak VU meters		X		X	X
L/R correlation & stereo image display		X		X	X
Scrolling text messages on VU meters		X		X	X
Intelligent headphone monitor system		X		X	X
Additional front panel remote control port		X		X	X
▶ **Audio I/O, SMPTE & Ancillary Data**					
24-bit A/D converters	X	X	X	X	X
Gold plated Neutrik® XLR audio connectors	X	X	X	X	X
AES/EBU digital input, output and synch	● DB9	DB9	XLR	XLR	XLR
Automatic rate adaptation	X	X	X	X	X
Optical Digital I/O			●	●	●
Spectrum analyzer & phase display					X
SMPTE Timecode			●	●	●
Asynchronous ancillary data RS232	X	X	X	X	X
Additional asynchr. ancillary data RS232			X	X	X
Synchronous ancillary data	●	●	●	●	●
▶ **Compression Algorithms**					
ISO/MPEG Layer II (CCS MUSICAM® encoding)	X	X	X	X	X
ISO/MPEG Layer III	X	X	X	X	X
CCITT G.722	X	X	X	X	X
16, 24, 32 & 48 kHz sampling rates	X	X	X	X	X
Additional algorithm capacity	X	X	X	X	X
▶ **Command and Control**					
68020 Integrated Support Processor	X	X	X	X	X
Software update via Internet and RS232	X	X	X	X	X
J.52 IMUX (BONDING)	X	X	X	X	X
H.221 transport protocol	X	X	X	X	X
Extensive on-line help	X	X	X	X	X
Headphone select and level control keypad		X		X	X
4-button cue keypad		X		X	X
Hot keys & extended feature keypad					X
Full remote control via RS232 & RS485	X	X	X	X	X
Front panel RS232 remote control port		X		X	X
Optically isolated remote control inputs	● 4	● 4	● 4 or 8	●4 or 8	●4 or 8
Dry floating relay contacts or TTL outputs	● 4	● 4	● 4 or 8	●4 or 8	●4 or 8
Virtual control lines connecting each unit	12	12	12	12	12
RS232 control port, no modem control	X	X			
RS232 control port, full modem control			X	X	X
RS485 control port			X	X	X
Programmable summary alarm relay	X	X	X	X	X
Programmable silence detector	X	X	X	X	X
Programmable peak level detector	X	X	X	X	X
Bit error rate detector	X	X	X	X	X
Out-of-frame detector	X	X	X	X	X
▶ **Additional Options Available**					
ISDN, X.21/RS422, and V.35 DIF modules	●1	●1	●3	●3	●3
Windows® remote control software	●	●	●	●	●
Psychoacoustic parameter adjustment	●	●	●	●	●

X = always present
● = hardware/software option (for example: ●3 means optional 3)

Engineered for Today's Digital Audio –
And Flexible for Tomorrow

Remote Control, Local or Distant

All CDQPrima codecs can be remote controlled in a variety of ways. When equipped with a 4- or 8-input Opto/Relay card, up to 8 remotely located pushbuttons can perform a variety of functions, like "Dial this ISDN Connection," "Hang Up," "Change Algorithm and/or Bit Rate," and more. Wired RS232 Remote Control lets you command your CDQPrima from a nearby PC, and wired RS485 lets you address individual CDQPrima codecs in larger installations. A variety of available Windows® Remote Control programs give you minimal or total control. It is even possible to remote control the far end CDQPrima via the connecting transmission circuit without interrupting the audio program.

Customize the CCS MUSICAM algorithm with Psychoacoustic Parameter Adjustment

Based on a psychoacoustic model of the human ear and advanced techniques, CCS MUSICAM removes audio data judged irrelevant. Now, CDQPrima gives you the ability to tune the psychoacoustic model to meet your own needs, yet still be compatible with ISO/MPEG Layer II decoders. You can access up to 240 psycho-acoustic parameter tables, adjust and set them to custo-mize your audio, and even store parameters for recall.

More than a decade of our own experience in optimizing the Layer II algorithm is packed into every CDQPrima. Nevertheless, we want to let you play a part in the improvement of coded audio. Trust your own ears to create the sound you need.

CDQPrima Logic Language PLL
Access advanced codec features with over 180 commands

CDQPrima has intelligence, as well as superb audio. Every Prima lets you define, store and recall Event-to-Action Logic using easy-to-understand Prima Logic Language. Only CDQPrima lets you switch between near-end and far-end codecs to access and view "Virtual Actions". PLL gives CDQPrima the power to control and be controlled by other devices on your network.

SMPTE Timecode – On A Single ISDN Line

CDQPrima codecs equipped with optional SMPTE I/O boards accept standard SMPTE timecode signals and transmit them perfectly synchronized along with the audio to produce standard SMPTE timecode at the far end unit. Ideal for audio and video post-production, CDQPrima can synchronize recorders and other equipment over ISDN, satellite or dedicated data lines. For ISDN, Prima requires only 128 kb/s – two ISDN "B" channels, or one ISDN BRI – for crystal clear digital audio, SMPTE timecode, ancillary data, eight contact closures, scrolling message displays and full far-end remote control.

Ready For Tomorrow – Today

Hardware modularity and alterable software allows the CDQPrima to adapt to the future. CDQPrima uses easily changeable Digital Interface Modules and downloadable operating software to give you room to grow. Your CDQPrima can be easily upgraded to meet tomorrow's needs as new algorithms and digital transmission services become available. New operating software can be downloaded to your CDQPrima directly from the internet.
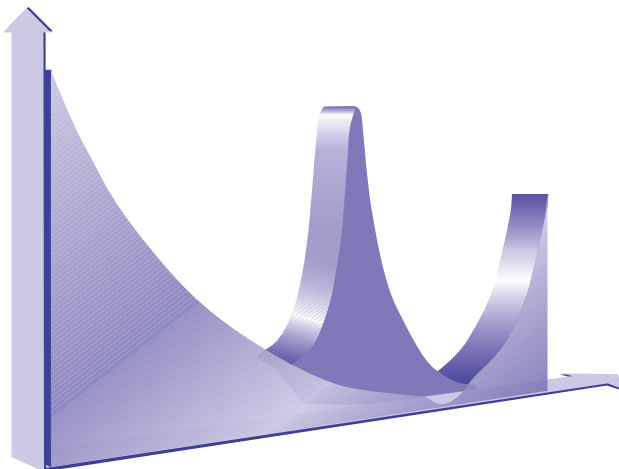
Analog Audio Specifications

Connector type	Gold plated Neutrik® 3-pin XLR Input: female Output: male
A/D converter	24 bits sigma-delta
Sample frequencies	16, 24, 32, or 48 kHz
Input impedance	600 ohms or >25 kohms, balanced
Output impedance	600 ohms or <60 ohms, balan.
Clipping level	18 dBu
Insertion gain	0 dB ±0.5 dB
System frequency response	±0.3 dB, ref. 1 kHz
Fs=16 kHz	20 to 7,500 Hz
Fs=24 kHz	20 to 11,250 Hz
System frequency response	±0.15 dB, ref. 1 kHz
Fs=32 kHz	20 to 14,500 Hz
Fs=48 kHz	20 to 20,000 Hz
Total harmonic distortion	<-80 dB at 1 kHz
Signal-to-noise ratio	>92 dB
Crosstalk	<-85 dB
L/R phase difference	<0.5°
Compression algorithms	CCS MUSICAM® Old CCS MUSICAM® New ISO/MPEG Layer II ISO/MPEG Layer III CCITT G.722

Digital Audio Specifications

Digital audio connectors Models 110 & 120	DB9, female (optional XLR adapter available)
Digital audio connectors M. 210, 220 & 230	Audio input: gold plated Neutrik® 3-pin XLR female Audio output: gold plated Neutrik® 3-pin XLR male Sync input: gold plated Neutrik® 3-pin XLR female
Type of interface	AES/EBU
Lock range	±200 ppm
Rate adaptation	Automatic

Data Interface Specifications

Network Interface

Types		ISDN BRI (2B+D) RS422 V.35 X.21
Number of B channels		From 1 to 6 in parallel
Bit rates		24, 32, 40, 48, 56, 64, 80, 96, 112, 128, 144, 160, 192, 224, 256, 320 or 384 kbit/s

Ancilliary data channel

Type of connector		DB9, female
Bit rate	Direct	300, 1200, 2400, 4800, 9600 or 38,400 bit/s
	Mux	300, 1200, 2400, 4800, 9600 or 19,200 bit/s
Mode		8 data bits, no parity, 1 stop bit
Handshake		None required

Alarm Interface

Type of connector	DB9, male
Functions	Summary Alarm
Type	Form C contacts

Control Interfaces

Level Meters		Mode	Average with peak hold
		Range	0 to -40 dB relative to full scale
		Mode	L/R correlation
		Range	+1 to -1
		Mode	Stereo image
		Range	+90 to -90 degrees
	Scrolling text display Selective variable intensity		
Headphone Output		Modes	Encoder or Decoder monitor L Encoder to both ears R Encoder to both ears L Decoder to both ears R Decoder to both ears
		Level control	Via front panel or remote control Separate level set for encoder and decoder
Remote Control (Rear and front panel)			
	Features controlled		All
	Electrical interface		RS232-C or RS485
	Connector		DB9, male (rear), 1/8 inch (0.32 cm) stereo jack (front)
	Bit rates		1200, 2400, 4800, 9600 or 38,400 bit/s
	Mode		8 data bits, no parity, 1 stop bit
	Handshake		None, or XON/XOFF
Digital Control Outputs		Type	Dry floating relay or open collector TTL
		Number	4 or 8 (only M. 210, 220 & 230)
		Connector	DB25, female
Digital Monitor Inputs		Type	TTL or optically isolated
		Number	4 or 8 (only M. 210, 220 & 230)
		Connector	DB25, female
Cue Channel:		Input	Front panel push button (Models 120, 220 & 230 only)
		Output	Front panel LED (Models 120, 220 & 230 only)
SMPTE Time Code (Models 210, 220 & 230 only)			
		Type	Both input and output
		LCD display	Hours, minutes, seconds, frames, mode
		Mode	24, 25, 30 & drop frame automatically detected
		Connector	DB25, female (optional XLR adapter available)

General

Environmental Conditions

Storage temperature	-40 to 70° C (-40 to 158° F)
Operating temperature	5 to 45° C (41 to 113° F)
Relative humidity	20 to 80%, non-condensing
EMC	EN 50081-1, EN 50082-2

Power

Line voltage	90 to 250 V AC, 47 to 65 Hz

Dimensions and Weight

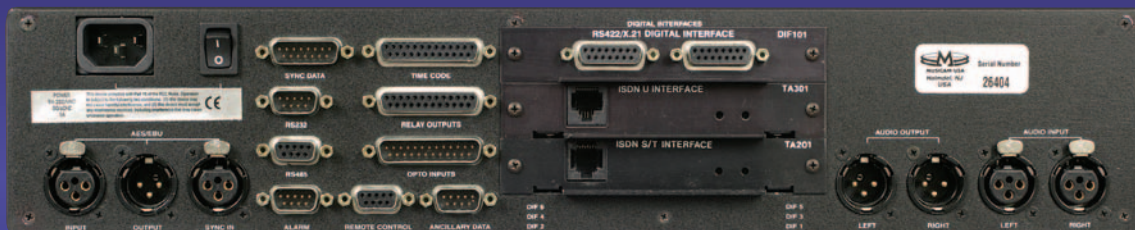|	
Height	Models 110 & 120 1U (1.75", 4.45 cm) Models 210, 220 & 230 2U (3.5", 8.89 cm)
Width	19" (48.26 cm)
Depth	12.2" (30.99 cm)
Net weight	Approx. 10 lbs. (4.5 kg)
Shipping weight	Approx 15 lbs. (6.8 kg)
Certifications	CE Mark, ISO-9002 manufactured

CDQ*Prima*

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CDQ**Prima 120**
rear panel – one digital interface slot, AES/EBU digital audio I/O standard

CDQ**Prima 230**
rear panel – three digital interface slots, note SMPTE timecode and additional data ports.

Specifications are subject to change without notice

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