

# Proposal

4601 Commercial Avenue Marion, IA 52302 319.373.1425

Proposal Submitted To: New Hampton Community Schools		Date April 30, 2019
Street 710 W Main St.		Job Name Intercom System Replacement
City State Zip Code New Hampton, Iowa 50659		Job Location High School
Contact Supt Jay Jurrens	Proposal # 19120ma	Phone

We are providing a proposal for a replacement school intercom which would replace the existing Dukane Starcall that is no longer manufactured or supported. The existing system was damaged from a lightning strike and power surges from a recent storm.

We will provide and install a new Bogen Quantum Multicom IP-Based Communication Solution. which will support all of the current high school and allow further expansion to include the new addition of the middle school. A separate proposal will be provided for the middle school project. Two administrative phones and a desk all call microphone will provide easy system control. A new digital radio tuner will also be provided and replace the old no working tuner.

Once everything has been installed we will program the new system for proper operation and assist with operational instructions.

**Material:**

- 1ea Bogen QSR144 Quantum IP Intercom System
- 2ea. Bogen MCDS4 Admin Phones
- 1ea Bogen SAX1R Aux Input Cards
- 1ea Bogen DST1 Digital Tuner
- 1ea Bogen DDU250 Desk Mic
- 1ea Bogen MIC2X Mic Input Module
- 1ea Bogen HTA250 Power Amp
- All needed installation hardware and labor

We propose hereby to furnish material and labor complete in accordance with above specifications, for the sum of:

**Thirty One Thousand Four Hundred Fifty Dollars**

dollars **\$31,450.00**

Payment to be made as follows:

**35% Deposit, Balance Due Upon Completion.**

plus tax

All material is guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Workmen's Compensation insurance.

Authorized Signature

**Mark A. Doubet**

Note: This proposal may be withdrawn by us if not accepted within

30

days.

**Acceptance of Proposal** - The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

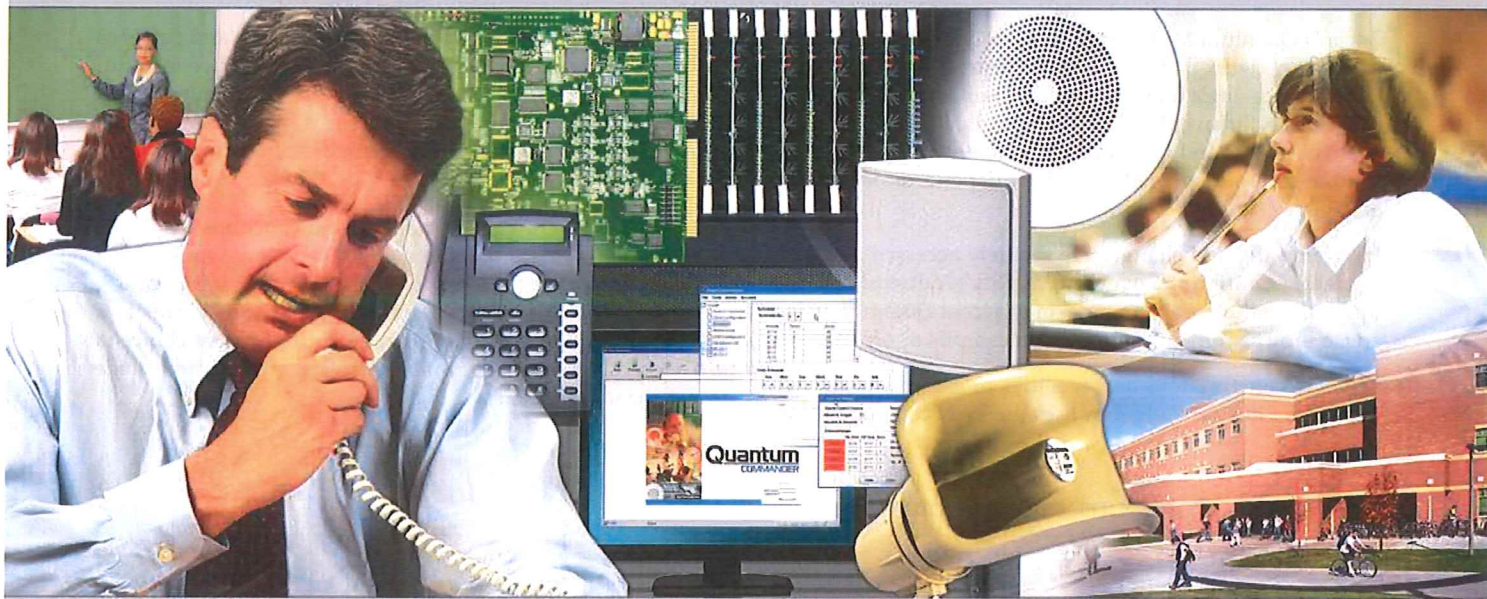
Signature

Date of Acceptance:



# Quantum

MULTICOM IP



**IP-Based  
Communications  
Solutions**

**BOGEN®**

# Quantum

## MULTICOM IP

### IP-Based Communications Solutions

- ▶ Effective Communications Facility-Wide and Campus-Wide
  - ▶ Leverage your network and lower your system costs
  - ▶ Scalable, cost-effective and feature rich

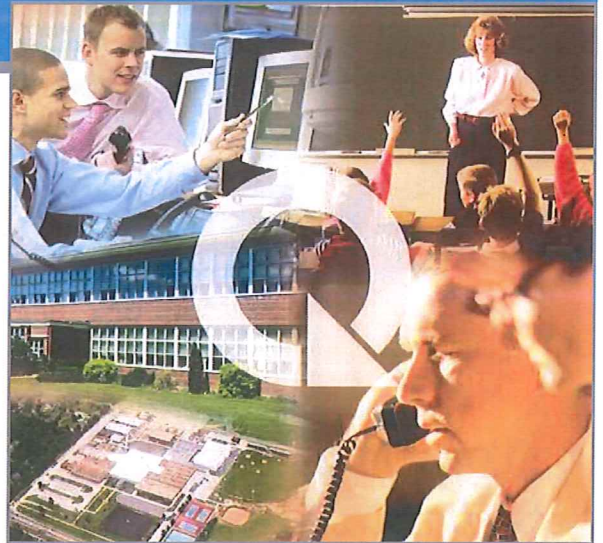
Bogen's Quantum Multicom IP is a comprehensive communications network that connects administrative areas and staff locations in a single building, multiple building sites throughout a facility, or an entire campus. It is filled with a variety of quality features and functions you can rely on every day for routine communications as well as depend on should an emergency situation occur.

Programming and changes are securely accessed and conveniently configured over the facility's network, or the internet. Authorized personnel may access Quantum using a web browser on any computer on campus or off-site.

For new constructions and facilities or campuses that are expanding in size, Quantum uses the LAN connections for

programming and sending of audio messages and pages so there is no need for dedicated control cables between buildings or across long distances. Zone paging and All-Call Emergency Mass Notification assures that messages sent from an Administrator location are distributed exactly and only to the desired locations.

Sophisticated emergency features and functions help you, your staff, and students in a crisis situation. Options and access can be customized for each station. System options include direct dial 911, re-routing of emergency calls to a different station type in the same location if busy, choice of 4 dedicated emergency alarm tones, and system-wide emergency All-Call.



### Key Communications Features for...

#### Facilities:

- Alert staff and students
- Select Zone Paging
- Pinpoint person-to-person communications
- Facility-wide mass notification
- Coordinate facility operations
- Station Call Rollover
- Direct Dial 911

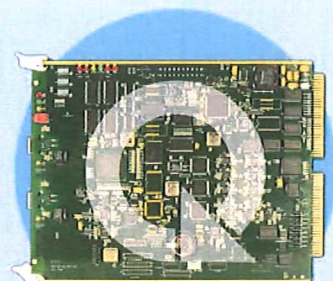
#### Campuses:

- Interconnect all facilities with Quantum IP communications systems
- Make calls directly into classrooms or admin offices from other facilities
- Make all-call announcements into facilities from remote sites like Administrative offices
- Make district-wide All-Calls to all facilities simultaneously

### Already Have Multicom? Just Add Quantum

Existing Multicom 2000 systems can be easily and cost effectively upgraded to Quantum functionality since the Quantum processor card is backwards compatible. Quantum seamlessly integrates with existing Multicom 2000 hardware, connected to a network, it provides enhanced features and functions.

Bogen's notification systems are an investment your facility makes once and benefits from in the future. Unlike competitive systems, Bogen's intercom systems are designed for backwards compatibility. This allows you to update your system with Bogen's latest system functionalities without needing to replace or install an entire new system.



QUANTUM PROCESSOR CARD

### Quantum Facility Capacity Maximums:

- **75** Quantum processors can be linked within one facility
- **18,750** stations using a combination of analog station devices and VoIP phones
- **600** non-blocking calls (*instantaneous capacity depends on call origination and destination*)
- **1.125** loop start central office telephone lines

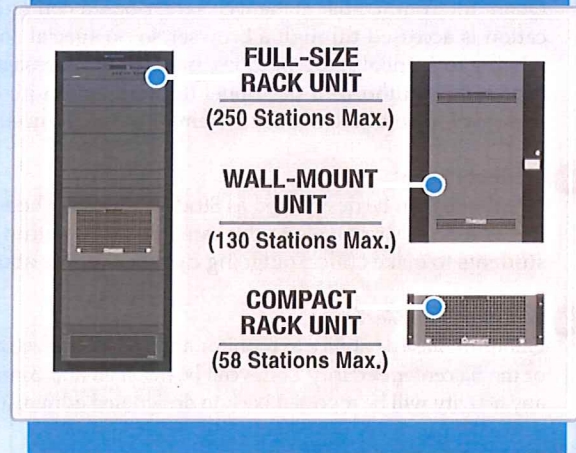
### Available Schedules, Zones, and Devices:

- **64** multi-purpose zones (*page, time, page+time, security*)
- **32** schedules, including calendar-based holiday schedules
- **1024** separate schedule events per facility
- **23** unique station device types
- **32** assignable classes of service

### Quantum District Capacity:

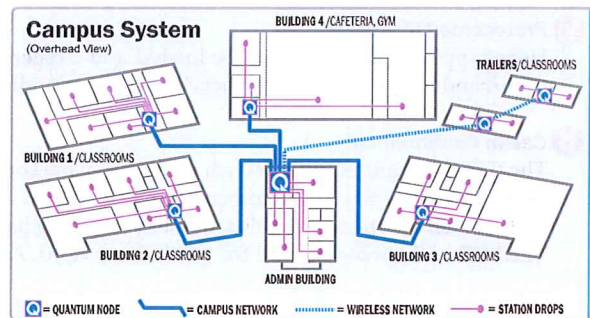
- **99** interconnected facilities per district

## QUANTUM PROCESSOR UNITS



### Quantum Deployment:

The Quantum system is extremely scalable and can be deployed to meet the demands of any facility configuration. The Quantum system uses a distributed facility architecture that places processor nodes at appropriate locations throughout the facility and links them together into a single system using the existing network infrastructure. By breaking the system into smaller, local processor nodes, thousands of feet of interconnecting home-run wire, as well as any associated conduit, trenching, surge protectors and installation costs, are eliminated. The scalability of the Quantum processor nodes allows perfect tailoring of the hardware to the local capacity requirement.



### Integrated Classroom, Campus, and District Solutions (see center panel illustration)

#### 1 District-wide Communications

Quantum allows entire school districts to be interconnected providing a way to make district-wide All-Call announcements, All-Call announcements to a single school and point-to-point communications between schools, B.O.E. offices, etc. Up to 99 facilities total can be interconnected into a district.

#### 2 Upgrade Your Existing Multicom 2000 to a Quantum System

Existing Bogen Multicom 2000 school intercom systems can be easily, and cost effectively upgraded with Quantum capabilities because it is backwards compatible. With this upgrade, the facility enjoys all the Quantum features, such as network-based control and district-wide interconnectivity.

#### 3 Expansion of Existing Facilities

New building additions can take advantage of the distributed facility architecture of Quantum by locating hardware near the new classrooms to provide shorter wiring runs and then use the facility's network infrastructure to link the existing and new sectors into one fully integrated school communications system.

#### 4 Network Phone Connections

Network connected VoIP phones are also available for Quantum. These phones provide a convenient way of installing phones in areas that already have a network drop.

#### 5 Network Connections to Remote Locations

Quantum hardware located in classroom trailers can easily connect to the main facility by means of the network drops feeding the trailers. If there are no existing drops, a wireless link can be used to make the network connections and carry the communications as well as the data to the remote classrooms.

## Integrated Classroom, Campus, and District Solutions *(cont'd)*

### 6 Quantum Commander

Quantum Commander is the web server-based configuration and control application for the Quantum system. The application is accessed through a browser so no special software is needed, allowing access from any computer. Functions relating to manual setup of tones, prerecorded messages, external equipment operation and schedule selection are easily accessed by authorized personnel through an intuitive user interface. Quantum can also allow equipment maintenance personnel remote access to the system reducing the need and cost of site visits.

### 7 Student Phones

Telephones can be designated as Student Phones. These phones have unique limitations, such as toll restrictions, length of use and number of calls to the same number within a certain time period. This phone service is designed to allow students to make critical outgoing calls, but reduce abuse of the privilege.

### 8 Security Zone Alerts

Quantum has the ability to monitor and alert administrators of any activity in key areas of the facility, such as a computer lab or media center. Security Zones can be installed and connected to appropriate sensors, such as motion or door position, so that any activity will be reported back to designated administrators' display phones.

### 9 Zones, Schedules, and Events

Quantum provides a facility with up to 64 separate zones for time tones and paging, plus 32 schedules providing up to a total of 1024 separate tone events. These capacities allow facilities a large degree of scheduling detail that can be used for "school within a school" applications.

### 10 Prerecorded Messages

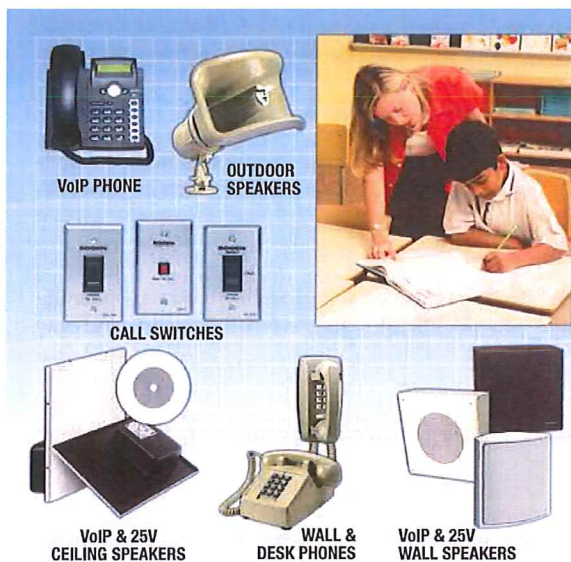
User-supplied audio files can be loaded and triggered for playback from either administrative telephones, Quantum Commander, or an external contact closure. These audio files are played back as an emergency level All-Call announcement.

### 11 Call-In Confirmation

The Call Assurance Call-In Switch provides visual confirmation that a call-in request has been logged with the Quantum system. Pushing the SC1's momentary rocker switch initiates a request for service to the Quantum system. The Quantum system then acknowledges this request by signaling back to the initiating SC1, which then illuminates its LED annunciator. The LED will remain lit until the call-in is serviced. At the end of the call, the LED will extinguish.

## Classroom Devices

A wide range of speakers, telephones, and call switches are available to fit the specific needs of the classroom, multi-purpose room, zone or outdoor area.



## Office Devices

Administrative display telephones, VoIP (SIP) phones, wall displays and room speakers are available to address the needs of the main office and other administration areas.



## An Overview of Quantum Integrated School, Campus, & District Solutions

- 1** District-wide Communications
- 2** Upgrade Your Existing Multicom 2000 to a Quantum System
- 3** Expansion of Existing Facilities
- 4** Network Phone Connections
- 5** Network Connections to Remote Locations
- 6** Quantum Commander
- 7** Student Phones
- 8** Security Zone Alerts
- 9** Zones, Schedules, and Events
- 10** Prerecorded Messages
- 11** Call-in Confirmation



For Illustrative Purpose Only

## Benefits for School Administrators...

### • **Browser-Based Remote Access**

Administrators get easy browser-based control of facility bell schedules, prerecorded announcements, and alarm tones. Since the control is browser-based, special software is not needed. A URL and a password are all you need to access Quantum Commander from any location.

### • **Instant Notification When Secure Areas Accessed**

Quantum's Security Zones can provide real-time notification of access into sensitive facility areas. As soon as a sensor is tripped, Quantum sends an alert via the administrator's phone or wall display. It can also trigger relays and/or emergency messages.

### • **Station Call Rollover**

When a speaker and a telephone device are both located in a classroom, an administrator will always get through with Quantum's rollover feature. If one device is being used, then the administrator's call will automatically rollover to the other device.

### • **Administrator Phone Groups**

Quantum allows administrator phones to be assigned into groups to ease managing calls when others are out of the office. If the destination phone isn't answered within 30 seconds, Quantum will automatically route the call to the other phones in the group.

### • **Call-In Confirmation**

Using the SCI "Secure Call" call switch, classroom users will know that their request for communications with an administrative station has been received and logged in the Quantum system.

### • **Survivability**

*Distributed Integration:* Quantum is designed to survive network crashes by allowing individual processor nodes to operate autonomously. Losing network communications to one piece of Quantum hardware does not affect the others and even the affected hardware continues to operate, delivering bells and providing communications for devices connected to it locally.

*Fail-Safe Features:* As an added safety measure, a mass notification feature can be hard-wired to all Quantum nodes within a facility, ensuring that Emergency All-Calls can be made during a complete system-wide network failure.

### • **Programmable Calendar and Holiday Schedules**

Quantum contains a complete calendar function and holiday schedule feature that allows accurate and automatic execution of bell schedules throughout the year or years to come. Schedules are customizable, and easy to change. Calendars also allow automatic Daylight Savings Time adjustment.

### • **Limit Outgoing Student Phone Calls**

Quantum's Student Phone feature provides students with the ability to make outgoing calls without abusing the privilege.

## Benefits for District Superintendents...

### • **A System That Grows As You Need It To**

Quantum is an expandable system. You can configure the system for your entire district all at once, or you can purchase for each individual school or building location over time.

### • **Communications For All, As Needed**

Point-to-point calls between different facilities, All-Call paging into individual facilities, and District-Wide All-Call paging to all facilities.

## Benefits for Facility Managers...

### • **Scalable To Your Needs**

Quantum is extremely scalable and flexible. Quantum processor nodes can be deployed in the appropriate capacity for each location to make installation and maintenance as effective as possible.

### • **Runs On Existing Network**

Quantum uses the school's existing network to trunk the voice and data signals between processor nodes. This can eliminate thousands of feet of interconnecting home-run wire, as well as any associated conduit, trenching, surge protectors and labor costs. This provides obvious benefits in the installation phase as well as the system's long-term maintenance.

### • **Network/Internet Setup & Maintenance**

Quantum allows facility maintenance personnel or contracted dealers a simple means to remotely configure and diagnose the system operation through the facility's network or over the Internet.

### • **Network Time Synchronization**

If provided with internet access, Quantum can synchronize with network time servers. This ensures accurate time and correctly sets and adjusts daylight savings time.

## Benefits for IT Directors...

### • **Leverage Existing Network**

Quantum leverages the facility's existing network to interconnect multiple processor nodes located throughout the facility. The network carries Quantum's system control data and VoIP-based communications to other system nodes. Nodes then convert the calls to and from the analog domain for delivery to their associated classroom end-of-line devices.

### • **VoIP Speakers**

Since Quantum is VoIP-based, VoIP speakers can communicate with it. These devices allow a simple and effective way of adding speakers to an existing system.

### • **Duplicate Databases Secure Critical Data**

The Quantum Commander, which is resident on each Quantum node, acts as a web server and provides browser-based access to the configuration and diagnostic features of the system. Each node holds duplicate databases for the system, providing redundancy for critical data.

### • **Node Operation Not Affected By Network Outages**

Since even robust networks may fail, Quantum is designed to survive network crashes. All processor nodes can operate independently of one another. If a network connection is lost to one, the others remain operational. Even the affected node continues to operate, servicing bell schedules and local calls.

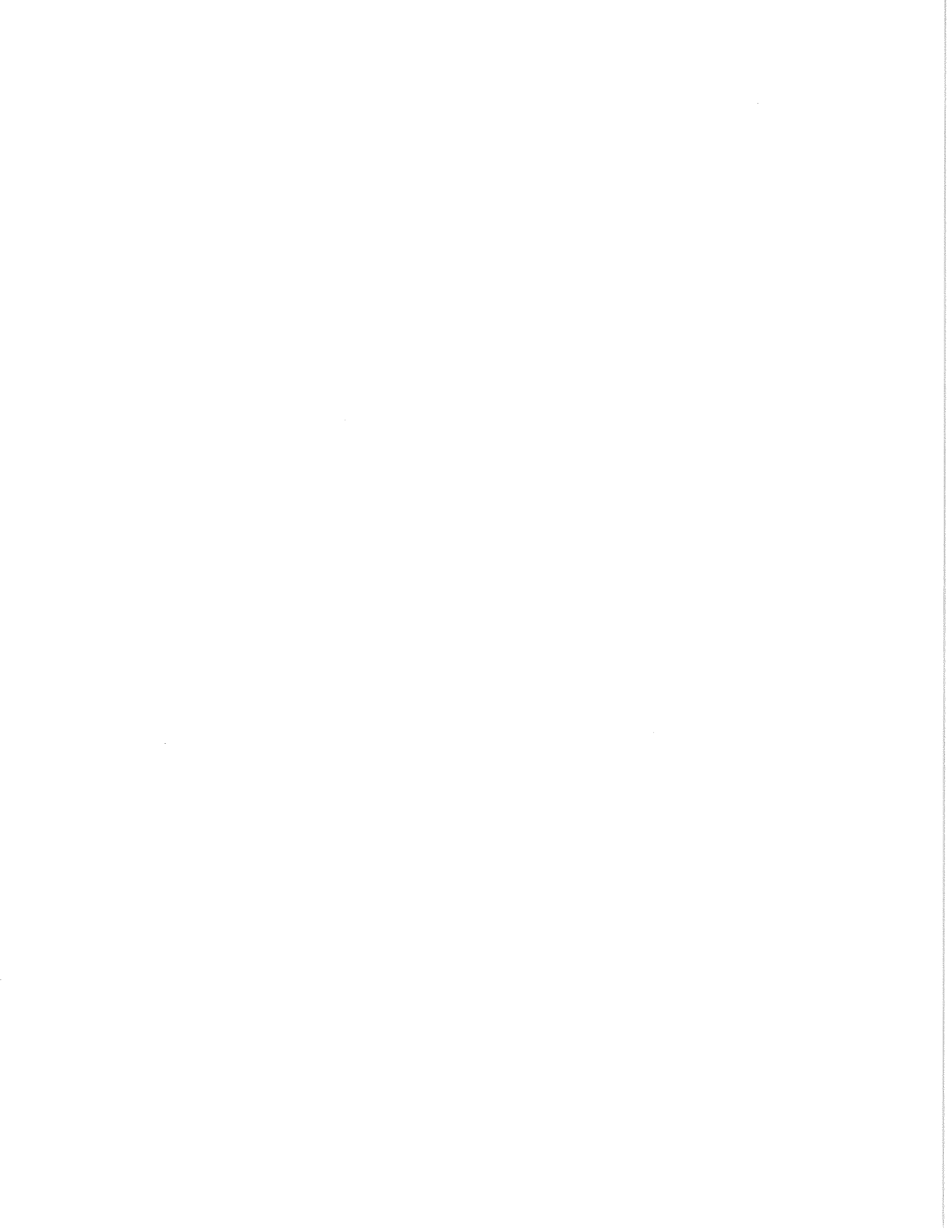
### • **Powerful Processor Card**

The Quantum processor card is designed around a 250 MHz Power PC microprocessor platform running a Linux OS. This provides plenty of processing power and a processor card that will keep up with enhancements in system software for many years to come.



Also Available From Bogen

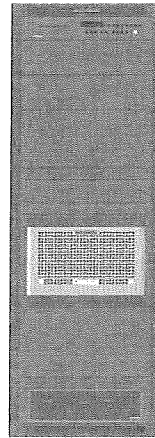




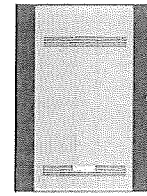
# Quantum

MULTICOM IP

## Rack Mount, Wall Mount, and Compact Rack Mount



Rack Mount



Wall Mount



Compact  
Rack Mount

### Description

Bogen's **Quantum Multicom IP** is a comprehensive communications network that connects administrative areas and staff locations in a single building, multiple building sites throughout a campus, or an entire school district. Quantum enables facility- or district-wide mass notification, paging to zones or select point-to-point communications. Emergency notification, direct-dial 911, emergency alarm tones, pre-recorded messages and network time synchronization are possible, and Quantum also supports media control of VCRs and DVDs. The system nodes are interconnected using existing network infrastructure. In many installations this greatly reduces the need for additional home-run wiring, conduit, trenching, surge protectors, and associated installation costs.

Quantum is highly scalable, with as many as 64 processor nodes combining to serve up to 16,000 stations per facility, and with up to 99 facilities possible in a Quantum district. The system handles up to 960 central office telephone lines, and up to 512 non-blocking calls and pages. Distributed facility architecture allows deployment of the right combination of hardware for any facility's needs.

**Quantum Rack system node** – supports up to 250 stations.

**Quantum Wall-Mount system node** – supports up to 130 stations. Space-saving wall-mount design.

**Quantum Compact Rack system node** – supports up to 58 stations in a compact, six-rack-space design. Easily mounts in existing IT equipment racks. Allows economic distribution of Quantum nodes throughout a facility.

**Quantum Commander** function is resident on each processor card. System administrators use Quantum Commander to configure the system via secure, browser-based access.

### System Features

- Network interconnected nodes allow distribution of hardware throughout a facility, reducing long cable runs
- Highly scalable, 1 to 64 nodes support 34 to 16,000 stations per facility
- Up to 99 facilities interconnected to form a district
- All-Calls throughout a facility or across an entire district, or point-to-point communications between any two stations
- 32 Schedules, including calendar-based holiday schedules
- 1,024 Separate schedule events per facility
- 64 Multipurpose time, paging, and security zones per facility
- Any combination of Administrative Display Phone, Administrative VoIP Phone, Administrative Phone, call switches, speakers, or media control
- User-supplied audio files can be played back as emergency-level All-Call announcements
- Allows voice calls, time tones, media, and emergency announcements to travel along the network, wired or wireless
- Network time synchronization
- Four dedicated alarm tones

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**User  
Features**

- Station Call Rollover forwards calls to in-room speaker if telephone is busy
- Administrative Display Phone groups automatically forward calls if destination phone is not answered
- Direct-dial 911 feature speeds emergency calls and helps administrators pinpoint the station making the call
- Choice of distinctive tones for scheduled events like class change, as well as dedicated emergency alarm tones
- Security zones may be connected to door or motion sensors to alert administrator stations of activity in specified areas
- Media control of VCRs and DVDs
- Designated student phones allow outgoing calls while limiting abuse of privilege

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**Tech  
Features**

- System nodes are interconnected using existing network infrastructure
- Nodes function independently during network outage
- Quantum nodes store duplicate databases so critical system information is not lost during network outage
- Real-time programming and control from any PC with network access
- Fail-safe feature can be hard wired to each node in a building allowing emergency mass notification
- Backwards compatibility allows Quantum to work with existing Multicom 2000® hardware
- Quantum connects to public switched telephone network via analog CO trunks

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**Technical  
Specifications**

- Capacity:** 34 to 250 Stations (Rack Mount System)  
34 to 130 Stations (Wall-Mount System)  
58 Stations (Compact Rack Mount System QCR48)  
34 Stations (Compact Rack Mount System QCR24)  
Up to 64 Nodes per facility  
Up to 16,000 stations per facility  
Up to 99 interconnected facilities per district  
Up to 512 Non-blocking calls and pages  
Up to 960 Loop start central office phone lines  
32 Schedules, including calendar-based holiday schedules  
1,024 Separate schedule events per facility  
64 Multipurpose time, paging, and security zones per facility  
19 Unique station device types  
32 Assignable classes of service
- Connectivity:** 1 LAN Port per node
- Configuration:** Via browser-based Quantum Commander program  
3 Access levels (access dependent on user credentials)
- Maximum Ambient Temperature:** 120° F (49° C)
- Dimensions:** 19" W × 26.25" to 68.25" H\* × 16" D (Rack Mount)  
24" W × 32" H × 10" D (Wall Mount)  
19" W × 8.75" H × 16" D (QCR 24)  
19" W × 10.5" H × 16" D (QCR 48)

\*Height of Rack Mount System depends on configuration ordered

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**Architect &  
Engineer  
Specifications**

Please see [www.bogen-es.com/quantum/documentation/](http://www.bogen-es.com/quantum/documentation/) for Architect & Engineer Specifications.

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**COMMUNICATIONS, INC.**

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# Administrative Display Telephone

## Model MCDS4



- Features**
- DTMF dialing, 12-push-button keypad
  - 13 user-programmable, auxiliary function push buttons
  - 4-line x 16 character supertwist LCD display readout with alphanumeric, menu-driven operation
  - Displays up to four incoming calls, each with its priority level: normal, urgent, or emergency
  - Displays up to 8 outside lines and their status: free, ringing, in use, hold
  - Special ring signal and flashing "HELP" for emergency calls
  - Displays and sounds emergency 911 alert
  - Speakerphone for hands-free conversation
  - Handset volume control

**Description** The Bogen MCDS4 is a 12-push-button DTMF dialing telephone, designed for use as an administrative station in Bogen Multicom 2000® and Quantum Multicom IP Systems. It incorporates a high-contrast supertwist LCD-type display panel, and a unique, easy-to-read menu-driven display system to provide rapid, efficient, and reliable control over the system's paging, intercom, or signal distribution features. (The specific features available to any station are assigned from the system's "central administrator" station.) A built-in speakerphone feature provides hands-free conversation. A handset volume control allows volume adjustment. The MCDS4 features ten dedicated-function push buttons and three user-programmable push buttons. The dedicated functions include speed dial of up to 10 numbers, redial last number, hold, speaker, and speaker volume control. The three programmable buttons can be used to speed dial frequently called numbers, or used to initiate a system function (alarm, relay, etc.).

Five different ringing signals are provided to distinguish call alert, normal, urgent, and emergency calls, and incoming outside line calls. The MCDS4 is fully compatible with the MCTCA option and when used in Multicom 2000 systems can display the status of outside lines and calls on hold for the first eight lines.

When the MCDS4 is used as the central administrator's phone with a Multicom 2000, system programming can also be performed. A special password-protected menu routine can be displayed on the LCD panel to guide the programming process.

The unit is furnished with a replaceable modular telephone coil cord, an easy-to-wire junction box and an AC power supply. It is constructed of high-impact ABS molded in a gray finish. The handset includes a dynamic receiver and transmitter. The phone requires 7-5/8" x 8-7/8" of desk or wall mounting space. Product weight is 3 lb.

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## Technical Specifications

<b>Audible Signals:</b>	5 ringing signals – call alert, normal, urgent, emergency call, incoming outside line call (requires MCTCA card)
<b>Dialing:</b>	DTMF-dialing "touch tone" telephone keypad
<b>Auxiliary Dialing Functions:</b>	10 fixed function, 3 programmable keys
<b>Outside Line Capability:</b>	8 lines (requires MCTCA card)
<b>Interconnections:</b>	Via junction box. Twisted-pair required for telephonic communication; optional outside line status feature requires additional twisted-pair.
<b>Digital Display:</b>	4-line x 16 character LCD. Display shows time, current time-signal schedule, station numbers/priority of calls, outside line status, and system operating menu routines.
<b>Construction:</b>	Molded ABS; gray finish
<b>Dimensions:</b>	7-5/8" X 8-7/8" desk or wall-space required
<b>Product Weight:</b>	3 lb.
<b>Power Supply:</b>	Supplied; 120V AC, 60 Hz, 5W input; 12V DC, 300mA output

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## Architect and Engineer Specifications

The administrative telephone(s) shall be a Bogen Model MCDS4. It shall be a DTMF-type with 12 positive action push buttons. It shall have dedicated function keys for speed dial (up to 10 numbers), redial, pause and save (programming functions), outside line, volume control, and speakerphone. It shall have three (3) programmable multi-function keys for speed dial or other system functions.

The phone shall provide full two-way hands-free speakerphone or private handset communication with any other system telephone, or intercom communication with any system staff station speaker. The phone shall allow handset volume control adjustment. The phone shall have its own internal microprocessor and shall provide for full implementation, control, and display of the Bogen Multicom 2000 and Quantum Multicom IP system's operational functions and modes. Each administrative station shall also support an optional loudspeaker. It shall store up to thirteen (13) speed dial numbers, three of which may be assigned to any of the dedicated function keys.

The phone shall be equipped with a 4-line by 16-character LCD-type display panel which shall normally show the time of day, day of week, and current time signal schedule. The display shall also be capable of displaying four (4) internal calls with their priority level, and the status of up to eight (8) outside lines.

Five (5) ring signals shall be supported, to distinguish between call alert, normal, urgent, and emergency calls, and outside line calls. Unanswered calls shall be logged, in order of priority, as a call-back request. Incoming emergency

calls shall also cause the word "HELP" to flash on the display panel. (A feature is available to route incoming emergency calls to a dedicated emergency speaker station in the event the administrative phone is unanswered.) The phone shall display and sound a 911 emergency alert.

An easy-to-read display shall be available to guide the operator through scrolling, auto-dial and queue/erase functions. When used with the Multicom 2000, a system setup menu shall be available to designated administrative telephones, with the entry of a valid password. The menu shall permit setting the time and day of week, programming time-signaling events, time zones and page zones, and accessing an outside line (if this option is specified). A system "initialization" menu shall be available from the configuration menu, and with the entry of a valid password, shall permit full control over system functions and station functions.

The telephone shall be supplied with a modular telephone coil cord, junction box, and AC to DC power supply. The power supply shall provide 12V DC @ 300mA for display panel operation from normal 110V AC. The telephone shall be constructed of high-impact molded ABS in a gray finish. The handset shall include a dynamic receiver and transmitter. All telephonic communication, complete with DTMF signaling, dial tone, ringing and busy signals, and data display shall use two wires. Two additional wires connecting to the system's RS485 interface shall be required to utilize the line status feature (Multicom 2000 systems only). Desk or wall mounting space required shall be 7-5/8" x 8-7/8". Product weight shall be 3 lb.

# Digital Stereo Tuner

## Model DST1



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### Description

The Bogen **DST1 Digital Stereo Tuner** is ideal as a background music source in sound systems of all sizes. It incorporates a digital PLL-synthesized tuner for precise reception of FM and AM signals. Tuning is accomplished by pushbuttons with frequency readout appearing on an alphanumeric, fluorescent display panel.

The DST1 features the ability to store up to 60 total presets (FM and AM). Stations can then

be selected individually by pushbutton or by scanning the preset stations.

The tuner operates from nominal 120V AC, 60 Hz. It is designed for shelf- or rack-mounted installation and is one rack space (1 RU) high. Removable rack ears are included with the unit.

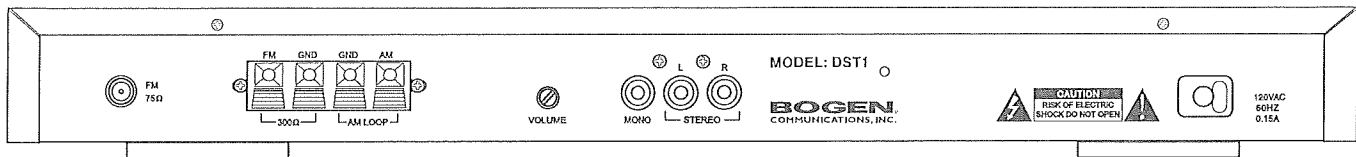
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### Features

- PLL-synthesized tuning with digital readout
- FM Frequency range: 87.00 to 108.05 MHz
- AM Frequency range: 530 to 1710 kHz
- 60 Presets total (FM and AM), with scan feature
- Stereo and Mono outputs (1V minimum) via RCA jacks
- Alphanumeric, fluorescent display panel
- Connectors for 75-ohm FM, 300-ohm FM, and AM loop antennas
- FM dipole and AM loop antennas included
- Volume Control (rear panel-mounted)
- Operates from nominal 120V AC, 60 Hz
- Included accessories: Handheld Remote Control and Stereo Output Cable
- Shelf- or rack-mounted installation, one rack space high (removable rack ears included)
- Listed to UL Standard 60065 for U.S. & Canada

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**Technical Specifications**

- Band Coverage:** FM: 87.00 to 108.05 MHz; AM: 530 to 1710 kHz
- Tuning:** PLL-Synthesized
- Channel Indicator:** Alphanumeric, fluorescent display
- Station Tuning:** Pushbutton
- Preset Memory:** 60 Total stations (FM and AM)
- Memory Scan:** Preset stations
- Antenna Connectors:** FM: 75-ohm, coaxial; 300-ohm, push-release  
AM: Push-release
- Output:** Stereo/Mono Out via RCA jacks; 1 volt minimum
- Program Selection:** Pushbutton, via front panel or Remote Control
- Output Terminals:** RCA Jacks
- Controls:** Power, Intro, Memory, Channel, AM/FM, Tuning, Stereo/Mono, Volume
- Power Required:** 120V AC nominal, 60 Hz, 0.15A max.
- Dimensions:** 16-7/8" W x 1-3/4" H x 10" D (without feet)  
16-7/8" W x 2" H x 10" D (with feet attached)
- Product Weight:** 5 lb.

**Architect & Engineer Specifications**

The tuner shall be a Bogen DST1 Digital Stereo Tuner. It shall incorporate a digital PLL-synthesized tuner for precise reception of FM and AM signals. All tuning shall be accomplished by pushbutton. An alphanumeric readout of frequency shall be displayed on a bright fluorescent display panel. FM frequency range shall be from 87.00 to 108.05 MHz. AM frequency range shall be from 530 to 1710 kHz. It shall be possible to select up to 60 total preset stations (FM/AM). It shall be possible to select stations individually by pushbutton or by scanning the preset stations. A stereo and mono output of 1 volt minimum shall be provided via RCA jacks. A stereo output cable and remote control shall be included with the unit. A rear-mounted volume control shall be provided to attenuate the output signal.

Connectors shall be provided for 75-ohm FM, 300-ohm FM, and AM loop antennas. FM dipole and AM loop antennas shall be included with the unit. The tuner shall operate from nominal 120V AC, 60 Hz. Dimensions shall be 16-7/8" W x 1-3/4" H x 10" D. With included feet for shelf placement, the unit shall be 2" H. Weight shall be 5 lb. The tuner shall be designed for shelf- or rack-mounted installation and shall be one rack space (1 RU) high. Removable rack mounting ears shall be included.

**BOGEN<sup>®</sup>**  
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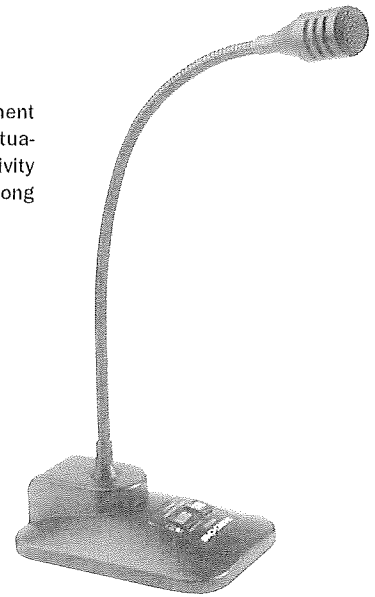
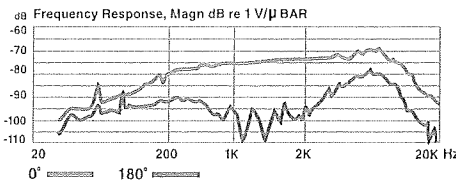
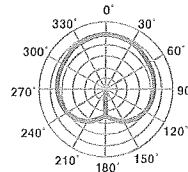
## DESKTOP

### Dynamic Desktop Microphone DDU250

High-quality slim, compact desktop microphone with gooseneck positioning flexibility for sound reinforcement applications. Exudes excellent speech and intelligibility. Cuts through noisy backgrounds of live miking situations and large gatherings. Effective control of feedback, reduced ambient handling noise, and low sensitivity to breath and popping sounds. Features a push-to-talk switch, a push-to-lock switch, a hard-wired 10-foot long 5-conductor cable, and a wire-mesh wind filter. Table stand with on/off switch.

(4-1/4" W x 18-1/4" H x 6-1/4" D, 3-1/2 lb.)

- 16" sturdy, flexible neck
- Rugged metal die cast base w/shock mount
- Matte black finish
- Cardioid pickup pattern
- External contact closure outputs
- Moving coil dynamic element
- 500-ohm impedance
- Wide frequency response range of 100 Hz - 12 kHz
- Sensitivity of -76 dB +/- 3 dB



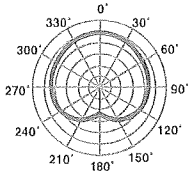
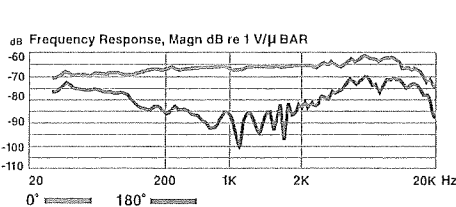
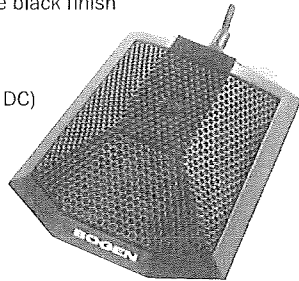
## SPECIALTY

### Professional Boundary Microphone SCU250

Full, rich reproduction of voice and music in a low-profile design. Perfect for applications where minimum visibility is required, or where a handheld microphone might be impractical to use. Low sensitivity to thumping noise, excellent user sound isolation, feedback rejection, and reduced room reverberation. Excellent clarity for multiple microphone applications.

(2-3/4" W x 3/4" H x 3-1/4" D, 11 oz.)

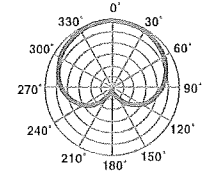
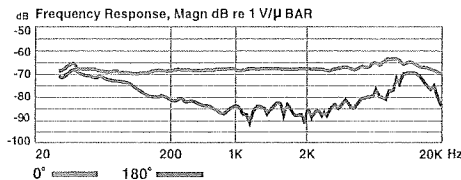
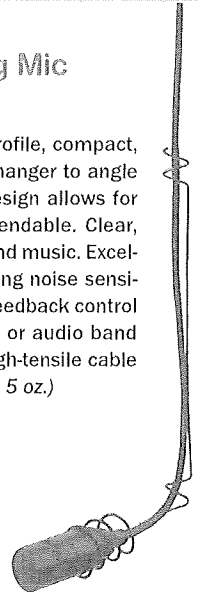
- Heavy-duty metal case with matte black finish
- Cardioid pickup pattern
- Electret condenser element
- Phantom power operated (9-52V DC)
- 250-ohm impedance
- Frequency response range of 20 Hz - 18 kHz
- Sensitivity of -58 dB +/- 3 dB
- 26' quad cable

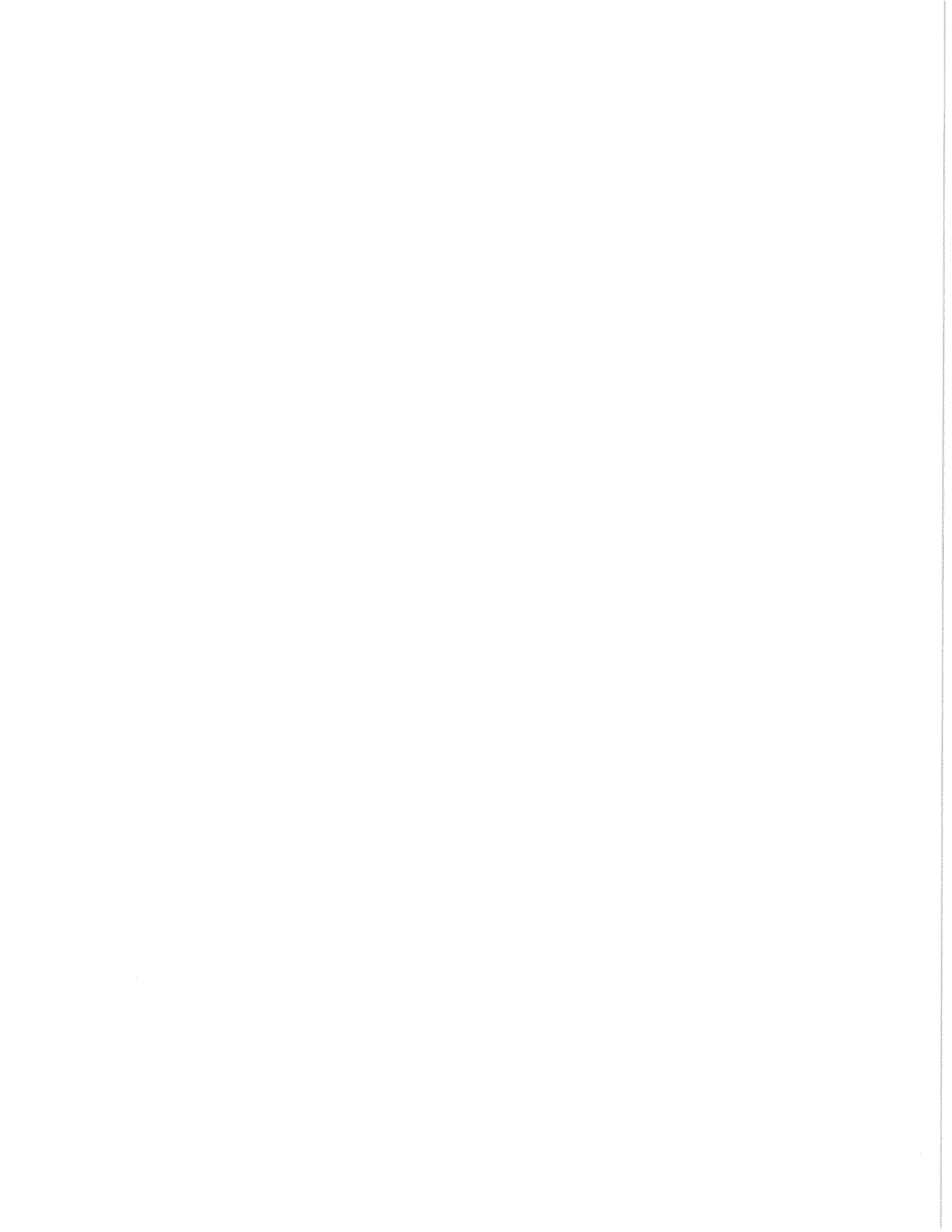


### Professional Overhead Hanging Mic WCU250

High-quality sound reinforcement from a low-profile, compact, lightweight hanging microphone. Adjust metal hanger to angle and position in any direction. Ceiling-mount design allows for overhead pickup of groups. Accurate and dependable. Clear, crisp sound with full, rich reproduction of voice and music. Excellent off-axis rejection, no peaks, reduced handling noise sensitivity, high SPL handling capacity, and superior feedback control with no acoustic or electrical phase anomalies or audio band resonance. Low mass diaphragm. Features a high-tensile cable with mini XLR output plug. (1-1/4" D x 1/2" dia., 5 oz.)

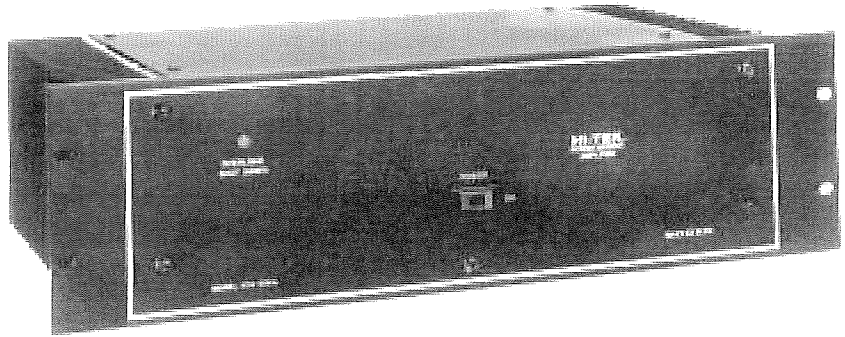
- Stainless steel, adjustable black hanger
- 20-foot long cable
- Matte black finish
- Cardioid pickup pattern
- Electret condenser element
- Phantom power operated (9-52V DC)
- 250-ohm impedance
- Wide frequency response range of 50 Hz - 18 kHz
- Sensitivity of -65 dB +/- 3 dB





# Power Amplifier

## Model HTA-250A



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### Features

- Power MOSFET circuitry
- Capable of continuous operation at rated output power
- Frequency response  $\pm 1\text{dB}$ , 20 - 20,000Hz at full rated output
- Distortion less than 0.5% THD, 20 - 20,000Hz
- Multiple output voltages/impedances available
- Automatic overload protection
- UL listed

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### Description

The Bogen HTA-25A Power Amplifier is a high-performance unit employing state-of-the-art Power MOSFET technology. The unique characteristics of Power MOSFETS make them ideally suited to power amplifier design, providing far superior performance and reliability compared to other types of transistors. They offer higher efficiency, reduced heat, simpler overall design, reduced size and weight.

The Model HTA-250A supplies 250 watts (rms continuous output) at less than 0.5% total harmonic distortion from 20 to 20,000Hz. An input signal of only 500mV is required for full rated output. The input impedances are: high-impedance (50,000 ohms) unbalanced; low impedance (500/600 ohms, balanced or unbalanced) with optional accessory transformer Model TL-600. Line bridging can be achieved with optional transformer Model TL-100. Residual hum and noise is at least 90dB below rated output and the output regulation is better than 2dB from no load to full load.

The HTA-250A can drive a variety of load impedances. Outputs include 4 ohms, 8 ohms, 25VCT

and 70.7 volts. The amplifier is capable of safely driving any recommended load continuously. The HTA-250A is thermally protected to prevent damage due to excessively high temperatures; however, the amplifier will deliver the full rated output continuously, even at  $+55^{\circ}\text{C}$  ( $+131^{\circ}\text{F}$ ). Additional failure-preventive devices include overload limiting, short circuit protection, and a Slo-Blo fuse.

Electronic shutdown circuitry is automatically activated if an overload or short occurs and a front panel overload shutdown LED illuminates. Once the cause has been rectified, the unit automatically resets. The power on/off switch, located on the front panel, illuminates when power is on. The rear panel contains an input level control, input and output connections, the ac line fuse, and an auxiliary receptacle. A low-cut filter switch is located internally.

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## Technical Specifications

Rated Output Power:	250 watts rms
Total Harmonic Distortion:	Less than 0.5%, 20 - 20,000Hz
Frequency Response:	±1dB, 20 - 20,000Hz at full rated output
Input Sensitivity:	High impedance, 500mV; Low impedance balanced, with optional transformer, 150mV
Hum and Noise:	90dB below rated output
Output Loads:	4 ohms, 8 ohms, 25VCT (2.5 ohms), 70.7V (20 ohms)
Output Regulation:	Better than 2dB from no load to full load
Input Impedances:	Hi-Z, 50,000 ohms unbalanced; Lo-Z, 600 ohms, balanced or unbalanced, and 1:1 bridging with optional plug-in transformers
Low-Cut Filter:	-10dB @ 100Hz
Controls & Indicators:	Front panel illuminated power and shutdown LED indicators Rear Panel Input level control, Slo-Blo fuse Internal Low-Cut filter switch
Power Requirements:	120VAC, 60Hz, 520 watts @ Full Rated Output (Idle, 60W)
Overload Protection:	Electronic overload protection Electrical 7A Slo-Blo Fuse Thermal 105 C (220 F) Thermostat
Operating Temperature Range:	20°C (-4°F) to +55°C (+131°F) at rated output
Auxiliary Receptacle (not switched):	Three-wire grounded*, 300 watts maximum
Dimensions (without removable feet):	19"W x 11"D x 5-1/4"H (48.3 x 27.9 x 13.3 cm)
Front Panel Dimensions:	19"W x 5-1/4"H (48.3 x 13.3 cm)
Finish:	Black
Weight:	50 lbs. (22.7 kg)
Accessories:	Model TL-600, line-matching transformer; Model TL-100, 1:1 line-matching transformer

\*This receptacle will be grounded only if the power amplifier has been grounded properly.

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## Architects and Engineers Specifications

The power amplifier shall be a Bogen Model HTA-250A or approved equivalent solid-state amplifier incorporating state-of-the-art MOSFET power transistors. Amplifiers utilizing conventional or bipolar power transistors shall not be acceptable.

The amplifier shall deliver an audio output of 250 watts (rms continuous). Total harmonic distortion shall be less than 0.5% at the 250-watt rating over the frequency range of 20 to 20,000Hz. The rated output shall be obtained with an input that is not greater than 500mV (rms). Hum and noise shall be at least 90dB below rated output. The frequency response, when measured at full rated output, shall be flat within ±1dB, 20 to 20,000Hz.

The amplifier shall provide either balanced or unbalanced constant-voltage outputs of 25 VCT and 70.7 volts, plus 4 and 8 ohm balanced or unbalanced outputs. Output regulation shall be within 2dB from no load to full load.

The amplifier shall provide an input of 50,000 ohms unbalanced high impedance, or 600 ohms balanced or unbalanced low impedance, or line bridging with optional accessory plug-in transformers. Overall gain shall be adjustable by means of a single level control located on the rear panel. An internal low-cut filter (-10dB @ 100Hz) shall also be provided. The front of the amplifier shall contain an illuminated on/off power

switch. The amplifier shall incorporate electronic shutdown circuitry which shall activate whenever an overload or short occurs on the output of the amplifier. A front panel overload shutdown LED shall illuminate to indicate the discontinuance of power output; the circuitry shall automatically restore power output once the cause of the shutdown condition has been removed.

The amplifier shall operate from a 120VAC, 60Hz source and shall consume 60 watts or less at idle and 520 watts at full rated output. The amplifier shall have thermostatic control to prevent operation at excessive ambient temperatures. The amplifier also shall include electronic overload limiting, short-circuit protection and a 7-amp Slo-Blo fuse.

The amplifier shall have a standard EIA 19-inch front panel suitable for rack mounting. The amplifier shall be 19" wide, 5-1/4" high and 11" deep, finished in black and shall weigh 50 lbs.

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