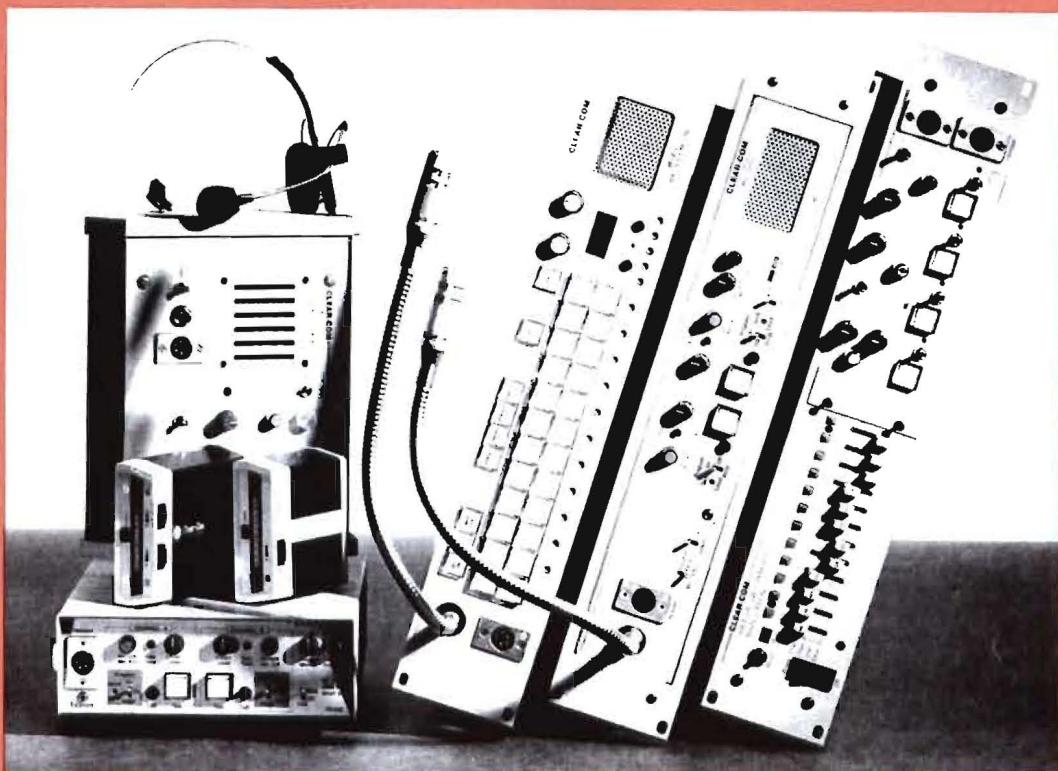


CLEAR-COM INTERCOM SYSTEMS

THE CONDENSED PRODUCT CATALOG 1992-93



PARTY-LINE INTERCOM

MATRIX INTERCOM

WIRELESS INTERCOM

PROGRAM INTERRUPT (IFB)

PRO AUDIO

HEADSETS

FRESH IDEAS FROM



Clear-Com
Intercom Systems



The Company

Over the last 25 years, Clear-Com has become the professional intercom market leader throughout the world, supplying systems for professional video, legitimate theater, concert arenas, theme parks, aerospace, business and industry.

Wherever people need to communicate, Clear-Com offers the *intercom solution* with over 150 versatile products that fit everyone's needs.

Clear-Com is committed to producing products that provide uncompromising quality and exceptional reliability. And this dedication is backed up by an extensive customer service policy where the customer comes first.

Clear-Com's experienced sales staff is always available to provide expert assistance in system design and product selection.

Designing products to exacting standards, Clear-Com's engineering team maintains an inspired commitment to research and development. The resulting outflow of new products combines the latest technologies with innovative, user oriented features.

The Distribution Network

Clear-Com maintains and supports a world wide dealer network. This select group of established professionals provides customer assistance, sales support, and stocks a substantial product inventory to accommodate immediate product needs.



The Products

Party-Line Intercom

A full-duplex, distributed amplifier system, where all electronics are contained in each user station. This wide bandwidth system offers high level audio for up to 100 stations—that are easily connected together, using up to one mile of standard mic cable. A central power supply provides audio termination and short-circuit proof regulation for the system.

The system can be designed from a host of user stations, power supplies and accessories. It can be one channel, or 12 channels. And all components are compatible to allow for future system expansion.

Matrix Intercom

The Matrix Plus is an all-digital 50x50 crosspoint system that provides programmable point-to-point communications between stations and/or any external systems, including Clear-Com party lines. Stations are easily interconnected on a single pair of wires.

Wireless intercom

A high band, FM modulation, full-duplex system expressly designed to interconnect to Clear-Com hard-wires systems. This rugged, high-performance product is virtually transparent in operation and audio quality when compared to a wired station.

Program Interrupt (IFB)

This unique television production tool is a flexible one-way quing system that supports up to 96 talent stations from up to 50 locations.

Pro Audio

A low profile, 35 watt powered loudspeaker offers broadcast quality and can be conveniently mounted in equipment racks where space is a premium.

Intercom Headsets

A wide range of headsets, designed for use in a variety of applications, range from heavy duty, high-noise double muff sets to stylish, single muff, lightweight sets.

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RS-501



RS-522



TWC-10

TWC-10 Adapter: 2-Channels on One 3-Pin Cable

Allows the connection of Series 500- "TW" beltpacks to standard, 2-channel Clear-Com intercom systems. The TWC-10 Adapter combines two standard intercom channels (on two separate cables) onto a single, standard 3-pin microphone cable. This stand-alone Adapter drives up to 18- "TW" beltpacks.

Weight: 2.3 lbs (1.04 kg)

TWC-104

Four TWC-10 Belt Pack Adapters in a 1RU Rack Unit (not shown)

Beltpacks

Beltpacks-Series 500

These "No-fail", superbly-designed beltpack headset stations feature high-quality audio, and programmable talk and listen functions. Each model utilizes noiseless, digital electronic switching on all audio circuits. Push-pull output allows high levels in headset. Models available for monaural and binaural headsets. A compressor/limiter compensates for user voice variance and eliminates distortion due to mic overload. The Remote Mic Kill function enables beltpack mikes to be shut off from another location to conveniently eliminate inadvertent line noise. Visual Call Signalling is provided by high-intensity LED's alerting operators who have removed their headsets.

Constructed of aircraft-grade aluminum and ultra-durable HDS composite material, the units are virtually indestructible. The touch controls last up to five million cycles. Lightweight and compact, these beltpack stations are comfortable for long-term wear. Virtually unbreakable belt clip.

Power Consumption: 35 mA avg

Dimensions:

RS-501: 3.25 "H x 3.875 "W x 1.5 "D
(83 x 98 x 38mm)

RS-502/522: 4.125 "H x 3.875 "W x 1.5 "D
(103 x 98 x 38mm)

Weight:

RS-501: 8 oz (0.23 kg)

RS-502/522: 11oz (0.31kg)

RMK-1 Remote Mic Kill Unit

This control unit allows microphones to be shut off via the call circuit from a location other than the main station in an intercom network. Compact unit operates with up to 60 Series-500 beltpacks.

Weight: 2.3 lbs (1.04 kg)

Rack-mount kits and other options available for beltpacks. Consult price list for ordering information.

2-Channel Stations

* NEW



MS-222GM

MS-222 Main Station

2-channel intercom main station with built-in speaker and fail-safe power supply. Supports up to 30 headset stations. Uses headset, internal speaker, or external earphone or speaker for monitoring. Operator can talk or listen on either or both channels, combining them, or accessing them separately or both at once without tying them together. Stage Announce output with relay for external paging. Accepts mic- or line-level program input for monitoring, assignable to either or both channels, with selectable "Program Interrupt." Individual level controls for intercom-listen, program-send and sidetone for each channel, plus local program monitor level. Remote Mic Kill and Visual Call Signal buttons for each channel. Dual-action, electronic momentary/latching "talk" buttons. Microphone limiting. External switchable line termination on each channel. Automatic short-circuit protection and reset with "short" and "good" LED indicators. In event of DC short circuit or current overload, protection circuitry shuts down DC output. When fault condition is removed, "auto-reset" automatically restores system power.

Power Supply Output: 1 amp

Dimensions: 3.5" H x 19" W x 10" D
(89 x 483 x 254mm)

Weight: 7.4 lbs. (3.4 kg)

MS-222GM

Same as MS-222, with gooseneck mic.

CS-222 Portable Main Station

Rugged, lightweight, 2-channel portable intercom main station with fail-safe power supply. Supports up to 30 headset stations. Uses headset, external earphone or speaker for monitoring. Operator can talk or listen on either or both channels, combining them, or accessing them separately or both at once without tying them together. Stage Announce output with relay for external paging. Accepts mic- or line-level program input for monitoring, assignable to either or both channels, with selectable "Program Interrupt." Individual level controls for intercom-listen, program-send and sidetone for each channel, plus local program monitor level. Remote Mic Kill and Visual Call Signal buttons for each channel. Dual-action, electronic momentary/latching "talk" buttons. Microphone limiting. External switchable line termination on each channel. Automatic short-circuit protection and reset with "short" and "good" LED indicators. In event of DC short circuit or current overload, protection circuitry shuts down DC output. When fault condition is removed, "auto-reset" automatically restores system power.

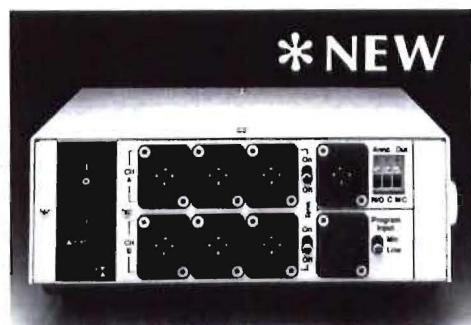
Power Supply Output: 1 amp

Dimensions: 3.0" H x 8.125" W x 10" D
(76 x 206 x 254mm)

Weight: 5.2 lbs. (2.3 kg)

RK-101

2RU rackmount kit for CS-222.



CS-222 Rear



CS-222 in Rack Mount

Remote Stations



RM-120A-GM



KB-111A in M-Box



KB-112 in P-Box



MR-102A

KB-112 Speaker Station

Single-channel, programmable push-to-talk speaker station. Wide frequency response speaker. Built-in electret mic with adjustable sensitivity. Programmable operation allows local or remote, hands-free control of speaker and mic. Visual Call Signalling. External program. Volume control on front panel. Custom-mount in wall or console or in Clear-Com portable enclosure.

Power Requirement: 60 mA avg

Dimensions: 6.5" H x 8.6" W x 1.5" D
(165 x 218 x 38mm)

Weight: 1.6lbs (0.73kg)

KB-111A Speaker Station

2-channel speaker station. Wide frequency-response speaker with on/off switch. Channel-select toggle switch, intercom volume control, and sidetone adjust on front panel. Uses handset, dynamic or carbon headset, or push-to-talk mic. Mic on/off switch for listen-only mode. Visual Call Signalling. Custom-mount in wall or console or in Clear-Com portable enclosure.

Power Requirement: 60mA avg

Dimensions: 6.5" H x 8.6" W x 1.5" D
(165 x 218 x 38mm)

Weight: 1.6lbs (0.73kg)

RM-120A Remote Main Stations

2-channel, intercom remote station. Built-in wide frequency response speaker with on/off switch. Toggle switch selects channel A, B, or both. Use with carbon or dynamic headset. Front panel controls provided for intercom and program level, mic on/off switch and sidetone null. Visual Call Signalling. Stage Announce line-level output available from rear connector. External speaker jack.

Power Requirement: 60mA avg

Dimensions: 1.75" H x 19" W x 6.5" D
(44 x 483 x 165mm)

Weight: 3.31lbs (1.5kg)

MR-102A Headset Station

2-channel wall-mount station for use with dynamic headset. Toggle switch selects either intercom channel. Visual Call Signalling. Headset volume control. Mic on/off and Call switches. Installs in standard two-gang outlet box.

Power Requirement: 15mA avg

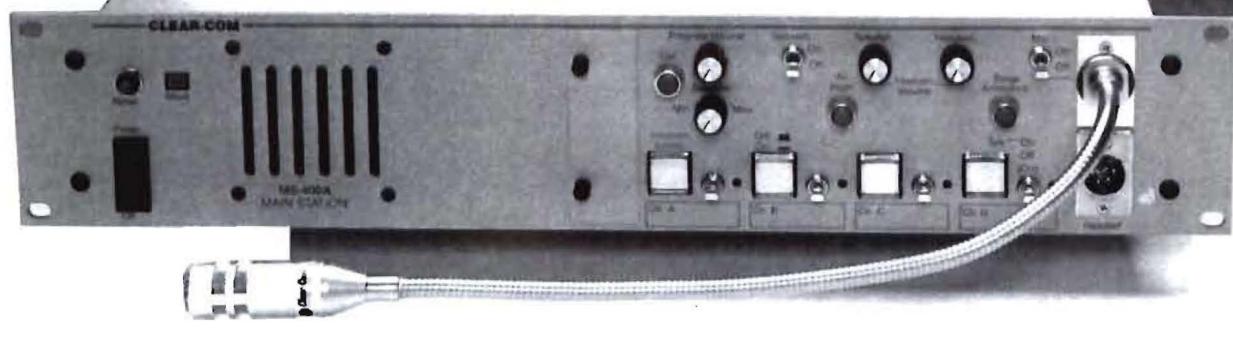
Dimensions: 4.5" (114 mm) Square
1.75" (44 mm) Deep

Weight: 7.25 oz (0.21kg)

MR-104A Headset Station

Identical to the MR-102A. Rotary switch allows selection of 4 intercom channels.

4-Channel Main/Remote Stations



MS-400A-GM

MS-400A Main Station

Rack-mounted 4-channel intercom main station with built-in speaker. "No-fail" power supply supports 100 remote headset stations. Balanced auxiliary (program) input, at mic or line level, is assignable to any or all channels. Built-in program interrupt (IFB). Talk function selectable for each channel. Illuminated channel-select listen buttons and separate toggle talk switch. Stage-Announce, All-Page, and Visual Signalling features. Uses one or two headsets. Controls for intercom volume, program level, and sidetone null for each channel are all accessible on front panel. Intercom system short-circuit indicator and reset button.

Power Supply Output: 2amps

Dimensions: 3.5" H x 19" W x 9" D
(89 x 483 x 229 mm)

Weight: 10.5 lbs (4.8 kg)

MS-400A-GM

(Same as MS-400A with permanently attached gooseneck mic)

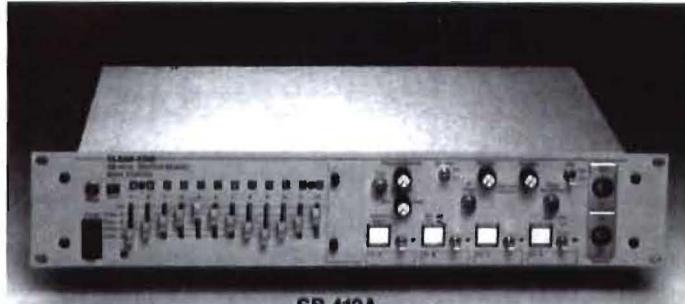
SB-412A Main Station

Rack-mounted 4-channel intercom main switchboard station. Similar to the MS-400A, except with a 4 x 12 switchboard matrix in place of speaker (has ext. speaker jack). Up to 12 individual stations (or groups of stations) can be assigned to any one of the four main intercom channels or an OFF position. Stations in the OFF mode are disconnected from the matrix, but can talk amongst themselves. An LED above each matrix slide switch indicates a call signal from a remote station, even if the OFF mode has been selected for that input channel.

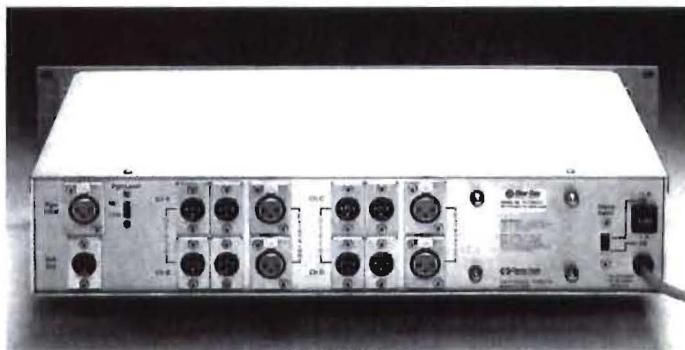
Weight: 11lbs (5.0 kg)

SB-412A-GM

(Same as SB-412A with permanently attached gooseneck mic)



SB-412A



MS-400A Rear

RM-400A Remote Main Station

9244-channel intercom remote speaker station. Features and specifications identical to the MS-400A, except without power supply.

Power requirement: 100 mA avg

Weight: 6.3 lbs (2.9 kg)

RM-400A-GM

(Same as RM-400A with permanently attached gooseneck mic)

*NEW



8—12-Channel Programmable Master Station:

adjustable button brightness, and the ability to program internal and external IFB and ISO, privacy, relays, "walkie-talkies" and much more.

The MS-812's extensive programming capabilities allow individual stations to be "customized" by storing the "setups" in non-volatile memory. Individual button assignments can be stored in "presets" for instantaneous recall. See local programming "setups" greatly enhance the capabilities of the station by allowing quick and easy switching between rehearsal and performance or shows and events.

A special feature of the MS-812 is the LCD display screen. When programming the station, messages "prompt" the operator through the programming sequence, simplifying station setup.

The MS-812 has selectable program signal feed to any of the intercom channels. Additionally, the program interrupt can be assigned to any of the talk buttons. All Talk and Listen buttons are "dual action" electronic latching. A sustained press produces a momentary action, while a quick press "toggles" the button On or Off. The "latch" function can be disabled, making the button "momentary only".

The MS-812 is fully compatible with all other Clear-Com party line products making it easy to interface to virtually any type of communication equipment or system. It can provide an exceptional level of control, is easy to operate and extremely cost effective for both new and existing applications.

Interconnect

The MS-812 outputs are XLR-3 connectors or optionally 56 pin ELCO connectors.

Power: 115 / 230 V 50 / 60 Hz 30 VA

Dimensions: 2RU x 10" D



MS-812 Rear

IP-1200 Interconnect Panel

This interconnect panel provides an easy method to connect intercom stations and accessories to MS-812 stations using the ELCO connector option and multi-pair cable. It also has connectors for external power supply, program inputs, Stage Announce outputs, and relay contacts. Each of the 12 outputs include circuit breakers and indicators. It can be rack mounted or used as a stage box.

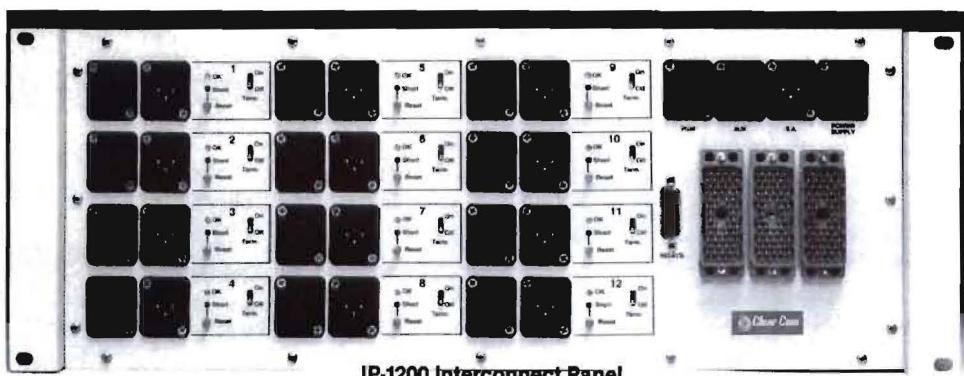
Dimensions: 4RU x 3" D

MS-812 Master Station

Rack mount microprocessor based master station with menu driven programming. The MS-812 provides 8 channels of standard Clear-Com Party-Line intercom easily expandable to 12 channels.

Features

Easy to operate and program, it has a standard gooseneck mic, visual and audible signaling, separate Listen and Talk buttons, individual channel Listen level controls, 4 "preset" buttons,



IP-1200 Interconnect Panel

Dynamic Headsets

CC-26 Ultra-Light Headset

Single-muff, 300Ω ultra-lightweight (2 1/4 oz) headset with dynamic, noise-cancelling mic element (4-pin female XLR connector). Straight, ultra-thin, 6 ft cord.

CC-75B Heavy-Duty Headset

Heavy-duty, single-muff 600Ω headset with noise-cancelling mic. Mic boom switch, earsock, 5 ft coil cord (4-pin female XLR-type connector).

CC-240B Heavy-duty Headset

Double-muff, heavy duty headset similar to the CC-75B.

DT-108 Beyer Headset

Single-muff 200Ω Beyer headset with dynamic microphone, ear sock, and 5 ft straight cord (4-pin female XLR connector).

DT-109 Beyer Headset

Double-muff 200Ω version of DT-108.



CC-75B

CC-240B

PH-7

DT-109/6 Beyer Headset

Double-muff 400Ω headset set wired for "split-ear" operation. 6-pin female XLR connector. 5-foot straight cord. Required for RS-522 Stereo beltpack.

PH-7 Noise Attenuating Headset

Double-muff, 200Ω noise-attenuating headset designed for high noise environment. Ear-socks, 5 ft coil cord (4-pin female XLR connector).

HS-6 Telephone-Style Handset

Telephone Style Handset with wall/console mount hanger, push-to-talk switch. 3 ft coil cord (4-pin female XLR connector).



CC-26

HS-6

PT-4

PT-4 Hand-Held Mic

Rugged, push-to-talk, hand-held microphone with mounting clip, 2 ft coil cord (4-pin female XLR connector).

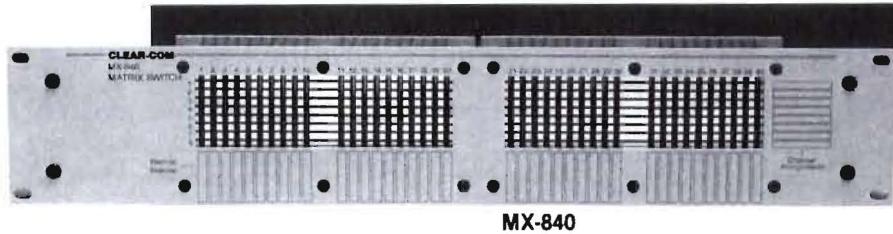
Accessories

MX-840 Matrix Switch

Rack-mounted matrix switch for multiple-channel intercom systems. Enables 40 individual stations, or groups of stations, to be easily switched to any one of eight channels.

Dimensions: 3.5" H x 19" W x 2" D
(89 x 483 x 51mm)

Weight: 1lb (0.45kg)



MX-840



WP-2

WP-2 Intercom Outlet Wall Plate

Selectable, 2-channel, wall plate for connection to beltpack single-channel stations such as Clear-Com RS-501. Has male XLR-type connector and a two-position selector switch. Mounts in standard single-gang electrical box.

YC-36 "Y" Adapter

Plugs into the 6-pin XLR intercom connector on a RS-502 or RS-522 beltpack. The other end provides two 3-pin XLR connectors, for separate line connection to channels A and B.



SP-3

SP-3 Line Splitter

A one female input to three male output cable assembly for intercom line splitting.

YC-66 6-Pin Line Splitter

One 6-pin male XLR connector splits into two 6-pin female connectors.

Wireless Intercom



WBS-6



WTR-2

Wireless Intercom System

The Clear-Com Wireless intercom is designed to provide high quality, hands-free, full or half-duplex communications without interfering cables. The system can stand alone, but when connected to a wired intercom

system, the wireless link is virtually transparent to the user. The crystal-controlled base and remote stations are FCC-approved for broadcast use. The system's high RF sensitivity delivers impressive performance even in stadium-sized environments. Base station antenna can be remoted for optimum performance. Beltpacks and base station accept the full range of Clear-Com headsets. This system can be expanded from 1-6 beltpacks by the addition of receiver boards in the base station. Separate audio level controls for each "Receive" channel.

The WTR-2 wireless beltpack is a rugged, lightweight unit with momentary or latching mic switch and volume control. Two standard 9V

batteries will provide 8-10 hours of continuous beltpack operation.

BASIC SPECIFICATIONS

Operating Frequency: 150-216 MHz

Frequency Stability: $\pm 0.005\%$,
-20 to +60 degrees C

Transmission Modulation:
Direct FM

Audio Frequency Response:
200 to 7.5 kHz @ -3 dB

Range: to 1,500 feet or more (line of sight)

Distortion: <2%

Base Station:

Dimensions: 3.5" H x 16.75" W x 10" D
(8.89 x 42.5 x 25.4cm)
(19" W with "ears")

Weight: 11.5 lbs max (5.22 kg)

Power: 115-230 VAC

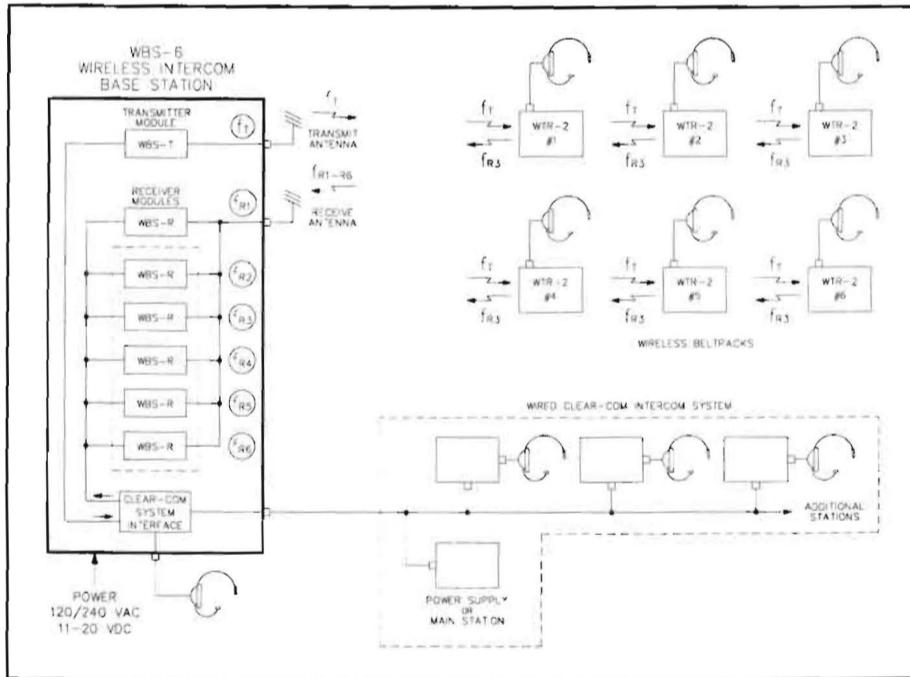
Beltpack:

Dimensions: 5.2" H x 3.8" W x 1.5" D
(9.7 x 13.2 x 3.8cm)

Weight: 1.1 lbs (0.5 kg)

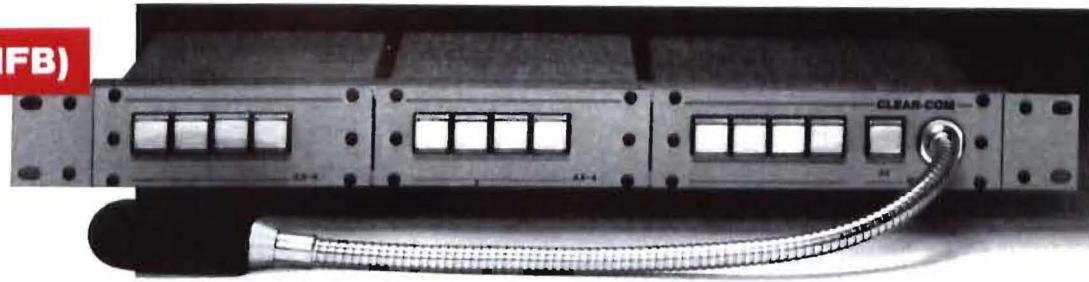
Headset Connector: 4-pin XLR-F

Construction: High-impact ABS control panel; one-piece anodized aircraft alloy case



Consult factory for pricing and delivery.

Program Interrupt (IFB)



MA-4/AX-4 Talent Control

Program Interrupt (IFB) Systems

The Clear-Com IFB system transmits one or two program audio signals to individual Talent Receivers via standard, two-conductor shielded mic cables. This system allows Talent coordinators to interrupt the program and cue talent. Tally lights indicate IFB channels in use. This modular system is capable of operating as a "stand-alone", or being integrated with MS-808 main stations. It features virtually unlimited expansion capabilities (up to 96 talent channels and 50 control locations). IFB components are powered by the Clear-Com system.

MA-4/AX-4 Talent Control Station

These units control programs interruption (IFB) to the talent. The MA-4 includes a gooseneck microphone, illuminated "all talent" and 4 individual talent push buttons. The AX-4 permits expansion in multiples of 4.

Dimensions:

MA-4: 1.75" H x 6.3" W x 6.5" D
(44 x 158 x 163 mm)

AX-4: 1.75" H x 4.9" W x 6.6" D
(45 x 125 x 168 mm)

TR-50 Talent Receiver

An amplifier with volume control. Connects to the Program Interrupt controller with standard microphone cable. Monaural "mini" earphone jack output, includes talent earset.

Dimensions: 1.5" H x 1.5" W x 3.6" D
(38 x 38 x 91mm)

Weight: 4.5 oz (0.28kg)



PIC-4000B



TR-50



TR-532

PIC-4000B/Program Interrupt Controller

Each IFB Controller handles up to four Talent Receivers. For use with MA-4 and AX-4 Talent Controllers. This unit contains the circuitry for selecting one of two program sources, sending the program to the IFB channels, and interrupting it via the Talent Control Station. Monaural or stereo/"split-feed" outputs.

Dimensions: 1.75" H x 19" W x 9" D
(44 x 483 x 225 mm)

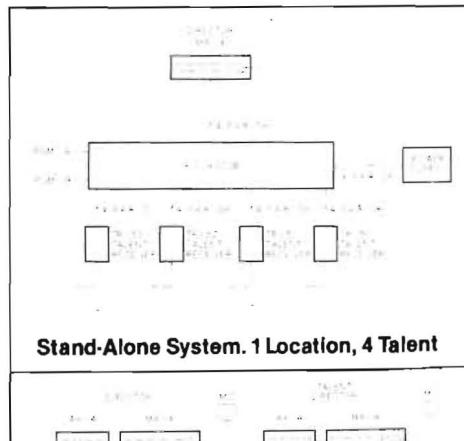
Weight: 3.56 lbs (1.62 kg)

TR-532 Stereo/Split Feed Talent Receiver

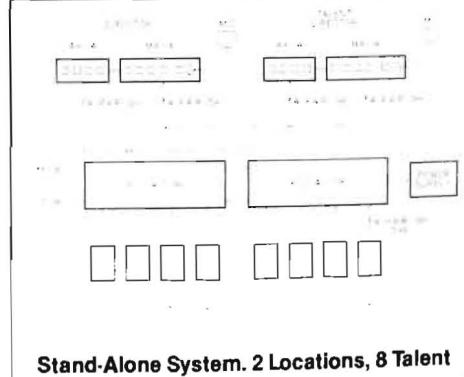
Accepts interrupt and non-interrupt program signals — on a single, standard mic cable — and outputs them to a sportscaster-type headset (or standard stereo earphones); the interrupt signal goes to one ear, non-interrupt to the other. Individual volume controls, $\frac{1}{4}$ " stereo headphone jack, 6-pin male headset connector and 3-pin line connector.

Dimensions: 4.125" H x 3.875" W x 1.5" D
(105" H x 98 x 35mm)

Weight: 11oz (0.31kg)



Stand-Alone System. 1 Location, 4 Talent



Stand-Alone System. 2 Locations, 8 Talent



PS-22

PS-22 1-Amp Power Supply

Lightweight, small and rugged, this fail-safe power supply provides system power, line termination and program feeds for 2-channel intercom. Front-panel "link" switch allows operation as 1-channel system. Program input with selectable channel assignment and individual level controls. "Short" and "good" power indicators. In event of DC short circuit or current overload, protection circuitry shuts down DC output. When fault condition is removed, "auto-reset" circuitry automatically restores system power, even under full load conditions. When 2 or more PS-22s are connected together, "intelligent" power sensing lets system reset itself in the event of DC short or loss of AC power, no matter how large the system is.

Dimensions: 3.0" H x 8.125" W x 10" D
(76 x 206 x 254mm)

Weight 4.7 lbs. (2.1 kg)

RK-101

2RU rackmount kit for PS-22.



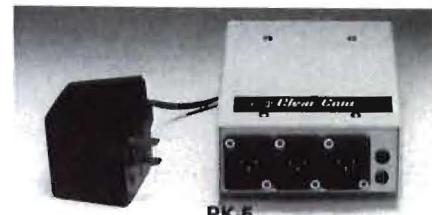
PS-454

PS-454 Multi-Channel Power Supply

Fail-safe, modular, rackmount power supply provides system power, line termination and program feeds for 2- and 4-channel systems. Configurable as single 2-amp supply, two independent 1-amp supplies, or single 1-amp supply with 1-amp backup. Two program inputs with selectable channel assignment and individual level controls. "Short" and "good" power indicators. In the event of DC short circuit or current overload, protection circuitry shuts down DC output. When fault condition is removed, "auto-reset" circuitry automatically restores system power. When 2 or more PS-454s are connected together, "intelligent" power sensing lets system reset itself in the event of DC short or loss of AC power, no matter how large the system is.

Dimensions: 3.5" H x 19" W x 10" D
(89 x 483 x 254mm)

Weight 7.8 lbs. (4.0 kg)



PK-5

PK-5 Power Supply

A very small, low cost, lightweight power supply designed for powering up to 10 Series 500 beltpacks. Housed in a rugged, all metal case, it features short-circuit protection with automatic recovery and full voltage regulation to 400mA. Three output connectors provide for convenient interconnection to the beltpacks.

Dimensions: 1.6" H x 2.75" W x 4.9" D
(41 x 70 x 124mm)

Weight 1.5 lbs. (0.68 kg)

ISO



ICP-4 ISO Control



ISO-4000



ICP-4 ISO Control Panel Module

The ICP-4 is an illuminated 4-button control panel for rack-mount or console use. All buttons are user-legendable.

Dimensions: 1.75" H x 5" W x 6.75" D
(44 x 127 x 171mm)

Weight 1.51 lbs. (0.7 kg)

ISO-4000 ISO Central Electronics

Rack-mount computer electronics unit includes switching matrix and power supply. Factory-configured to support up to six control locations.

Station/Camera ISO System

The ISO System is designed to quickly and easily establish isolated communications within a party-line intercom system. The System is microprocessor-controlled and fully programmable. It provides maximum user flexibility and minimum system cabling. The system can support 4 to 16 isolated stations from up to 6 control locations. The system has full tally indication, and user-selectable priority levels.

System Interfaces



AC-10H

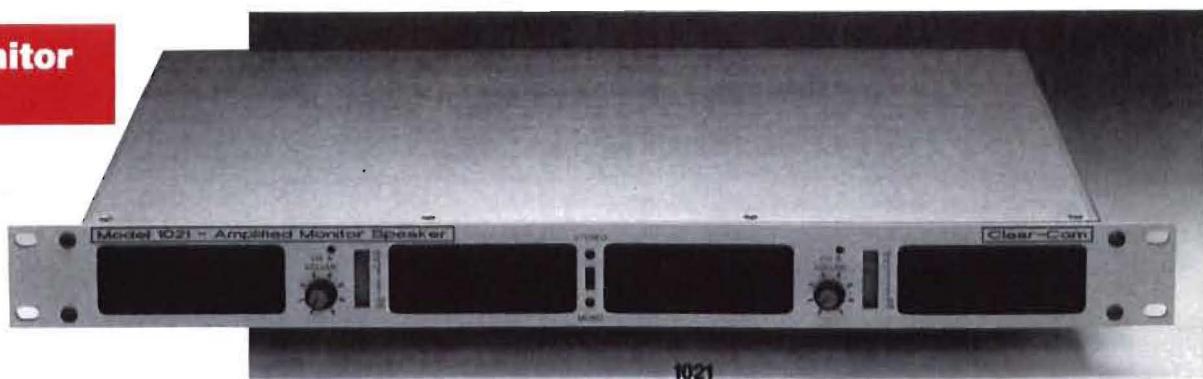


TW-12B



IF4-B-4

Amplified Monitor Speaker



1021 Amplified Monitor Speaker

A self-contained, bi-amplified, monitor speaker that occupies only a single rack space. Provides convenient, powerful, high-quality audio monitoring capability in locations where few other monitor speakers can fit. Features exceptional audio quality with very low distortion, at high output power. The specially-designed 2-way baffled speaker system will reach output levels of 96 dB SPL without audible distortion. Extended base response.

Balanced or unbalanced line-level 3-pin XLR inputs. Stereo/mono switch. Separate volume controls for each channel. Two adjustable LED bar-type VU meter displays. Steel enclosure results in improved magnetic shielding.

AC-10H Universal Interface

Connects Clear-Com to any other 2-, 3- or 4-wire system or Telco lines. Built-in test tones and balancing controls for fast, convenient setup. Individual transmit and receive gain controls. Transformer-isolated.

TW-12B Interface

Connects one intercom system to another. Eliminates hums and buzzes caused by ground loops; compensates for level and impedance differences between systems. Allows Clear-Com-to-Clear-Com, Clear-Com-to-RTS, and RTS-to-RTS system configurations. Powered by connected intercom system. Translates "call" signals in both directions.

IF-4B Interface

Connects Clear-Com to TV cameras, 2-way radio units, satellite links, and other communication devices through their headset jacks or 4-wire circuits. Selective party-line capability. Individual transmit, receive, and null controls. Transmit level indicators. Output switchable between mic- or line-level. Built-in test jack and test tone for quick nulling. Fast, easy setup. Modular:

IF-4B2: 2-module rackmount unit

IF-4B4: 4-module rackmount unit

PCIF-4

Single-channel IF-4B circuit card for custom mounting and installation. (not shown)

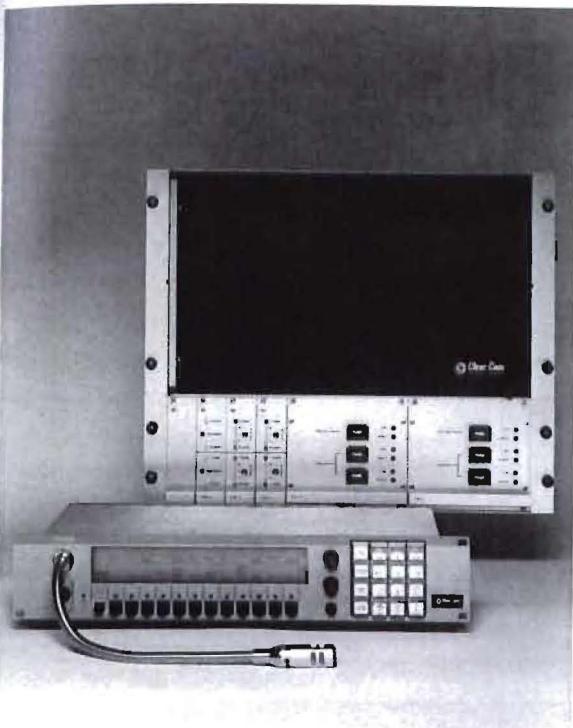
Frequency Response: 100-12 kHz ± 2.5 dB

Power Output: 18 watts to speaker system

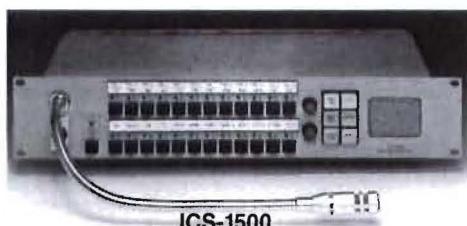
Dimensions: 1.75" H × 19" W × 9" D
(44 × 483 × 304mm)

Power Supply: 115/230 VAC, 48 W

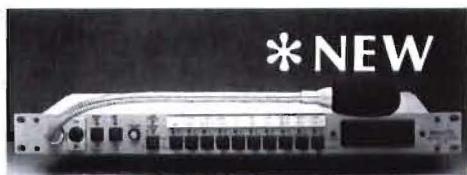
Weight 9 lbs (5.85 kg)



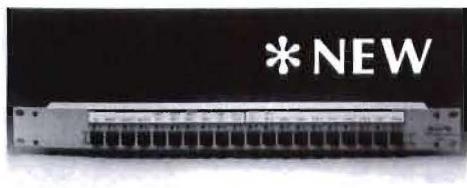
ICS-2000



ICS-1500



ICS-100



XP-20

Matrix-Digital Intercom: 1 To 50 Channels

Matrix-Plus

The System

The Matrix-Plus is the most versatile, advanced intercom system ever created. This digital audio/digital data, microprocessor-based system allows noise- and crosstalk-free communication between up to 50 stations by the simple push of a key. Each intercom station is connected to the central matrix, using ISDN communications, by one unshielded pair of wire.

Interfacing

Three modular interfaces allow communication with virtually any type of one or two-way communication system or device outside the matrix. A telephone interface enables manual and automatic call-answering and dialout from intercom stations. The matrix can also be matched with outside Party Line systems, 2-way radios, 2-wire/4-wire camera intercoms, IFB systems, ISO stations, and 4-wire systems. Control of telephones, keying of transmitters, remote cueing, and other functions can easily be effected from matrix intercom stations.

Programming

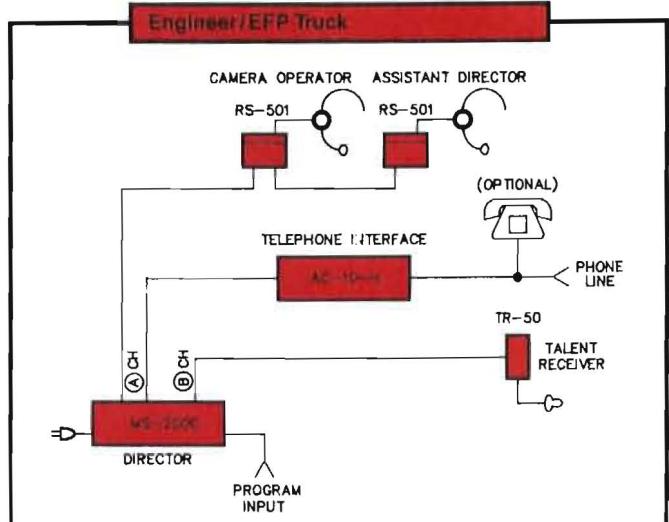
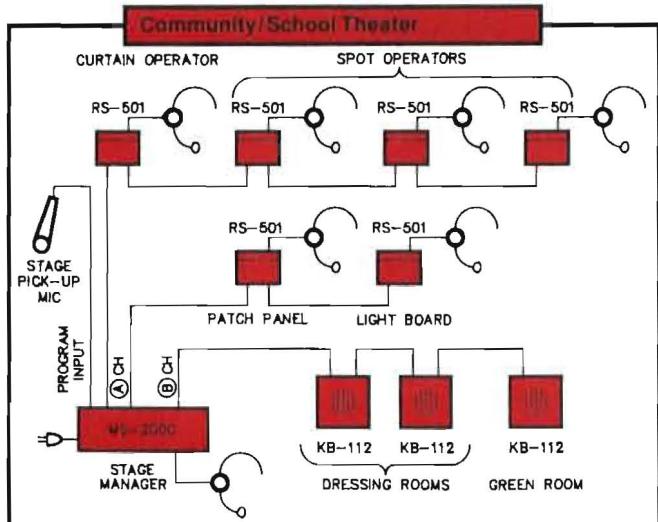
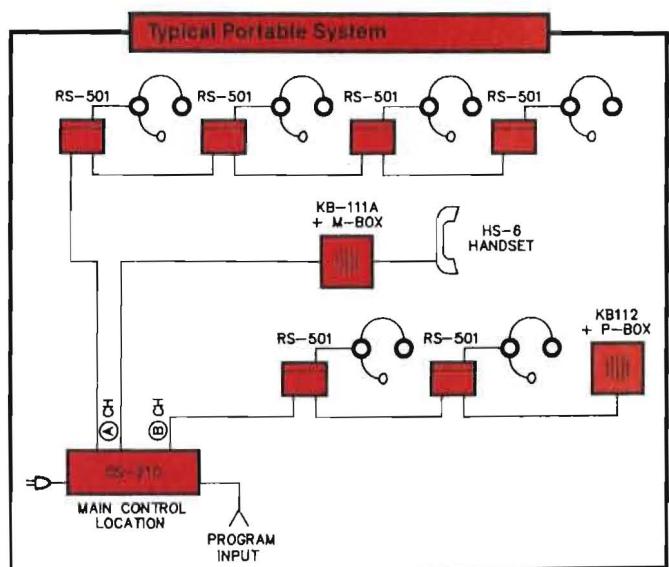
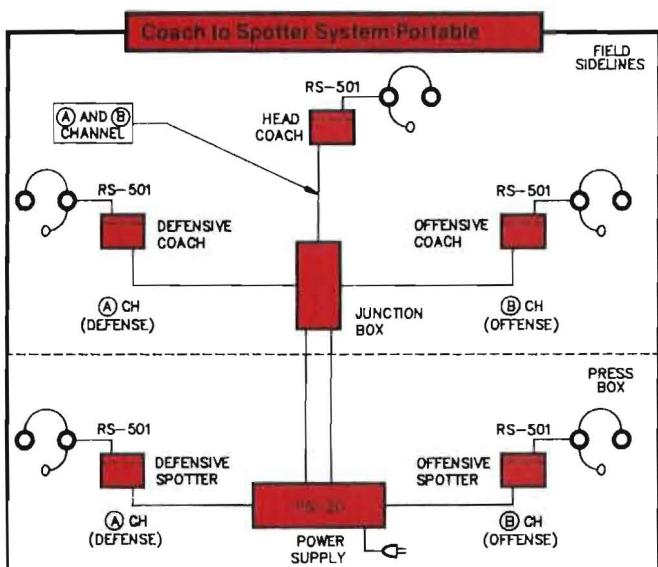
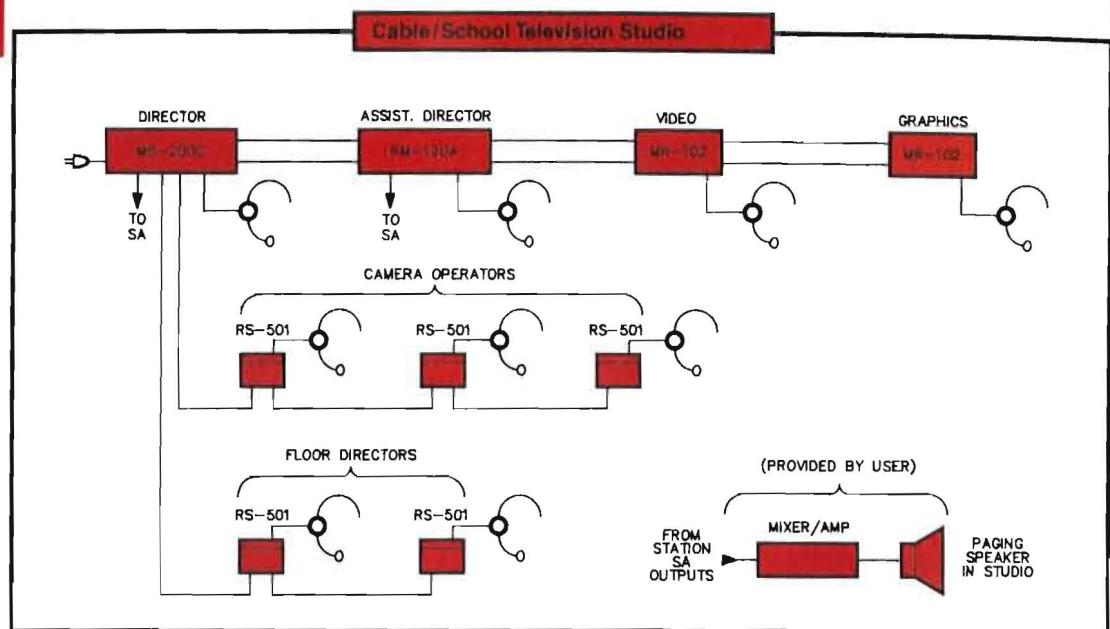
System configurations can be programmed using the menu-driven Matrix-Plus software package, allowing overall set-ups to be updated instantly, on or off-line, via a personal computer. Station assignments stored on disk can be loaded as needed.

Reliability

The Matrix-Plus system incorporates Clear-Com's standard "No-fail" design features, including a battery backup, a redundant power supply and "hot-patchable" circuit boards.

Contact factory for matrix catalog or more information.

System Diagrams



General System Specifications

Intercom Line

Line Impedance:	200 ohms
Line Level:	-14 dB +5 dB max
Line Type:	22 gauge, 2 conductor shielded mic cable
	30 pF/ft
Line Length:	Up to 5000 ft to meet published specs 20,000 ft usable

Dynamic Range:

75 dB

Signalling

Call Signal Send:	+11 V _{DC}
Call Signal Receive:	+4 V _{DC}
Amplifier Design:	Solid state IC amplifiers, current-limited and short-circuit protected

System Specs

Signal-to-Noise:	-75 dB
Station Bridging Impedance:	>15 k ohm
Chanel Separation:	>50 dB up to 1000 ft
EMI @ RFI Rejection:	>60 dB
Sidetone Adjustment:	>30 dB

Mic Preamp

Headset Mic Impedance:	200 ohms
Mic Gain:	41 dB
Limiter Range:	26 dB
Frequency Response:	200-12 kHz

Output Amp

Output Level:	+20 dB max
Gain:	35 dB
Headset Impedance:	> 50 ohms
Power Amp Output:	4 watts @ 8 ohms
Frequency response:	100-18 kHz ± 2 dB

Program Input

Balanced Line Level:	0 dB nominal
Balanced Mic Level:	-60 dB nominal
Stage Announce:	Balanced line level 0 dB nominal

Environmental

Operating Temp Range:	0-70°C (32-158°F)
Humidity:	0-90% relative humidity

Power Supplies (115/220 V mains, selectable)

Output Voltage:	30 V _{DC} regulated, circuit breaker protected
Hum and Noise:	< 2 mV RMS

Prices and specifications are subject to change without notice.

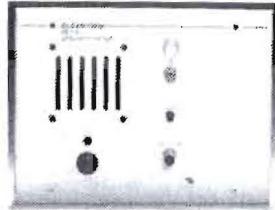
Contact your dealer or Clear-Com for additional information.	

REMOTE SPEAKER STATIONS

KB-112 SPEAKER STATION

Speaker station with push-to-talk mic; talk/listen can be controlled by other stations. All functions selectable. Applications include: Dressing rooms/paging/security. 299.00.

BB 279.00

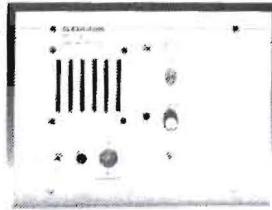


KB-111A SPEAKER STATION

2-channel select speaker station, uses handset or push-to-talk mic. Mount in 6" x 8" electrical box or portable enclosure. Applications include: theatre/security.

263.00 312.00 L, 57

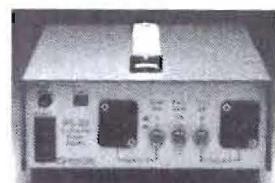
289.00 BRADLEY



POWER SUPPLIES

PS-20 PORTABLE POWER SUPPLY

Portable or rack-mount; regulated. Selectable one- or two-channel. Supports up to 60 stations. 365.00



PS-452 2-CHANNEL POWER SUPPLY

2-channel, regulated, with short circuit & overload monitoring. Supports up to 100 stations. For all large permanent installations.



562.00

SYSTEM INTERFACES

AC-10H INTERFACE

Universal interface to two-wire cameras and telephone lines; has holding coil and built-in test tones for balancing. 616.00

TW-12 INTERFACE

Interface to RTS-type systems or allows up to 12 CP-300 or RTS-type belt-packs to work in Clear-Com System. 1 1/4" rack-mount. 486.00

IF4-4 INTERFACE

Interfaces to virtually any 3-wire/4-wire TV camera; up to four cameras per unit. Individual transmit/receive level controls. 589.00

TWC-10 2 CHANNEL/3-PIN CABLE ADAPTOR

Combines two standard Clear-Com Channels (on two separate cables) onto a single 3-pin microphone cable. Requires 'TW' option on stations. 99.00

STATION/CAMERA ISO SYSTEM

The **ISO-4000 Station/Camera Iso System** is designed to easily and quickly establish private, two-way communications between two (or more) Clear-Com intercom stations. The **ISO-4000** uses a microprocessor to provide maximum user flexibility and minimum control/tally cabling. It provides priority/override, individual and global reset, and group preset capabilities. It is a modular system that can expand to accommodate up to sixteen "ISO" stations and six "CONTROL" stations. The system is comprised of the following components:

ISO-4000 ISO CENTRAL ELECTRONICS

This unit contains all of the audio, switching, and control/tally logic to implement the "ISO" function. The basic unit will support up to four "ISO" stations and either three or six "CONTROL" stations. It can be expanded in groups of four ISO stations.

IXM-4 ISO EXPANSION MODULE

This is an add-on module for the ISO-4000 Central Electronics that expands the ISO station capability in groups of four. Up to three IXM-4 modules can be installed in the ISO-4000 to provide the maximum system capacity of sixteen ISO stations.

ITO-1 ISO TRANSFER OPTION

This is a factory modification to a multi-channel intercom station. It is required to implement the ISO function transfer of the station's listen/talk circuits from the normal intercom paths to the special ISO channel.

ICP-4 ISO CONTROL PANEL

This is a four button stand-alone control panel to select any combination of four ISO stations to be isolated with an associated Clear-Com intercom station. Multiple ICP-4's can be linked together to select larger numbers of ISO stations.

ISO-4 ISO CONTROL MODULE

This is a four button control module, electrically equivalent to the ICP-4, designed for installation in a MS-808 Main Station.

NOTE: ISO system pricing depends on the specific system requirements and configuration. As an example, a system to ISO up to eight stations from two control points would cost \$3500.00. Please contact Clear-Com for detailed pricing information.

MINICOM

SM-1 HEADSET

Single-muff headset station with in-line, single-channel intercom electronics (no signalling). Applications include: portable and budget-conscious use. 198.00



DM-1 HEADSET

Double-muff headset station, same specs as SM-1. 214.00

PK-3 POWER SUPPLY

Portable regulated power supply; low-cost, single-channel. Operates up to 25 Minicom headset stations. 140.00



DYNAMIC HEADSETS

CC-26 HEADSET

Single-muff ultra-lightweight headset with dynamic, noise-cancelling mic. element (4-pin XLR). 142.00



CC-35 HEADSET

Our lightweight, low-cost headset. Field-serviceable, noise-cancelling; ideal for TV camera operators. 86.00

CC-55 HEADSET

Double-muff version of CC-35. 99.00



CC-75B HEADSET

Our most rugged model; good sound-attenuation, flexible boom-mount mic with auto-on/off switch. Indestructible ABS plastic construction, supplied with ear sock for extra comfort. Applications include: theatre, rental firms 130.00



CC-240B HEADSET

Double-muff version of CC-75B. 150.00



DT-108 HEADSET

Single-muff Beyer headset with straight cord and ear sock. (4-pin XLR). 200.00

DT-109/6 HEADSET

Beyer headset matched to Clear-Com specs and wired with split-feed earphones. Broadcast-quality mic. High noise-attenuation; very comfortable. Applications include: sportscasting. 220.00



PH-7 HEADSET

Double-muff, high-fidelity noise-cancelling mic—our most sound attenuating model. 225.00



HS-6 HANDSET

Telephone-style handset with push-to-talk switch. 78.00



PT-4 MIC

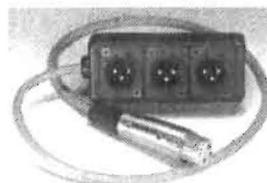
Rugged push-to-talk mic. 48.00



WP-2 WALL PLATE

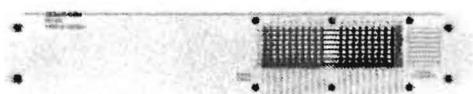
Selectable 2-channel wall plate for connection to portable single-channel stations. Ideal for large facilities/permanent installations.

38.00



QP-100A LINE SPLITTER

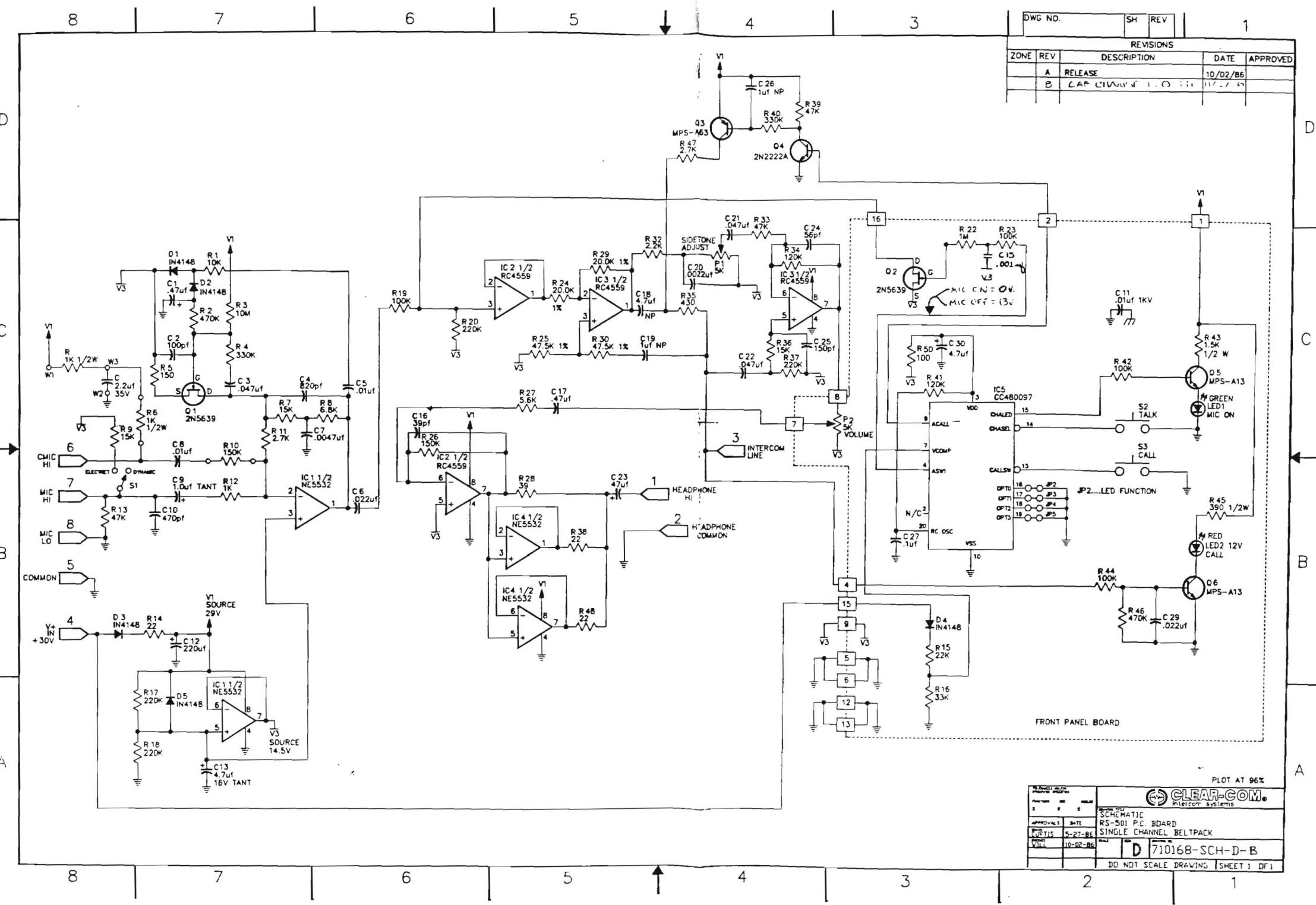
Interconnect line splitter: one input and three output connectors in a die-cast aluminum box. 75.00



ALSO AVAILABLE FROM CLEAR-COM

- **Gooseneck Mic** available for all rack-mount main and remote stations.
- **Rack-mount Kits** for CS-210 and PS-20
- **Rack-mount Kits** for MA-4 and AX-4.
- **P-Box** portable enclosures for KB-111A and KB-112
- **M-Box** portable enclosures for KB-111A and KB-112.
- **Z-4** standard electrical box for KB-111A and KB-112.
- **PC-501** electronics module kit for RS-501.
- **BP-10** battery pack with batteries.
- **RMK-1** remote microphone kill adaptor
- **WIRELESS INTERCOM SYSTEMS**

- **BA-1** battery adaptor/audio isolator
- **WP-6** wall plate with 6 pin XLR for use with RS-502 and RS-522.
- **EC-6** distribution interconnect box, 3 pin to 6 pin for RS-502 and RS-522.
- **YC-36** 3 pin to 6 pin Y adapter for RS-502 and RS-522.
- **ES-1** ear sock suitable for all headsets.
- **YC-100** headset Y cable.
- **IC-25** 25' interconnect cable (3 pin XLR). Other lengths and configurations available.
- **IC-DLC/25** 25' 12-pair interconnect cable with tuchel connectors installed





Clear-Com

Intercom Systems

1111 17th Street
San Francisco, CA 94107
415-861-6666

Established in 1970, Clear-Com is the recognized leader in the manufacture of high-quality, closed-circuit intercom systems. We have a solid reputation of exceptional reliability under the most adverse conditions. Our "no-fail" system design, high output, wide bandwidth, and wide variety of stations & accessories satisfy even the most demanding communications requirements.

MAIN STATIONS & RACK-MOUNT REMOTE STATIONS

NOTE: A "Main Station" is a combination intercom station and system power supply; a "Remote Station" does not include a power supply.

CS-210 MAIN STATION 625.00

2-channel headset station, monitors one or both; selectable program input (mic or line-level), Stage Announce. Portable or rack-mount. Applications include: theatre, concerts, rental firms.



MS-200C MAIN STATION 715.00

2-channel speaker station, monitors one or both channels. Selectable talk/listen/program functions; Stage Announce. Applications include: fixed installations; video/theatre directors.



RM-120A REMOTE STATION

Speaker station, 2-channels (monitor A, B, or both). Dynamic/carbon headsets; Stage Announce; selectable talk/listen/program functions. Applications include: video/theatre production. (gooseneck mic optional)



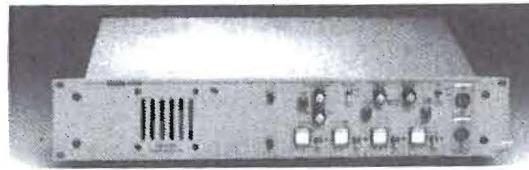
MS-400A MAIN STATION

1095.00
Four-channel speaker and dynamic headset main station. Rack-mount with power supply. Built-in program interrupt



RM-400A REMOTE STATION

887.00
Four-channel speaker and dynamic headset remote station. Rack-mount. Built-in program interrupt.



SB-412A MAIN STATION

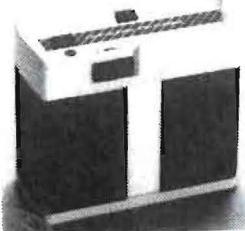
1630.00
4-channel, same specs as MS-400A but no speaker (has ext. speaker jack). Has switch matrix to assign each of 12 stations (or 12 groups) to any of the 4 channels or a "disconnected" OFF line. Applications include: video production/theatre with constant repatching needs.



BELTPACKS & WALL MOUNT HEADSET STATIONS

RS-501 BELTPACK 198.00

Single channel, lightweight beltpack. Advanced features include all digital, noiseless, electronic switching; "Remote Mic Kill" function; visual signalling. Accepts dynamic or electret microphones. Carbon type headset jack optional. The RS-501 is the standard beltpack station for use in all applications.



RS-502 BELTPACK 270.00

Two channel beltpack. Allows access to either one of two separate intercom channels. Includes all features of the RS-501 plus dual channel signalling. Applications include: video/theatre production, industrial. Both channels on single mic cable available as option. (See TWC-10.)



RS-522 BELTPACK

298.00

Two channel, dual listen, binaural beltpack. Allows completely selectable simultaneous listening and talking on two separate channels. Binaural "split-feed" headset output. (Monaural option available.) Includes all features of the RS-501 and RS-502. Applications include: video/theatre production, industrial, lighting design. (Replaces Both channels on single mic cable available as option (see TWC-10).



MR-102A HEADSET STATION 198.00

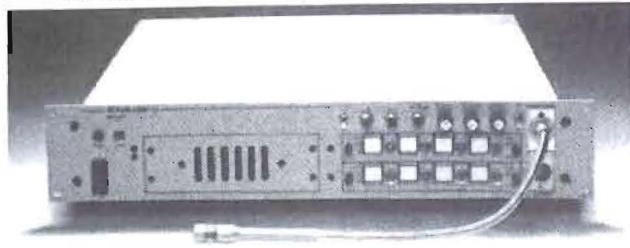
Two channel wall-mount headset station. Selectable to either one of two channels. Also available as MR-104A, selectable to any one of four channels. Applications include: permanent video, theatre, and industrial facilities.



DLC SERIES

MS-808 MASTER STATION (without modules) 1368.00

This modular, rack-mount master station can provide signalling and communication access to a maximum of 16 separate Intercom, IFB, and Point-to-Point channels plus additional functions through the use of up to four plug-in modules. Additional modules can be conveniently installed providing for ease of future expansion. The MS-808 can operate either "hands-free" (with speaker and gooseneck microphone) or with a headset.



SP-4 SPEAKER MODULE

69.00

This double space module provides an internal loudspeaker eliminating the need to use an external speaker.

BP-4 BLANK PANEL

24.00

This single space panel is required to fill any spaces not occupied by an operational DLC module.

IFB (PROGRAM INTERRUPT) SYSTEMS

The Clear-Com IFB system is a modular system capable of operating as a "stand alone" system, or being integrated with MS-808 Master Stations. It transmits an interruptible program signal to individual talent receivers via standard two conductor shielded microphone cable. It is a distributed amplifier system with the earphone amplifier located at the talents' position. It features virtually unlimited expansion capabilities (up to 96 talent channels and 50 control locations). Wiring required between Talent Access Stations and the IFB Electronics is only six conductors per each four talent channels, and can be either "home run" or "loop-thru" wiring method. The system is composed of the following components:

PIC-4000B IFB ELECTRONICS

685.00

This unit contains all of the audio and switching circuitry for selecting one of two program signals, routing the signals to four independent talent channels, and interrupting, with variable program attenuation, the signals from one or more control points. It requires 24 VDC power from a Clear-Com Intercom System or power supply.



IFB-4 PROGRAM INTERRUPT MODULE

455.00

This unit is the equivalent of the AX-4, designed for mounting in the MS-808 Master Station.

TR-50 TALENT RECEIVER

118.00

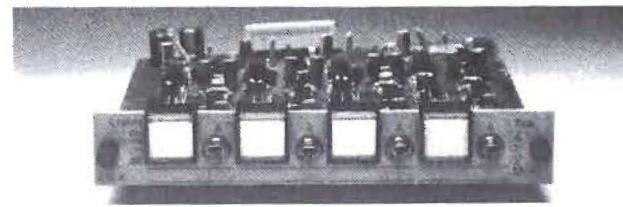
This small, portable unit contains the amplifier to power the talent's earphone. It connects to the PIC-4000B via standard two conductor shielded microphone cable. A miniature in-the-ear receiver is included with each TR-50.



CH-4 INTERCOM CONTROL MODULE

562.00

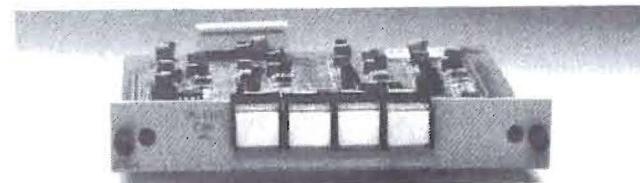
This single module provides individual channel listen/talk switching, program insert level control, and sidetone adjustment for four intercom channels.



IFB-4 PROGRAM INTERRUPT MODULE

455.00

This single space module provides access to four channels of IFB (Program Interrupt). It requires the PIC-4000B Control Electronics



ISO-4 ISO CONTROL MODULE

475.00

This is a four button control module, electrically equivalent to the ICP-4, designed for installation in a MS-808 Main Station.

MA-4 TALENT ACCESS MASTER CONTROL STATION

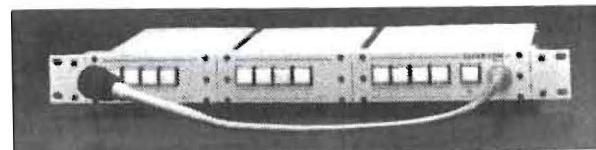
615.00

This unit provides individual access to four talent channels and "All CALL" access to all of the talent channels in the system. It is designed for direct console mounting or rack mounting in an optional Rack-Mount Adapter. It includes a panel mounted gooseneck microphone and all required local electronics.

AX-4 TALENT ACCESS EXPANSION STATION

425.00

This unit connects to the MA-4 Control Station, expanding the talent channel selection capabilities by four additional channels per AX-4. Multiple AX-4 units can be linked together to control a maximum of 96 talent channels.



TR-532 STEREO/SPLIT FEED TALENT RECEIVER

270.00

The TR-532 contains two discrete amplifiers to feed the "Interrupt" and "Non-Interrupt" signals from the PIC-4000B on standard mic cable to separate ears of a "sportscaster" type headset or standard stereo earphones. It also provides a passive "loop-thru" output of the headset's microphone for "on-air" applications.



REMOTE SPEAKER STATIONS

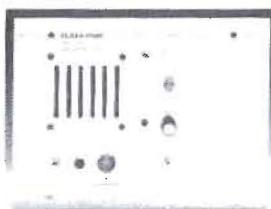
KB-112 SPEAKER STATION 299.00

Speaker station with push-to-talk mic; listen can be controlled by other stations. All functions selectable. Applications include: Dressing rooms/paging/security.



KB-111A SPEAKER STATION 275.00

2-channel select speaker station, uses handset or push-to-talk mic. Mount in 6" x 8" electrical box or portable enclosure. Applications include: theatre/security.

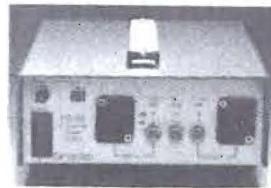


POWER SUPPLIES

PS-20 PORTABLE POWER SUPPLY

365.00

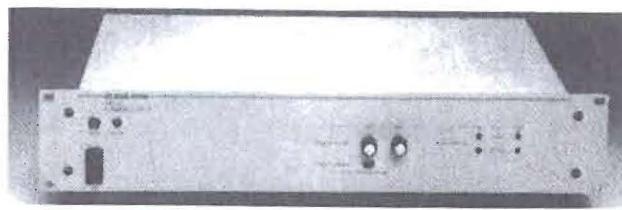
Portable or rack-mount, regulated. Selectable one- or two-channel. Supports up to 60 stations.



PS-452 2-CHANNEL POWER SUPPLY

562.00

2-channel, regulated, with short circuit & overload monitoring. Supports up to 100 stations. For all large permanent installations.



SYSTEM INTERFACES

AC-10H INTERFACE

616.00

Universal interface to two-wire cameras and telephone lines; has holding coil and built-in test tones for balancing.

TW-12 INTERFACE

532.00

Interface to RTS-type systems or allows up to 12 RTS-type belt-packs to work in Clear-Com System. 1 1/4" rack-mount.

IF4-4 INTERFACE

625.00

Interfaces to virtually any 3-wire/4-wire TV camera, up to four cameras per unit. Individual transmit/receive level controls.

TWC-10) 2 CHANNEL/3-PIN CABLE ADAPTER

99.00

Combines two standard Clear-Com Channels (on two separate cables) onto a single 3-pin microphone cable. Requires 'TW' option on stations.

STATION/CAMERA ISO SYSTEM

The **ISO-4000 Station/Camera Iso System** is designed to easily and quickly establish private, two-way communications between two (or more) Clear-Com intercom stations. The **ISO-4000** uses a microprocessor to provide maximum user flexibility and minimum control/tally cabling. It provides priority/override, individual and global reset, and group preset capabilities. It is a modular system that can expand to accommodate up to sixteen "ISO" stations and six "CONTROL" stations. The system is comprised of the following components:

ISO-4000 ISO CENTRAL ELECTRONICS

This unit contains all of the audio, switching, and control/tally logic to implement the "ISO" function. The basic unit will support up to four "ISO" stations and either three or six "CONTROL" stations. It can be expanded in groups of four ISO stations.

ICP-4 ISO CONTROL PANEL

This is a four button stand-alone control panel to select any combination of four ISO stations to be isolated with an associated Clear-Com intercom station. Multiple ICP-4's can be linked together to select larger numbers of ISO stations.

ISO-4 ISO CONTROL MODULE

This is a four button control module, electrically equivalent to the ICP-4, designed for installation in a MS-808 Main Station.

NOTE: ISO system ordering and pricing depends on the specific system requirements and configuration. As an example, a system to ISO up to eight stations from two control points would cost \$4500.00. Please contact Clear-Com for detailed pricing information.

MINICOM

SM-1 HEADSET

215.00

Single-muff headset station with in-line, single-channel intercom electronics (no calling). Applications include: portable and budget-conscious use.



DM-1 HEADSET

231.00

Double-muff headset station, same specs as SM-1.

PK-3 POWER SUPPLY

150.00

Portable regulated power supply; low-cost, single-channel. Operates up to 25 Minicom headset stations.



DYNAMIC HEADSETS



CC-26 HEADSET

142.00
Single-muff ultra-lightweight headset with dynamic, noise-cancelling mic. element (4-pin XLR).

CC-35 HEADSET 86.00
Our lightweight, low-cost headset. Field-serviceable, noise-cancelling; ideal for TV camera operators.

CC-55 HEADSET 99.00
Double-muff version of CC-35.



CC-75B HEADSET

130.00
Our most rugged model; good sound-attenuation, flexible boom-mount mic with auto-on/off switch. Indestructible ABS plastic construction, supplied with ear sock for extra comfort. Applications include: theatre, rental firms.

CC-240B HEADSET 150.00
Double-muff version of CC-75B.



DT-108 HEADSET

215.00
Single-muff Beyer headset with straight cord and ear sock. (4-pin XLR).

DT-109 HEADSET 236.00
Double muff version of DT-108.



DT-109/6 HEADSET

246.00
Beyer headset wired with split-feed earphones. Broadcast-quality mic. High noise-attenuation. Applications include: sportcasting (6-pin XLR).

PH-7 HEADSET

225.00
Double-muff, high-fidelity noise-cancelling mic—our most sound attenuating model.



HS-6 HANDSET 78.00
Telephone-style handset with push-to-talk switch.

PT-4 MIC 48.00
Rugged push-to-talk mic.



ACCESSORIES

MX-820/MX-840 MATRIX SWITCH

475.00/625.00

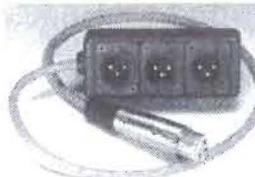
These units are designed for multiple channel intercom systems. They enable individual stations, or groups of stations, to be easily switched to any one of eight channels. The MX-820 handles 20 stations; the MX-840 handles 40 stations.



WP-2 WALL PLATE

38.00

Selectable 2-channel wall plate for connection to portable single-channel stations. Ideal for large facilities/permanent installations.



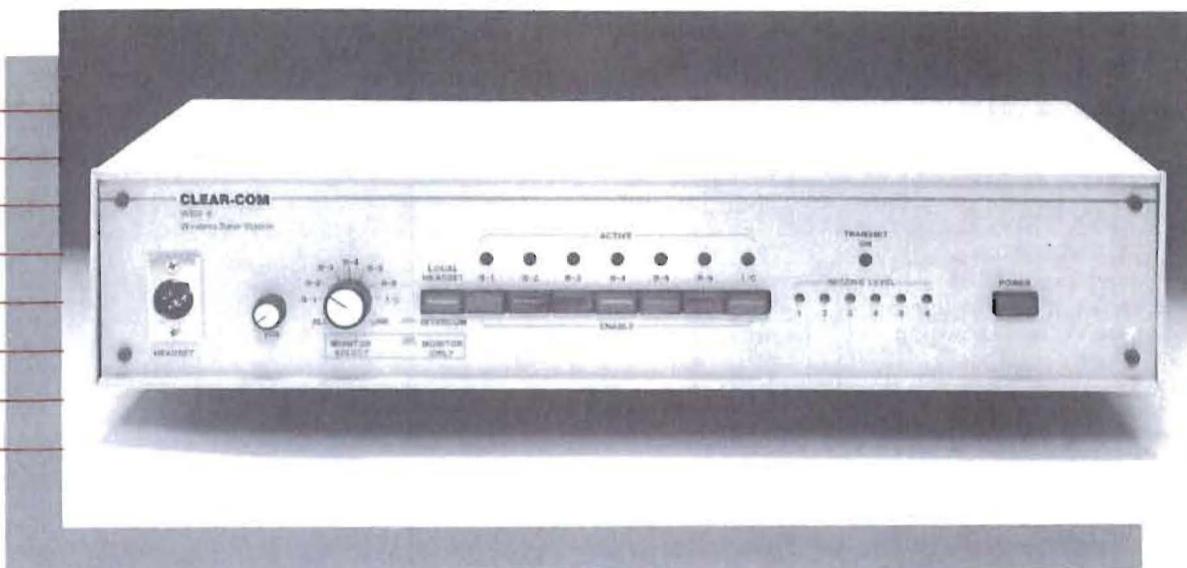
QP-100A LINE SPLITTER 75.00
Interconnect line splitter, one input and three output connectors in a die-cast aluminum box.

ALSO AVAILABLE FROM CLEAR-COM

- **Gooseneck Mic** available for all rack-mount main and remote stations.
- **Rack-mount Kits** for CS-210 and PS-20.
- **Rack-mount Kits** for MA-4, AX-4, and ICP-4.
- **P-Box** portable enclosures for KB-111A and KB-112.
- **M-Box** portable enclosures for KB-111A and KB-112.
- **PC-501** electronics module kit for RS-501
- **BP-10** battery pack with batteries.
- **RMK-1** remote microphone kill control unit
- **BA-1** battery adapter/audio isolator.
- **WIRELESS INTERCOM SYSTEMS**

- **WP-2/6** wall plate with 6 pin XLR for use with RS-502 and RS-522.
- **YC-36** 3 pin to 6 pin Y adapter for RS-502 and RS-522
- **YC-66** 6 pin line splitter (1 in, 2 out).
- **ES-1** ear sock suitable for all headsets.
- **YC-100** headset Y cable
- **IC-25** 25' interconnect cable (3 pin XLR). Other lengths and configurations available
- **IC-25/6** 25' interconnect cable (6 pin XLR)
- **IC-DLC/25** 25' 12-pair interconnect cable with tuchel connectors installed.

WIRELESS INTERCOM SYSTEM



FEATURES

- Exceptional RF performance.
- Clear-Com quality audio.
- Easy-to-use full-duplex operation.
- Reliable, low-noise, high-band VHF frequencies.
- Built-in interface to wired Clear-Com system.
- Modular and use-expandable.

DESCRIPTION

The Clear-Com "W" Series Wireless intercom is designed to provide high quality, high reliability, "hands-free" full-duplex communications without interfering cables. The WBS-6 Base Station and WTR-1 Belt-packs will operate as a stand-alone system or will interface with a hardwired intercom system. When connected to a wired Clear-Com intercom system, the wireless link is virtually transparent to the user.

Engineered to meet the most exacting and critical requirements of a wide range of applications from teleproduction to aerospace to industrial manufacturing and testing, the Clear-Com Wireless Intercom can provide a flexibility and convenience impossible to achieve with a wired intercom system.

The system's high RF sensitivity and enhanced IF and RF selectivity delivers impressive performance under the most demanding conditions. Reliable coverage in even stadium-sized environments is standard with this system. The superb RF characteristics, coupled with the 200-7.5kHz "companderized" audio response, provide wireless communications of exceptional quality and reliability.



WBS-6 BASE STATION

The WBS-6 Base Station incorporates interchangeable RF modules, an interface to a wired intercom system, and extensive but easy-to-use operating controls. The WTR-1 Beltpack is similar to a standard wired system beltpack, with only a volume control and a microphone ON/OFF (or Push-to-Talk) switch.

The Base Station features comprehensive front panel operating controls and monitoring facilities that enable easy system setup and operation. Separate audio level controls for each "Receive" frequency allow compensating for differences in operators' voices. Individual channel monitoring and adjustment can be done with the channel either "on-line", during actual operation, or "off-line", to minimize system disruption during system balancing or troubleshooting.

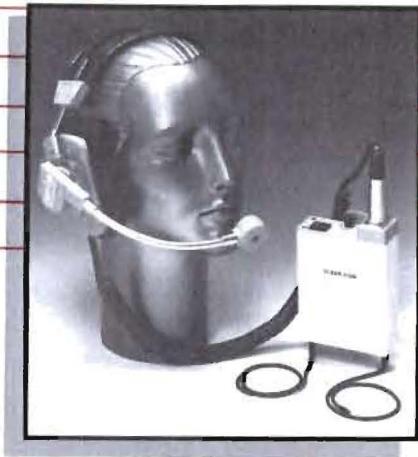
The WBS-6 Base Station operates on 115/230 VAC or 11-20 VDC. It is equipped with removable mounting brackets, permitting either tabletop or rackmount use.

OPERATION

The "W" Series Wireless Intercome system uses either duplex transmission for operation identical to a standard wired beltpack, or "half-duplex" Push-to-Talk (PTT) operation.

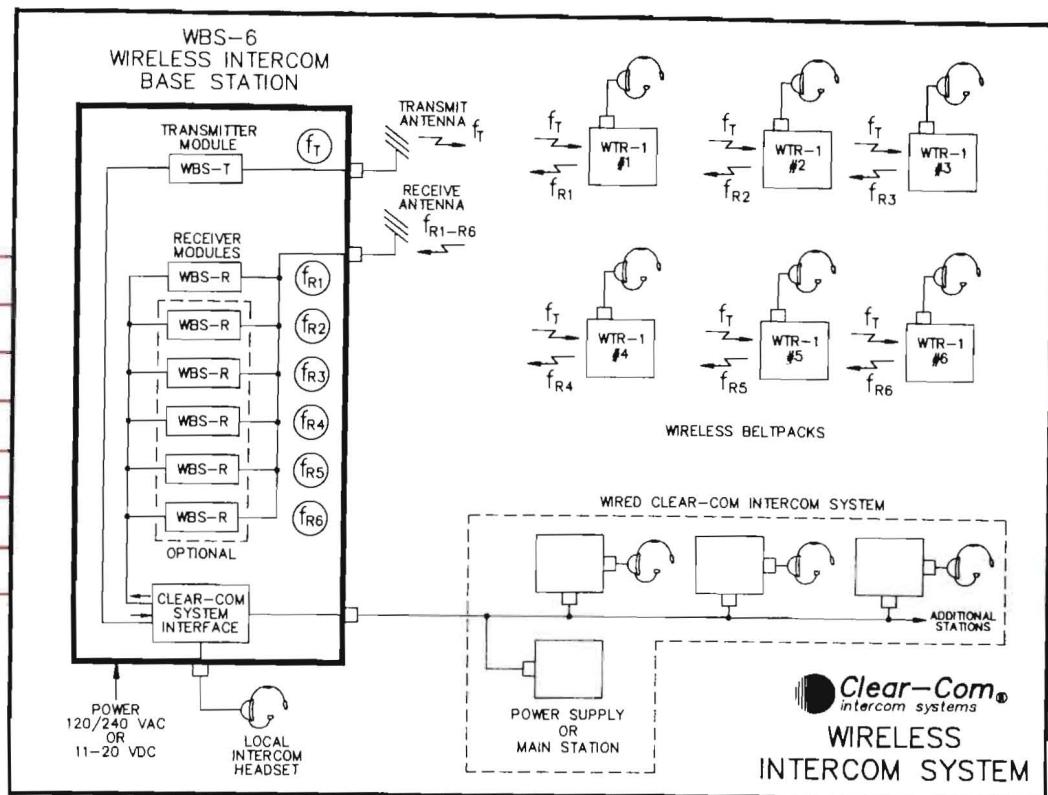
In full-duplex operation, the WBS-6 Base Station will support up to six WTR-1 Beltpacks. The WBS-6 transmits to all WTR-1 Beltpack transceivers on a single "Transmit" frequency (f_T) and receives from the beltpacks on different individual "Receive" frequencies ($f_{R1}-f_{R6}$). The WBS-6 uses modular receivers for the individual beltpack "Receive" frequencies, allowing system size to be individually configured, and easily user-expandable as needs grow.

In "half-duplex" (PTT) operation, the WBS-6 transmits to the WTR-1 beltpacks on one frequency, and receives from all the beltpacks on a second frequency. This operating mode will only allow one beltpack to transmit at a time, but all other beltpacks will continue to receive the Base Station signal. The system will support an unlimited number of beltpacks in this mode.



WTR-1 WIRELESS BELTPACK

The WTR-1 Wireless Beltpack is a rugged, lightweight unit constructed of aircraft grade Aluminum. It works with dynamic or electret headsets using a 3-pin XL type connector (female). The audio output is designed to provide sufficient volume for even high-noise operating environments. Two standard 9V batteries will provide 8-10 hours of continuous operation.



S P E C I F I C A T I O N S

WIRELESS SYSTEM

Operating Frequency: 150-216 MHz
Frequency Stability: +/-0.005%, -20 to +60 degrees C
Transmission Modulation: Direct FM
Audio Frequency Response: 200 to 7.5 kHz @ -3 dB
Range: to 1,500 feet or more (line of sight)
Frequency Range: 150-216 MHz
Distortion: < 2%

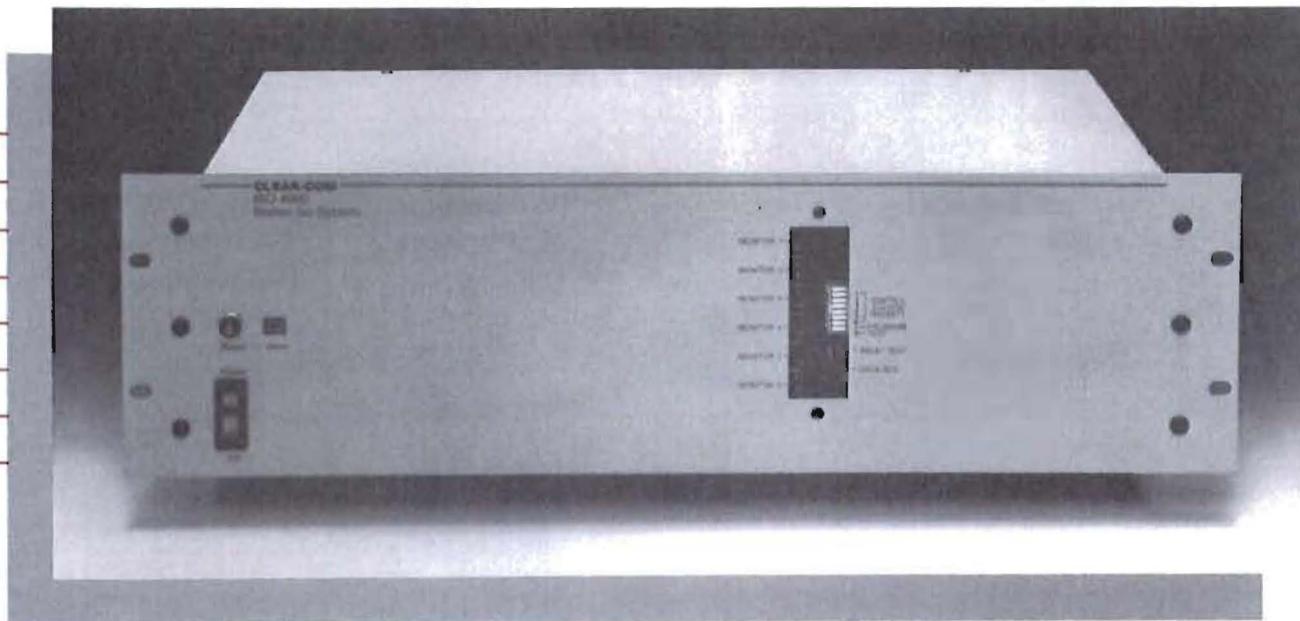
WTR-1 BELT-PACK

Transmitter
Power Output: 45-50 mW into 50 Ohms
Harmonics: less than -60 dBc
Spurs: less than -50 dBc
Freq. Deviation: +/-0 kHz, peak
Receiver
Sensitivity: > 0.75 uV for 30 dB S/N
Ultimate S/N: 80 dB minimum (20 kHz flat)
Image Rejection: 75 dB minimum
Output Level: 0-3 Vrms into 50 Ohms (175 mw)
Power Required: 6.5-9.5 VDC from 9V battery
Current Drain: approx. 70mA
Battery Life: 8-10 hours
Controls: Power On/Off/Volume control; microphone on/off switch
Indicator: LED power "on"
Dimensions: 3.8" W x 5.2" H x 1.5" D (9.7cm x 13.2cm x 3.8cm)
Weight: 1.1 lbs (0.5 kg)
Construction: High-impact ABS control panel; one-piece anodized aircraft alloy case

WBS-6 BASE STATION

WBS-T Transmitter Module
Power Output: 45-50 mW into 50 Ohms
Harmonics: less than -60 dBc
Spurs: less than -60 dBc
Freq. Deviation: +/-0.6 kHz, peak
WBS-R Receiver Module
Sensitivity: > 0.75 uV for 30 dB S/N
Image Rejection: 80 dB minimum
Ultimate S/N: 80 dB minimum
Intercom Output: meets standard Clear-Com specifications
Power Supply: 115/230 VAC, 50/60 Hz or external 11 to 20 VDC
Current Drain:
 AC — 20-W maximum
 DC — 1.0A maximum, 600mA typical
Dimensions: 16.75" W (19" with ears) x 3.5" H x 10" D (42.5cm x 8.89cm x 25.4cm)
Weight: 11.5 lbs max (5.22 kg)
Construction: aircraft alloy aluminum

STATION "ISO" SYSTEM



ISO-4000 CENTRAL ELECTRONICS

FEATURES

- microprocessor-controlled
- full system "tally" indication
- user-selectable priority levels
- minimal control wiring — regardless of system size
- modular and easily expandable: up to 16 ISO Stations by six control locations
- economical for small system use (four ISO Stations, three control locations)
- compatible with all Clear-Com products

Optional Software Features

- global & individual re-sets
- programmable button assignments
- non-volatile memory to store programmable functions



"ISO" OVERVIEW

The "isolated conversation" concept was originally created to provide private communications between a video operator and a camera operator, to adjust video or solve technical problems. The function was dubbed "Camera ISO."

Today's production facilities have increased in size and complexity. To help meet expanded intercom needs, the concept has been put in use as "Station ISO"—private communications between any two operating positions that need special coordination or conversation outside normal (party line) intercom channels.

Currently, Station ISO systems are used in video production, industrial and security installations, aerospace facilities, and theatrical/performing arts communications systems.

SYSTEM DESCRIPTION

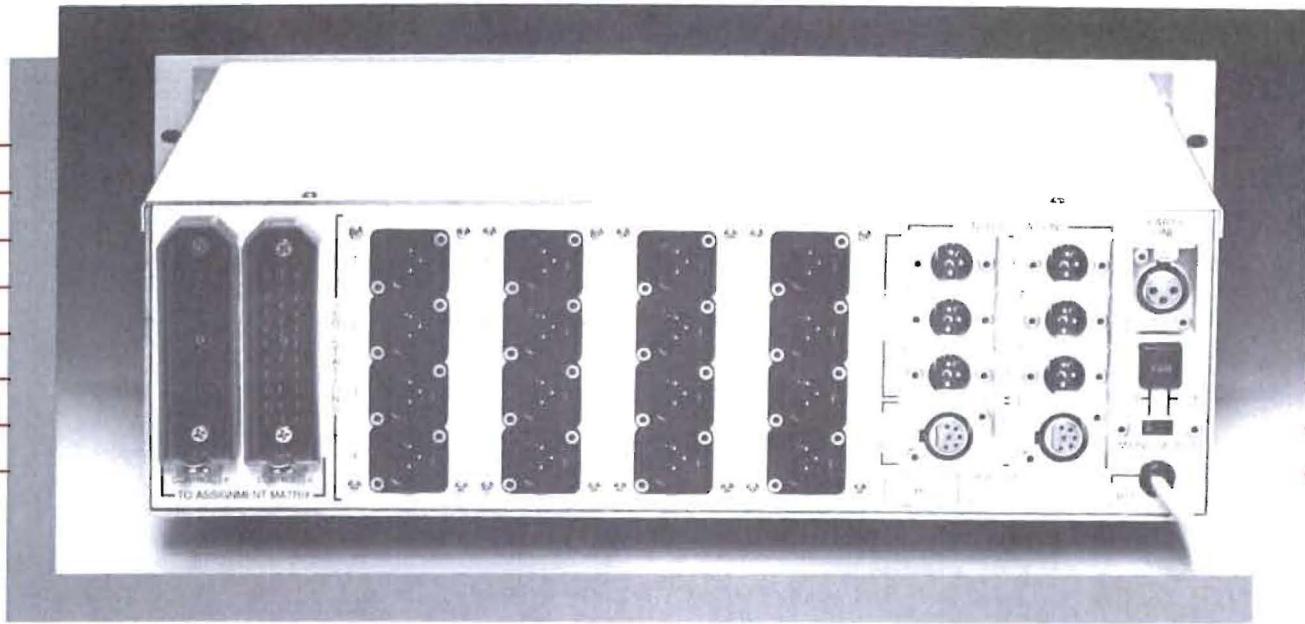
The Clear-Com Station ISO System was designed to quickly and easily establish private, isolated communications between

selected people within a party-line intercom system. The push of a single button allows an isolated conversation to occur, without disturbing "normal" intercom channel.

The Station ISO System is completely modular for easy system expansion. The minimum system supports four ISO Stations and three control locations. The user can expand the system to support eight, 12, or 16 ISO Stations, and up to six control locations.

The Station ISO System is microprocessor-controlled, providing maximum user flexibility and minimum system cabling. Only one cable is needed for each control location (see ISO Interconnect diagram). The system's single 6-conductor control/tally cable can be "looped" between Control Modules. This lets the user expand a 4 by 3 system to a 16 by 6 system with minimal control cabling.

The ISO System is completely compatible with all Clear-Com intercom and interface systems.



**ISO-4000 16 x 6 CONFIGURATION
(REAR PANEL)**

SYSTEM COMPONENTS

The Clear-Com Station ISO System (see ISO Interconnect diagram) consists of:

ISO-4000 Central Electronics

Rack-mount computer electronics, switching matrix and system power supply. Factory-configured to support up to three control locations (model ISO-4000-3), or up to six control locations (model ISO-4000-6). Can be expanded to maximum system capacity by adding internal expansion cards.

ISO and ICP-4 ISO Control Modules

The ISO-4 is a 4-button, plug-in module for the MS-808 Intercom Main Station. The ICP-4 is a 4-button control panel for rack-mount or console use with other Clear-Com intercom stations. All buttons are user-legendable for station identification. Buttons are dual-function: quickly press a button and it latches, or press and hold it for momentary use.

ITM-1 Transfer Electronics

ISO/intercom transfer electronics are contained on circuit boards, which must be factory-installed in multi-channel intercom stations intended for use with Control Modules.

Wiring

Modules interconnect with a single 6-pin cable. All other connections are made with standard, 3-pin microphone cable.

SYSTEM OPERATION

Any standard, single-channel Clear-Com intercom station can function as an ISO station (so can other single-channel devices such as cameras or telephone lines, when interfaced to the Clear-Com system). This is the remote station "ISO'ed" by the Control Module(s) that are installed at control intercom stations. See System Block Diagram.

To establish a private conversation between a control intercom station and an ISO station, simply press a button on the Control Module at the intercom station. This activates the microprocessor in the ISO-4000 Central Electronics, which disconnects the intercom station and the selected ISO station from their normal intercom channels, and connects them together on an isolated channel (via the central electronics). The selected control Module button has an illuminated tally lamp that blinks to indicate an established ISO conversation.

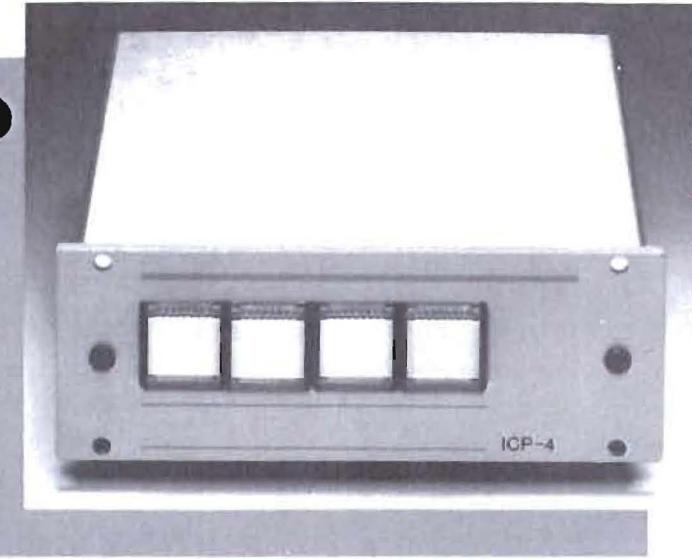
At other Control Modules, the buttons associated with the same ISO station will light brightly, showing that the station has been ISO'ed and is disconnected from its normal intercom channel.

Intercom Channel Monitoring

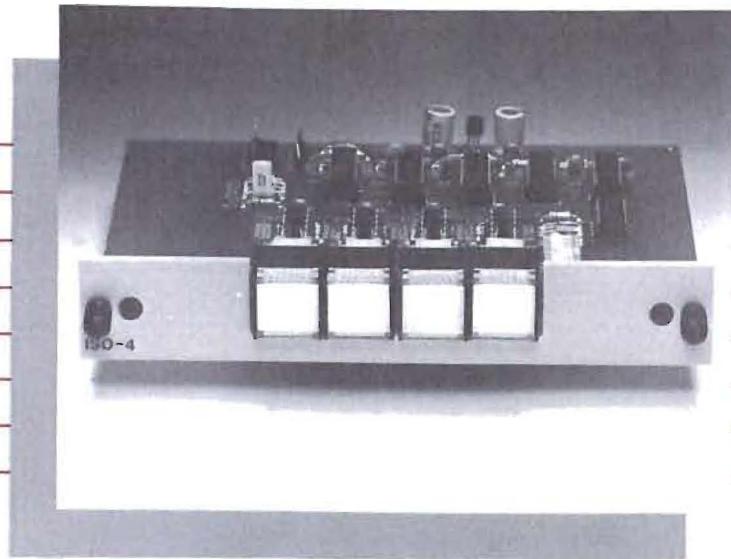
Intercom station positions with Control Modules may not want to lose contact with the normal intercom channel(s) when they initiate ISO conversations. Therefore, the ISO System provides adjustable "monitor" volume control to let the Control Module user listen to the intercom channel(s) while simultaneously using the ISO function.

System Priority

In typical ISO System use, any Control Module position can join in any ISO conversation established by a different Control Module, by pressing the associated (illuminated) ISO button. However, as a user-selectable feature, Control Modules can be programmed for "Lock-Out/Override" priority operation. When a "locked out" Control Module tries to join an ISO conversation, the associated button lamp blinks rapidly to indicate that entering the conversation is not possible. Control Modules can be assigned "Override" priority to let them join a conversation that other Stations are locked out of.



ICP-4 ISO CENTRAL MODULE



ISO-4 ISO CONTROL MODULE

OPTIONAL FEATURES

Optional ISO System features include:

Global & Individual Re-Set

When a Control Module isolates a remote station, both stations are removed from the normal intercom line, and remain in isolated conversation until released by the Control Module. The selected ISO station can only be released (returned to its intercom channel) by the selecting Control Module. But some situations require the ability to release an ISO'ed station from a central control location. Clear-Com's EFS-1 Extended Function Software enables a central location to release a selected, individual ISO station, or initiate "global" re-setting of the entire ISO System, returning all ISO'ed stations to their normal intercom channels.

Programmable Button Assignment/Non-Volatile Memory

In typical ISO system use, the Control Module buttons are labelled with names or numbers corresponding to specific ISO stations. The EFS-1 software lets the system's button/output assignments be easily re-pro-

grammed and saved, to meet special requirements of specific productions or applications. For example, this could enable "Button #1" to actually control "Camera #5." Also, a single Control Module button can be assigned to select multiple ISO

stations. When buttons are re-programmed, the new assignment information is stored in non-volatile memory.

Note: The EFS-1 Extended Function Software requires an additional ISO-4 or ICP-4 Control Module to access these features.

SPECIFICATIONS

General System Specifications

IC amplifiers include relay switching circuits. Compatible with all standard Clear-Com products. Specifications for frequency response, signal levels, and crosstalk are dependent upon specifications of the intercom system.

All DC audio and logic signals protected from damage if mis-wired

ISO Transfer Response Time: 5 msec

Crosstalk: 65dB between ISO bus and normal intercom

65dB between individual ISO channels

Line Length: 2000 feet maximum

ISO-4000 CENTRAL ELECTRONICS

MICROPROCESSOR

8748/8749 EPROM

Power Supply (100% isolated from intercom system)

Supplies power for internal relays, tally lamps (six control modules maximum), and IXM-43/6 expansion modules (4 maximum).

Output Voltage: 30 volts DC regulated, output circuit-breaker protected

Output Current: up to 1.5 amps maximum

Isolation from Intercom System: 1 Meg. ohm

CONTROLS & INDICATORS (behind removable front panel cover)

Six (6) potentiometers for monitor level adjust, 8-position DIP switch bank for priority function and tests;

Two (2) LED test indicators (relay test and data bus)

CONNECTORS

ISO Inputs: 3-pin male XLR (up to 16)

ISO Outputs: 3-pin male XLR (up to 6)

Control Module Output: two (2) six-pin female XLRs (wired in parallel)

Party Line Input: one 3-pin female XLR

External Assignment Matrix: 30-pin connector (1 or 2; optional)

POWER REQUIREMENT

115 or 230 volts AC, 50/60 Hz,

80 watts maximum

ENVIRONMENTAL TEMPERATURE RANGE: 0-

50 degrees C (32-122 degrees F)

DIMENSIONS: 19" W x 5.25" H x 9.5" D (483 x 133 x 241 mm)

WEIGHT: 13 lbs (5.9 Kg)

CONTROL MODULE

Digital circuitry transfers signals to ISO-4000 Central Electronics. Inputs and outputs can be shorted to ground or +30VDC without damage.

CONTROLS

Four (4) electronically latching/momentary pushbuttons with integral incandescent lamps and user-legandable caps.

CONNECTORS

ICP-4: one 6-pin female XLR, one 6-pin male XLR (paralleled)

ISO-4: two 6-pin 0.1" center header connectors

INSTALLATION

ICP-4: rack mountable, or console mount for custom applications

ISO-4: plug-in module for MS-808 Main Intercom Station

POWER REQUIREMENT

140 mA @ 30VDC

DIMENSIONS

ICP-4: 5" W x 1.75" H x 6.75" D (127 x 44 x 171 mm)

ISO-4: 6" W x 1.25 H x 5.5" D (1778 x 32 x 140 mm)

WEIGHT

ICP-4: 1.5 lbs (0.7 Kg)

ISO-4: 0.75 lbs (0.5 Kg)

Ordering Configuration

MODEL #: ISO-4000-3 Central Electronics

Supports four (4) ISO Stations x three (3) control locations.

Supplied with one internal IXM-43 Relay Module card.

Expandable to maximum sixteen (16) ISO Stations x three (3) control locations--order one IXM-43 expansion card for each additional group of four ISO Stations (four cards maximum).

MODEL #: ISO-4000-6 Central Electronics

Supports four (4) ISO Stations x six (6) control locations.

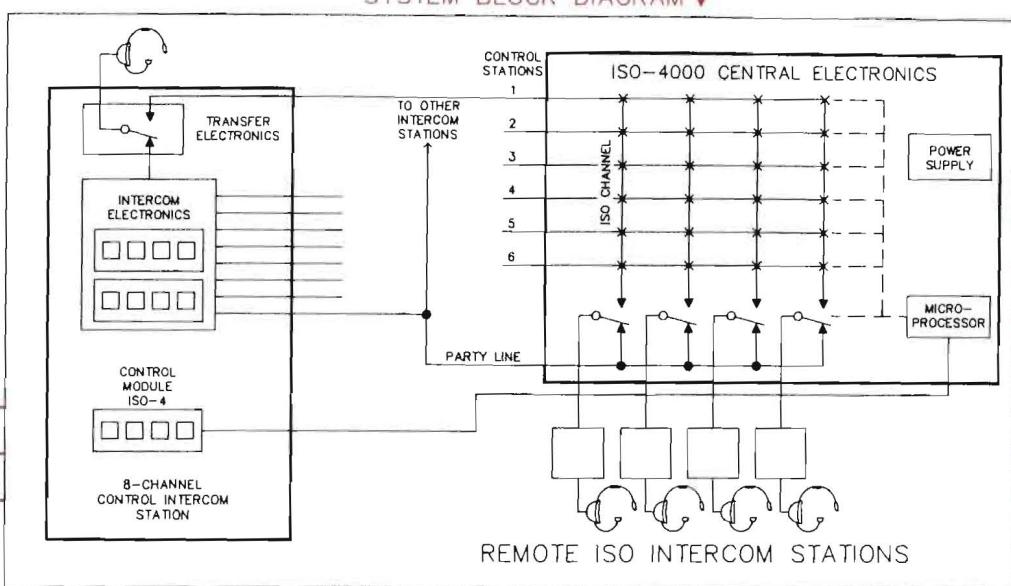
Supplied with one internal IXM-46 Relay Module card.

Expandable to maximum sixteen (16) ISO Stations six (6) control locations--order one IXM-46 expansion card for each additional group of four ISO Stations (four cards maximum).

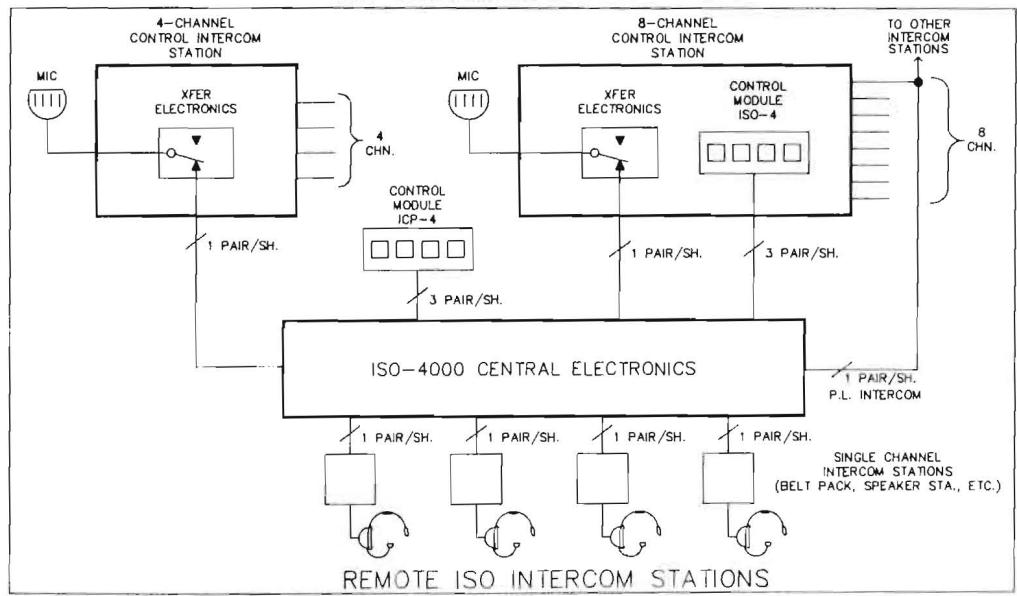
MODEL #: ITM-1 Transfer Electronics

Must be factory-installed in each multi-channel intercom station to be used with an ICP-4 or ISO-4 Control Module.

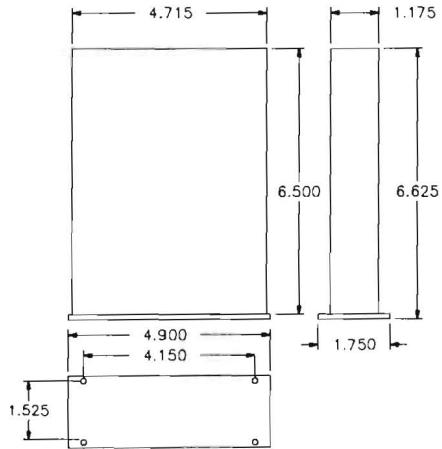
SYSTEM BLOCK DIAGRAM ▼



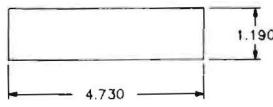
ISO INTERCONNECT DIAGRAM ▼



ICP-4 OUTSIDE DIM.



ICP-4 MTNG. CUTOUT



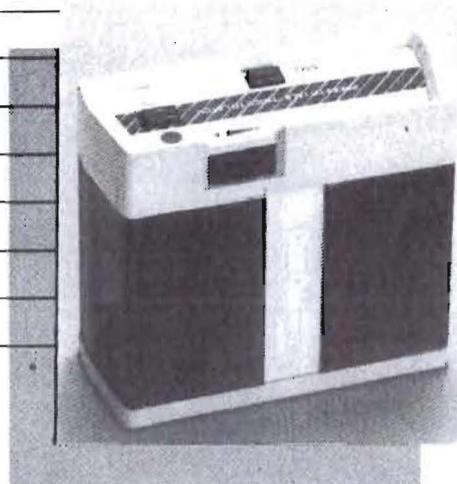
Sales: USA/Canada

1111 17th Street • San Francisco, CA • Telephone 415/861-6666

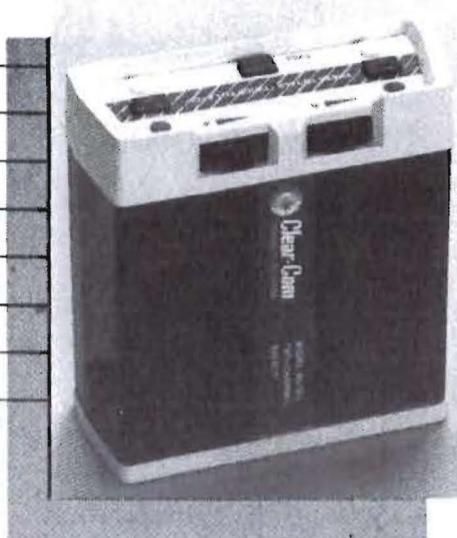
Export Division:

P.O. Box 302 • Walnut Creek, CA 94596 • U.S.A.

SERIES 500 BELTPACKS



RS-501 SINGLE CHANNEL



**RS-502 TWO CHANNEL, DUAL LISTEN
MONAURAL OUTPUT**

**RS-522 TWO CHANNEL, "SPLIT EAR",
STEREO OUTPUT**

FEATURES

- Momentary or Latching microphone on/off function.
- "Remote Mic Kill" feature.
- Exceptionally light weight and small size.
- Rugged case constructed of aircraft grade Aluminum and advanced HDS composite material.
- All controls and indicators are recessed for protection.
- Ergonomically designed controls for ease of operation.
- High Audio Output Power.
- Special non-metallic belt clip and surface mounting adapter.
- Color coded models.
- Auto-shutoff of beltpack microphone circuit when intercom line is disconnected.
- Dynamic, Electret, or Carbon microphone capability.
- "TW" Option permits two channel operation on standard 3-pin microphone cable.

 **Clear-Com**
Intercom Systems

DESCRIPTION

The Series 500 beltpack type headset intercom stations are part of a series of Clear-Com products that use a powerful combination of analog and digital technology to provide many advanced operating features.

These beltpacks are the result of over fifteen years of designing and manufacturing intercom systems, and of working closely with the many users of our equipment. Most of the new and improved features included in the Series 500 are specifically designed to solve problems that have troubled and irritated intercom users for years.

The Series 500 beltpacks utilize noiseless electronic switching of all audio circuits, controlled by a custom designed digital integrated circuit.

They incorporate neoteric materials in their construction to provide the exceptional ruggedness and reliability for which Clear-Com is famous.

All of the operating controls, indicators, and connectors are recessed and protected against damage, and the units are designed for simplicity and ease of operation.

There are three basic Series 500 models available:

The RS-501 is a single channel unit. It is the standard Clear-Com beltpack for use in all types of applications.

The RS-502 is a two channel, "dual listen", monaural output unit. It allows the operator to listen to both channels simultaneously, and to select which channel to talk on. It is most frequently used by stage managers & floor directors.

The RS-522 is a two channel unit, with a stereo "split ear" output. It provides for simultaneous listening and talking, in any combination, on two intercom channels. The headphone output can operate in either a "split-feed" stereo mode, feeding each channel into a separate ear of a split-ear headset, or (optionally) in a combined monaural mode. It can be used in many special applications, such as lighting directors, camera "crane" applications, audio boom operators, etc.

All three units include visual "call" signalling as a standard feature, either on one channel (RS-501) or on both channels (RS-502 & RS-522).

CUSTOM DIGITAL LOGIC CIRCUIT

Two of the most important and innovative developments in the Series 500 beltpacks, the special dual function "Mic On/Off Control" and "Remote Mic Kill", are made possible thru the use of a custom designed digital integrated circuit, manufactured exclusively for Clear-Com. This custom IC provides most of the special functions, options, and "power-up" default settings for the various Series 500 electronic circuits.

Momentary or Latching microphone on/off function.

On initial power-up of the station, the microphone circuit is "OFF". The operator then turns the microphone "ON" either by pressing and holding the appropriate channel button (momentary) or pushing the button twice to latch the circuit "ON" (locking). This "two push" action required to latch the microphone "On" virtually eliminates the possibility of the microphone circuit being accidentally locked "ON" when only a momentary talk function is desired.

Remote Mic Kill feature.

One of the most common and most disruptive problems in an intercom system is an open microphone that cannot be located. A headset casually set down near a monitor loudspeaker or video monitor with the microphone left turned on can overwhelm the normal communications with uncontrollable noise. To solve this problem, all Series 500 microphone circuits can be muted by momentarily interrupting the system or channel power, or by the use of an auxiliary "Mic Kill" button.

Damage resistant controls, indicators, and connectors,

To eliminate the single biggest cause of intercom station failure: breakage of exposed controls, all Series 500 units are designed with the front panel operating controls and indicators protected against accidental damage by a raised bezel. The volume controls are recessed in the side of the unit. Also, the Series 500 beltpacks use elastomeric switches, with a life of more than 5×10^5 cycles, instead of more typical mechanical switches.

Exceptionally light weight and small size

The combination of compact size and light weight makes the 500 Series units very comfortable to wear, even over extended periods of time. In fact, the RS-501 single channel beltpack weighs only 8 ounces.

Rugged case constructed of aircraft grade Aluminum and advanced HDS composite material.

Maintaining the long established Clear-Com standard of ruggedness and reliability, the cases of the Series 500 stations are constructed of a combination of aircraft grade aluminum and ultra durable HDS composite material. The physical design of the units, coupled with the construction materials, make them unusually durable under the most demanding applications.

Special "Bounce-back" feature

The two channel units, the RS-502 and RS-522, have a programmable priority "Bounce-back" feature. This feature programs Channel A as the primary "talk" channel, and Channel B as the secondary channel. Pressing and holding the Channel B talk button temporarily transfers the microphone from Channel A to Channel B. Upon release of the button the microphone automatically "bounces-back" to Channel A, the priority channel.

Improved circuitry

The time-proven, ultra-reliable Clear-Com audio circuitry has been improved even further with the addition of:

A more powerful output circuit, capable of driving 50 ohm headsets, providing more volume for high noise applications.

A microphone compressor/limiter to compensate for variances in individual voices, and to minimize overloading problems.

All digitally controlled silent electronic audio switching.

Auto-shutoff of beltpack microphone circuit when intercom line is disconnected.

Normally when an intercom station is disconnected from the intercom line, the loss of termination can result in an extremely loud squeal in the headset earphone — and in the operator's ear. When a Series 500 station is unplugged from the line, the microphone circuit automatically and instantly shuts off, totally eliminating the condition.

Dynamic, Electret, or Carbon microphone capability.

The standard headset connector on the two channel beltpacks can accommodate either a dynamic or an electret microphone, simply by setting an externally accessible switch. An optional 1/4" TRS (tip, ring, sleeve) phone jack can be installed on all Series 500 units to accept most types of carbon or carbon compatible headsets.

Ergonomically designed controls for ease of operation

The side mounted volume control knobs and the physical location of the various push-buttons make all of the controls easy to operate by touch alone, without having to look at the unit.

Special belt clip and surface mounting adapter

The beltclip on the Series 500 is virtually unbreakable, made of HDS composite material. Should replacement ever be required, simply loosening four screws allows a new clip to easily slide into its mounting slot.

The beltclip is also designed to snap into the provided Surface Mounting Adapter. This adapter enables the beltpack to be used as a permanent or semi-permanent station (e.g. under a control console or desk.), providing complete access to all controls and indicators.

The mounting adapter can also be used to provide convenient temporary mounting for beltpacks, either at a portable beltpack operating location, or for non-operating storage, such as on the inside of an equipment storage cabinet door.

Color coded models.

All models of Series 500 intercom stations have similar size and shape. Therefore, to help quickly determine the specific station type, particularly in fast paced field operating situations, each different model has a colored strip on its front panel to easily identify the type of unit.

TWO CHANNEL/SINGLE 3-PIN CABLE OPERATION

GENERAL INFORMATION

In some portable applications, access to two discrete channels over a single 3-pin microphone cable is desirable (rather than the Clear-Com "standard" 6-pin/3-pair two channel cabling). The TWC-10 adapter combined with intercom stations equipped with the "TW" Option makes this two channel/single 3-pin cable operation possible.

"TW" OPTION

The "TW" option to Clear-Com intercom stations converts 6-pin cable/two channel intercom stations to single 3-pin cable/two channel operation.

The TW Option is a plug-in module that is factory installed inside a Clear-Com two channel intercom station. Its operation is completely transparent and simply separates the 30 Volts DC and the Channel A intercom audio, routing the two to the appropriate sections of the circuit.

Operation of intercom stations equipped with the TW Option is normal (as described in the individual station's operation manual), except that the TW Option deletes the "Call" signal function on Channel A.

("TW" optioned stations require at least one TWC-10 in the system to operate.)

TWC-10

The TWC-10 Adapter combines two standard Clear-Com intercom channels (on two separate cables) onto a single standard 3-pin microphone cable.

The TWC-10 is a stand-alone unit which adds the 30 Volts DC operating power to the Channel A intercom line. It can supply 1 amp of DC power, which will operate up to 18 beltpacks.

"TWR" OPTION

The "TWR" Option is a modified version of the standard Clear-Com "TW" Option. It changes the intercom line level to match RTS intercom systems. It also changes the headset connector from a male (Clear-Com standard) to a female (RTS standard).

A Series 500 station equipped with the "TWR" Option is "plug-in" compatible with an RTS system. It is *not* compatible with either standard or "TW" Clear-Com systems.

Note: RTS type "Call" signalling (20kHz PLL tone) is not available with the TWR Option.

SERIES 500 SPECIFICATIONS

AMPLIFIER DESIGN: IC amplifiers including solid-state digital switching and signalling circuits. Microphone compressor/limiter. Current limited and short circuit protected.

MICROPHONE PRE-AMP:

Mic Input: Accepts 200 Ω dynamic, Electret and carbon type optional

Gain, Mic to Line: +41

Maximum Before Clipping: -10dBv*

Limiter Compression Ratio: 2:1

Mic Pre-Amp Frequency Response: 200-12kHz, Contoured to enhance voice clarity

HEADPHONE AMPLIFIER:

Load Impedance Range: 50-2000 Ω

Output Level: +20dBv before clipping (drives standard CC headsets to more than 110dB SPL)

Distortion: .1% THD @ 1kHz

Gain, Line to Output: +35dB

Frequency Response: 100Hz-18Hz + 2dB

CONNECTORS:

Intercom Line:

RS-501

RS-502-TW 3-pin XL type

RS-502-TWR Female (input)

RS-522-TW Male (loop-thru)

RS-522-TWR

RS-502 6-pin XL type

RS-522 Female (input)

Dynamic/Electret Headset:

RS-501 4-pin XL type

RS-502 Male

RS-502-TW

RS-522 6-pin XL type

RS-522-TW Male

RS-502-TWR 4-pin XL type

Female (RTS standard)

RS-522-TWR 6-pin XL type

Female (RTS standard)

Carbon Headset (Optional):

All units: 1/4" TRS phone jack

ENVIRONMENTAL:

Ambient Operating Temperature:

0-60°C, 32-140°F

Storage: -55-125°C, -62-257°F

Humidity: 0-90% relative humidity

GENERAL

Station Bridging Impedance: > 15k Ω
(200Hz-10kHz)

Line Level: -15dBv nominal 0dBv max

Side Tone Adjustment: 35dB null to full on

Signal to Noise: 75dB

Equivalent Input Noise: -118dBv*

Power Supply Rejection: ≥60dB RFI and EMI ref. audio line

Power Requirements: 25mA quiescent/35 mA average talk/25 mA signalling

DC Voltage Range: 12-32 Volts (28 volts nominal)

DIMENSIONS:

RS-501 -- 3.25" h × 3.875" w × 1.5" d

RS-502 -- 4.125" h × 3.875" w × 1.5" d

RS-522 -- 4.125" h × 3.875" w × 1.5" d

WEIGHT:

RS-501 -- 8 oz

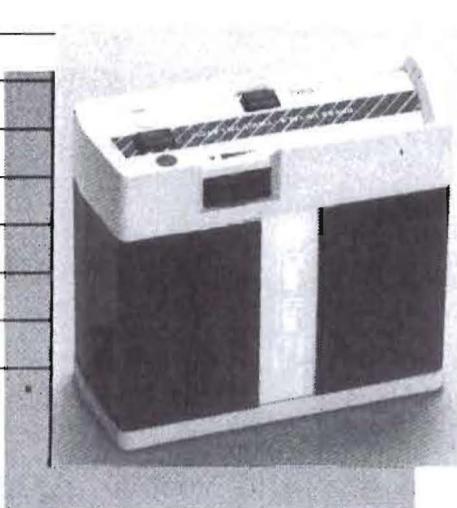
RS-502 -- 11 oz

RS-522 -- 11 oz

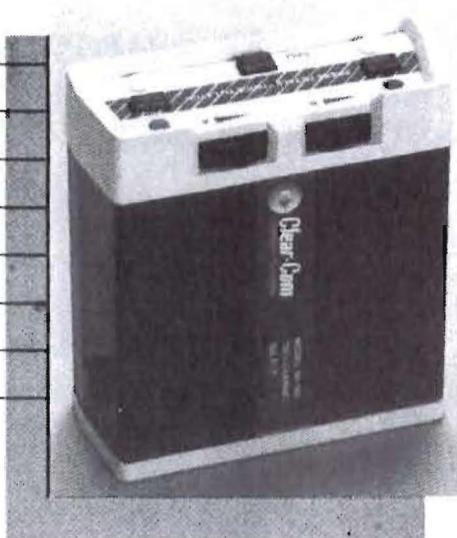
Specifications subject to change without notice

*0 dBv is referenced to 0.775 volts rms.

SERIES 500 BELTPACKS



RS-501 SINGLE CHANNEL



**RS-502 TWO CHANNEL, DUAL LISTEN
MONAURAL OUTPUT**

**RS-522 TWO CHANNEL, "SPLIT EAR",
STEREO OUTPUT**

FEATURES

- Momentary or Latching microphone on/off function.
- "Remote Mic Kill" feature.
- Exceptionally light weight and small size.
- Rugged case constructed of aircraft grade Aluminum and advanced HDS composite material.
- All controls and indicators are recessed for protection.
- Ergonomically designed controls for ease of operation.
- High Audio Output Power.
- Special non-metallic belt clip and surface mounting adapter.
- Color coded models.
- Auto-shutoff of beltpack microphone circuit when intercom line is disconnected.
- Dynamic, Electret, or Carbon microphone capability.
- "TW" Option permits two channel operation on standard 3-pin microphone cable.



DESCRIPTION

The Series 500 beltpack type headset intercom stations are part of a series of Clear-Com products that use a powerful combination of analog and digital technology to provide many advanced operating features.

These beltpacks are the result of over fifteen years of designing and manufacturing intercom systems, and of working closely with the many users of our equipment. Most of the new and improved features included in the Series 500 are specifically designed to solve problems that have troubled and irritated intercom users for years.

The Series 500 beltpacks utilize noiseless electronic switching of all audio circuits, controlled by a custom designed digital integrated circuit.

They incorporate neoteric materials in their construction to provide the exceptional ruggedness and reliability for which Clear-Com is famous.

All of the operating controls, indicators, and connectors are recessed and protected against damage, and the units are designed for simplicity and ease of operation.

There are three basic Series 500 models available:

The RS-501 is a single channel unit. It is the standard Clear-Com beltpack for use in all types of applications.

The RS-502 is a two channel, "dual listen", monaural output unit. It allows the operator to listen to both channels simultaneously, and to select which channel to talk on. It is most frequently used by stage managers & floor directors.

The RS-522 is a two channel unit, with a stereo "split ear" output. It provides for simultaneous listening and talking, in any combination, on two intercom channels. The headphone output can operate in either a "split-feed" stereo mode, feeding each channel into a separate ear of a split-ear headset, or (optionally) in a combined monaural mode. It can be used in many special applications, such as lighting directors, camera "crane" applications, audio boom operators, etc.

All three units include visual "call" signalling as a standard feature, either on one channel (RS-501) or on both channels (RS-502 & RS-522).

CUSTOM DIGITAL LOGIC CIRCUIT

Two of the most important and innovative developments in the Series 500 beltpacks, the special dual function "Mic On/Off Control" and "Remote Mic Kill", are made possible thru the use of a custom designed digital integrated circuit, manufactured exclusively for Clear-Com. This custom IC provides most of the special functions, options, and "power-up" default settings for the various Series 500 electronic circuits.

Momentary or Latching microphone on/off function.

On initial power-up of the station, the microphone circuit is "OFF". The operator then turns the microphone "ON" either by pressing and holding the appropriate channel button (momentary) or pushing the button twice to latch the circuit "ON" (locking). This "two push" action required to latch the microphone "On" virtually eliminates the possibility of the microphone circuit being accidentally locked "ON" when only a momentary talk function is desired.

Remote Mic Kill feature.

One of the most common and most disruptive problems in an intercom system is an open microphone that cannot be located. A headset casually set down near a monitor loudspeaker or video monitor with the microphone left turned on can overwhelm the normal communications with uncontrollable noise. To solve this problem, all Series 500 microphone circuits can be muted by momentarily interrupting the system or channel power, or by the use of an auxiliary "Mic Kill" button.

Damage resistant controls, indicators, and connectors,

To eliminate the single biggest cause of intercom station failure: breakage of exposed controls, all Series 500 units are designed with the front panel operating controls and indicators protected against accidental damage by a raised bezel. The volume controls are recessed in the side of the unit. Also, the Series 500 beltpacks use elastomeric switches, with a life of more than 5×10^5 cycles, instead of more typical mechanical switches.

Exceptionally light weight and small size

The combination of compact size and light weight makes the 500 Series units very comfortable to wear, even over extended periods of time. In fact, the RS-501 single channel beltpack weighs only 8 ounces.

Rugged case constructed of aircraft grade Aluminum and advanced HDS composite material.

Maintaining the long established Clear-Com standard of ruggedness and reliability, the cases of the Series 500 stations are constructed of a combination of aircraft grade aluminum and ultra durable HDS composite material. The physical design of the units, coupled with the construction materials, make them unusually durable under the most demanding applications.

Special "Bounce-back" feature

The two channel units, the RS-502 and RS-522, have a programmable priority "Bounce-back" feature. This feature programs Channel A as the primary "talk" channel, and Channel B as the secondary channel. Pressing and holding the Channel B talk button temporarily transfers the microphone from Channel A to Channel B. Upon release of the button the microphone automatically "bounces-back" to Channel A, the priority channel.

Improved circuitry

The time-proven, ultra-reliable Clear-Com audio circuitry has been improved even further with the addition of:

A more powerful output circuit, capable of driving 50 ohm headsets, providing more volume for high noise applications.

A microphone compressor/limiter to compensate for variances in individual voices, and to minimize overloading problems.

All digitally controlled silent electronic audio switching.

Auto-shutoff of beltpack microphone circuit when intercom line is disconnected.

Normally when an intercom station is disconnected from the intercom line, the loss of termination can result in an extremely loud squeal in the headset earphone — and in the operator's ear. When a Series 500 station is unplugged from the line, the microphone circuit automatically and instantly shuts off, totally eliminating the condition.

Dynamic, Electret, or Carbon microphone capability.

The standard headset connector on the two channel beltpacks can accommodate either a dynamic or an electret microphone, simply by setting an externally accessible switch. An optional 1/4" TRS (tip, ring, sleeve) phone jack can be installed on all Series 500 units to accept most types of carbon or carbon compatible headsets.

Ergonomically designed controls for ease of operation

The side mounted volume control knobs and the physical location of the various push-buttons make all of the controls easy to operate by touch alone, without having to look at the unit.

Special belt clip and surface mounting adapter

The beltclip on the Series 500 is virtually unbreakable, made of HDS composite material. Should replacement ever be required, simply loosening four screws allows a new clip to easily slide into its mounting slot.

The beltclip is also designed to snap into the provided Surface Mounting Adapter. This adapter enables the beltpack to be used as a permanent or semi-permanent station (e.g. under a control console or desk.), providing complete access to all controls and indicators.

The mounting adapter can also be used to provide convenient temporary mounting for beltpacks, either at a portable beltpack operating location, or for non-operating storage, such as on the inside of an equipment storage cabinet door.

Color coded models.

All models of Series 500 intercom stations have similar size and shape. Therefore, to help quickly determine the specific station type, particularly in fast paced field operating situations, each different model has a colored strip on its front panel to easily identify the type of unit.

TWO CHANNEL/SINGLE 3-PIN CABLE OPERATION

GENERAL INFORMATION

In some portable applications, access to two discrete channels over a single 3-pin microphone cable is desirable (rather than the Clear-Com "standard" 6-pin/3-pair two channel cabling). The TWC-10 adapter combined with intercom stations equipped with the "TW" Option makes this two channel/single 3-pin cable operation possible.

"TW" OPTION

The "TW" option to Clear-Com intercom stations converts 6-pin cable/two channel intercom stations to single 3-pin cable/two channel operation.

The TW Option is a plug-in module that is factory installed inside a Clear-Com two channel intercom station. Its operation is completely transparent and simply separates the 30 Volts DC and the Channel A intercom audio, routing the two to the appropriate sections of the circuit.

Operation of intercom stations equipped with the TW Option is normal (as described in the individual station's operation manual), except that the TW Option deletes the "Call" signal function on Channel A.

("TW" optioned stations require at least one TWC-10 in the system to operate.)

TWC-10

The TWC-10 Adapter combines two standard Clear-Com intercom channels (on two separate cables) onto a single standard 3-pin microphone cable.

The TWC-10 is a stand-alone unit which adds the 30 Volts DC operating power to the Channel A intercom line. It can supply 1 amp of DC power, which will operate up to 18 beltpacks.

"TWR" OPTION

The "TWR" Option is a modified version of the standard Clear-Com "TW" Option. It changes the intercom line level to match RTS intercom systems. It also changes the headset connector from a male (Clear-Com standard) to a female (RTS standard).

A Series 500 station equipped with the "TWR" Option is "plug-in" compatible with an RTS system. It is *not* compatible with either standard or "TW" Clear-Com systems.

Note: RTS type "Call" signalling (20kHz PLL tone) is not available with the TWR Option.

SERIES 500 SPECIFICATIONS

AMPLIFIER DESIGN: IC amplifiers including solid-state digital switching and signalling circuits. Microphone compressor/limiter. Current limited and short circuit protected.

MICROPHONE PRE-AMP:

Mic Input: Accepts 200 Ω dynamic, Electret and carbon type optional

Gain, Mic to Line: +41

Maximum Before Clipping: -10dBv*

Limiter Compression Ratio: 2:1

Mic Pre-Amp Frequency Response: 200-12kHz, Contoured to enhance voice clarity

HEADPHONE AMPLIFIER:

Load Impedance Range: 50-2000 Ω

Output Level: +20dBv before clipping (drives standard CC headsets to more than 110dB SPL)

Distortion: .1% THD @ 1kHz

Gain, Line to Output: +35dB

Frequency Response: 100Hz-18kHz + 2dB

CONNECTORS:

Intercom Line:

RS-501

RS-502-TW 3-pin XL type

RS-502-TWR Female (input)

RS-522-TW Male (loop-thru)

RS-522-TWR

RS-502 6-pin XL type

RS-522 Female (input)

Dynamic/Electret Headset:

RS-501 4-pin XL type

RS-502 Male

RS-502-TW

RS-522 6-pin XL type

RS-522-TW Male

RS-502-TWR 4-pin XL type

Female (RTS standard)

RS-522-TWR 6-pin XL type

Female (RTS standard)

Carbon Headset (Optional):

All units: 1/4" TRS phone jack

ENVIRONMENTAL:

Ambient Operating Temperature:

0-60°C, 32-140°F

Storage: -55-125°C, -62-257°F

Humidity: 0-90% relative humidity

GENERAL

Station Bridging Impedance: > 15k Ω
(200Hz-10kHz)

Line Level: -15dBv nominal 0dBv max

Side Tone Adjustment: 35dB null to full on

Signal to Noise: 75dB

Equivalent Input Noise: -118dBv*

Power Supply Rejection: ≥60dB RFI and EMI ref. audio line

Power Requirements: 25mA quiescent/35 mA average talk/25 mA signalling

DC Voltage Range: 12-32 Volts (28 volts nominal)

DIMENSIONS:

RS-501 — 3.25" h × 3.875" w × 1.5" d

RS-502 — 4.125" h × 3.875" w × 1.5" d

RS-522 — 4.125" h × 3.875" w × 1.5" d

WEIGHT:

RS-501 — 8 oz.

RS-502 — 11 oz.

RS-522 — 11 oz.

Specifications subject to change without notice.

*0 dBv is referenced to 0.775 volts rms.



Clear-Com

Intercom Systems

1111 17th Street
San Francisco, CA 94107
415-861-6666

Established in 1970, Clear-Com is the recognized leader in the manufacture of high-quality, closed-circuit intercom systems. We have a solid reputation of exceptional reliability under the most adverse conditions. Our "no-fail" system design, high output, wide bandwidth, and wide variety of stations & accessories satisfy even the most demanding communications requirements.

MAIN STATIONS & RACK-MOUNT REMOTE STATIONS

NOTE: A "Main Station" is a combination intercom station and system power supply; a "Remote Station" does not include a power supply.

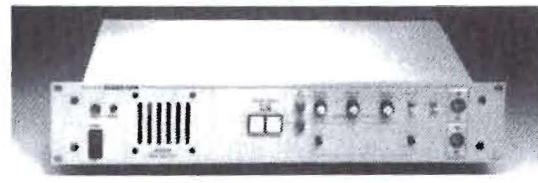
CS-210 MAIN STATION

2-channel headset station, monitors one or both; selectable program input (mic or line-level), Stage Announce. Portable or rack-mount. Applications include: theatre, concerts, rental firms. 589.00



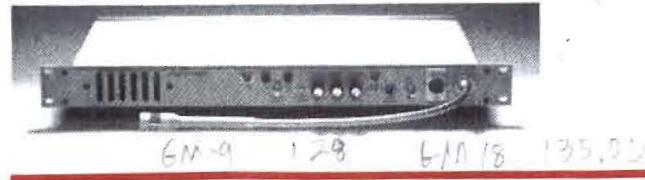
MS-200B MAIN STATION

2-channel speaker station, monitors one or both channels. Selectable talk/listen/program functions; Stage Announce. Applications include: fixed installations; video/theatre directors. 688.00



RM-120A REMOTE STATION

Speaker station, 2-channels (monitor A, B, or both). Dynamic/carbon headsets; Stage Announce; selectable talk/listen/program functions. Applications include: video/theatre production. (gooseneck mic optional) 486.00



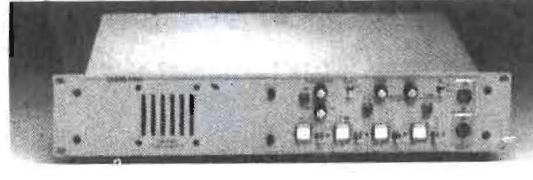
MS-400A MAIN STATION

Four-channel speaker and dynamic headset main station. Rack-mount with power supply. 1028.00



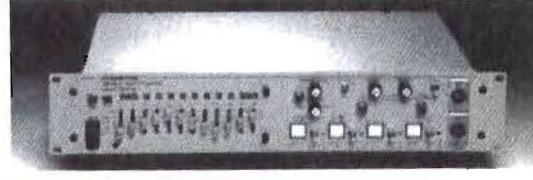
RM-400A REMOTE STATION

Four-channel speaker and dynamic headset remote station. Rack-mount. 867.00



SB-412A MAIN STATION

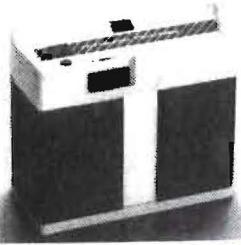
4-channel, same specs as MS-400A but no speaker (has ext. speaker jack). Has switch matrix to assign each of 12 stations (or 12 groups) to any of the 4 channels or a "disconnected" OFF line. Applications include: video production/theatre with constant repatching needs.



BELTPACKS & WALL MOUNT HEADSET STATIONS

RS-501 BELTPACK

Single channel, lightweight beltpack. Advanced features include all digital, noiseless, electronic switching; "Remote Mic Kill" function; visual signalling. Accepts dynamic or electret microphones. Carbon type headset jack optional. The RS-501 is the standard beltpack station for use in all applications. (Replaces RS-100A and CP-100.) 198.00



RS-502 BELTPACK

Two channel beltpack. Allows access to either one of two separate intercom channels. Includes all features of the RS-501 plus dual channel signalling. Applications include: video/theatre production, industrial. (Replaces CP-100/2CH.) 257.00



RS-522 BELTPACK

Two channel, dual listen, binaural beltpack. Allows completely selectable simultaneous listening and talking on two separate channels. Binaural "split-feed" headset output. (Monaural option available.) Includes all features of the RS-501 and RS-502. Applications include: video/theatre production, industrial, lighting design. (Replaces RS-201.) 298.00



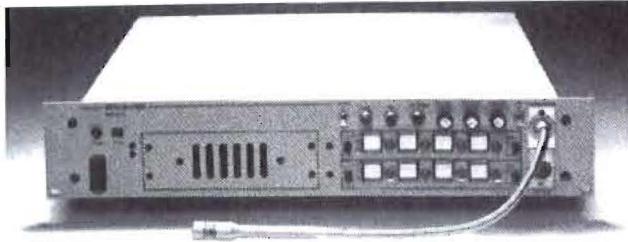
MR-102A WALL-MOUNT STATION

Two channel wall-mount headset station. Selectable to either one of two channels. Also available as MR-104A, selectable to any one of four channels. Applications include: permanent video, theatre, and industrial facilities. 198.00

DLC SERIES

MS-808 MASTER STATION

This modular, rack-mount master station can provide signalling and communication access to a maximum of 16 separate Intercom, IFB, and Point-to-Point channels plus additional functions through the use of up to four plug-in modules. Additional modules can be conveniently installed providing for ease of future expansion. The MS-808 can operate either "hands-free" (with speaker and gooseneck microphone) or with a headset. 1338.00



SP-4 SPEAKER MODULE

This double space module provides an internal loudspeaker, eliminating the need to use an external speaker. 69.00

BP-4 BLANK PANEL

This single space panel is required to fill any spaces not occupied by an operational DLC module. 24.00

IFB (PROGRAM INTERRUPT) SYSTEMS

The Clear-Com IFB system is a modular system capable of operating as a "stand alone" system, or being integrated with MS-808 Master Stations. It transmits an interruptable program signal to individual talent receivers via standard two conductor shielded microphone cable. It is a distributed amplifier system with the earphone amplifier located at the talents' position. It features virtually unlimited expansion capabilities (up to 96 talent channels and 50 control locations). Wiring required between Talent Access Stations and the IFB Electronics is only six conductors per each four talent channels, and can be either "home run" or "loop-thru" wiring method. The system is composed of the following components:

PIC-4000 IFB ELECTRONICS

This unit contains all of the audio and switching circuitry for selecting one of two program signals, routing the signals to four independent talent channels, and interrupting, with variable program attenuation, the signals from one or more control points. It requires 24 VDC power from a Clear-Com Intercom System or power supply. 636.00



TR-50 TALENT RECEIVER

This small, portable unit contains the amplifier to power the talent's earphone. It connects to the PIC-4000B via standard two conductor shielded microphone cable. A miniature in-the-ear receiver is included with each TR-50.

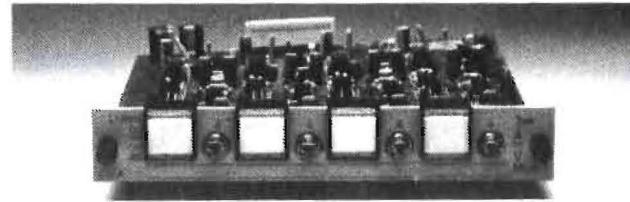
118.00

TR-532 STEREO/SPLIT FEED TALENT RECEIVER

The TR-532 contains two discrete amplifiers to feed the "Interrupt" and "Non-Interrupt" signals from the PIC-4000B on standard mic cable to separate ears of a "sportscaster" type headset or standard stereo earphones. It also provides a passive "loop-thru" output of the headset's microphone for "on-air" applications. 230.00

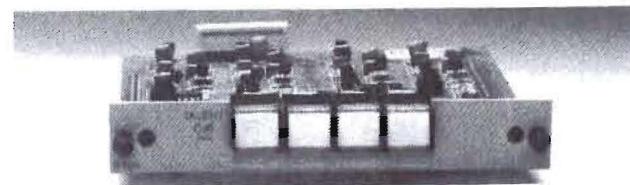
CH-4 INTERCOM CONTROL MODULE

This single module provides individual channel listen/talk switching, program insert level control, and sidetone adjustment for four intercom channels. 562.00



IFB-4 PROGRAM INTERRUPT MODULE

This single space module provides access to four channels of IFB (Program Interrupt). It requires the PIC-4000B Control Electronics. 455.00



ISO-4 ISO CONTROL MODULE

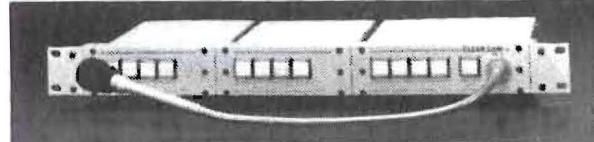
This is a four button control module, electrically equivalent to the ICP-4, designed for installation in a MS-808 Main Station.

MA-4 TALENT ACCESS MASTER CONTROL STATION

This unit provides individual access to four talent channels and "ALL CALL" access to all of the talent channels in the system. It is designed for direct console mounting or rack mounting in an optional Rack-Mount Adapter. It includes a panel mounted gooseneck microphone and all required local electronics. 578.00

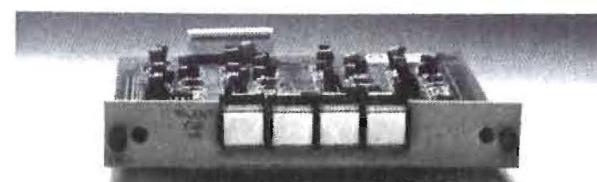
AX-4 TALENT ACCESS EXPANSION STATION

This unit connects to the MA-4 Control Station, expanding the talent channel selection capabilities by four additional channels per AX-4. Multiple AX-4 units can be linked together to control a maximum of 96 talent channels. 398.00



IFB-4 PROGRAM INTERRUPT MODULE

This unit is the equivalent of the AX-4, designed for mounting in the MS-808 Master Station. 455.00



THE MINICOM® SERIES



PK-3 POWER SUPPLY

FEATURES

- Line- and load-regulated
- Supports up to 25 headset stations
- Provides audio termination for entire system
- Short circuit-protected
- Two versions available; operating from 115 - 230 VAC
- Heavy-duty construction



MINICOM® HEADSET STATIONS

FEATURES

- High-performance, two-way communicating at a modest price
- Wide frequency response and high volume capability
- Transmits clearly under all conditions
- Easy to use and set up
- Lightweight noise-isolating headset is permanently attached to compact belt-pack
- Soft ear cushions and adjustable headbands
- Available in single- or double-muff style
- Noise-cancelling dynamic mic rejects background noise and is mounted on flexible boom
- SM-1 includes automatic boom-mounted mic-on/off switch
- Electronics enclosed in rugged, die-cast aluminum box
- Individual volume controls and on/off switches
- All units interconnect with standard mic cable
- Compatible with Clear-Com System

DESCRIPTION

MINICOM® by Clear-Com is widely used in audio-visual, educational, theatrical, video production, and sports applications, yet it also works exceptionally well in noisy industrial and concert sound installations.

The hard-wired Minicom system features low distortion, low noise, and a wide frequency response; all units interconnect with standard mic cable (two-conductor, shielded). All Minicom units are compatible with the Clear-Com Intercom System.

Minicom provides portable, hands-free communicating on a two-way channel (simultaneous talk/listen). Its contoured, wide frequency response and high volume capability assure top-quality performance.

SPECIFICATIONS

SM-1/DM-1 HEADSET STATION

Amplifier Type: Solid-state, IC amplifiers, current-limited with reverse polarity and short-circuit protection.

Signal-to-Noise Ratio: 65dB

Microphone Input: 200Ω dynamic

Distortion: <0.5% THD @ 1kHz

Mic Pre-Amp Frequency Response: 200Hz-10kHz, contoured for enhanced vocal intelligibility

Microphone Type: Dynamic, low-impedance, noise-cancelling (12dB background attenuation @ 1kHz)

Headphone Frequency Response: 200-12k Hz (± 2 dB)

Sound Pressure Level: 110dB SPL maximum (mid-band)

Controls & Connector: Mic on/off switch and headphone volume control; cable terminates in female XLR 3-pin connector

Power Requirements: 8mA quiescent, 10mA average talk; voltage range 12-32 VDC

Total Weight: SM-1, 1.25 lbs. (.57kg); DM-1, 1.5 lbs. (.68kg)

Intercom Unit Dimensions: 3.5" (89mm) L x 1" (254mm) W x 1.5" (38mm) D

Specifications subject to change without notice
*0 dBv is referenced to 0.775 volts rms.

PK-3 POWER SUPPLY

Output Voltage: +24 VDC regulated. Short circuit protected.

Output Current: .25A

Power Consumption: 15 VA

Power Requirements: 105-130 VAC, 60 Hz or 220-230 VAC, 50 Hz

Output Connectors: (3) male, 3-pin XLR type

Operating Temperature Range: 0-40°C

Dimensions: Line splitter, 3.5" (89mm) L x 1" (254mm) W x 15.5" (38mm) D; wall plug-in, 3.5" (89mm) L x 2.6" (66mm) W x 2.7" (69mm) D

Cable Length: 6' (from AC/DC box to splitter)

Weight: 1.5 lbs. (.68kg)

Specifications are subject to change without notice.

SM-1 & DM-1

The noise-attenuating headset station, available in single-muff (Model SM-1) or double-muff (Model DM-1) style, is attached to a lightweight, in-line intercom and includes a noise-cancelling dynamic mic for intelligibility in noisy or quiet areas. Each headset station provides a volume control and a mic on/off switch. The mic in Model SM-1 automatically turns off when its flexible boom is swung upward.

The Minicom intercom electronics (SM-1 or DM-1) include a mic pre-amplifier and headphone amplifier enclosed in a die-cast metal box with a belt-clip. The box is attached to six feet of mic cable that ends in a 3-pin XLR connector for system interconnection.

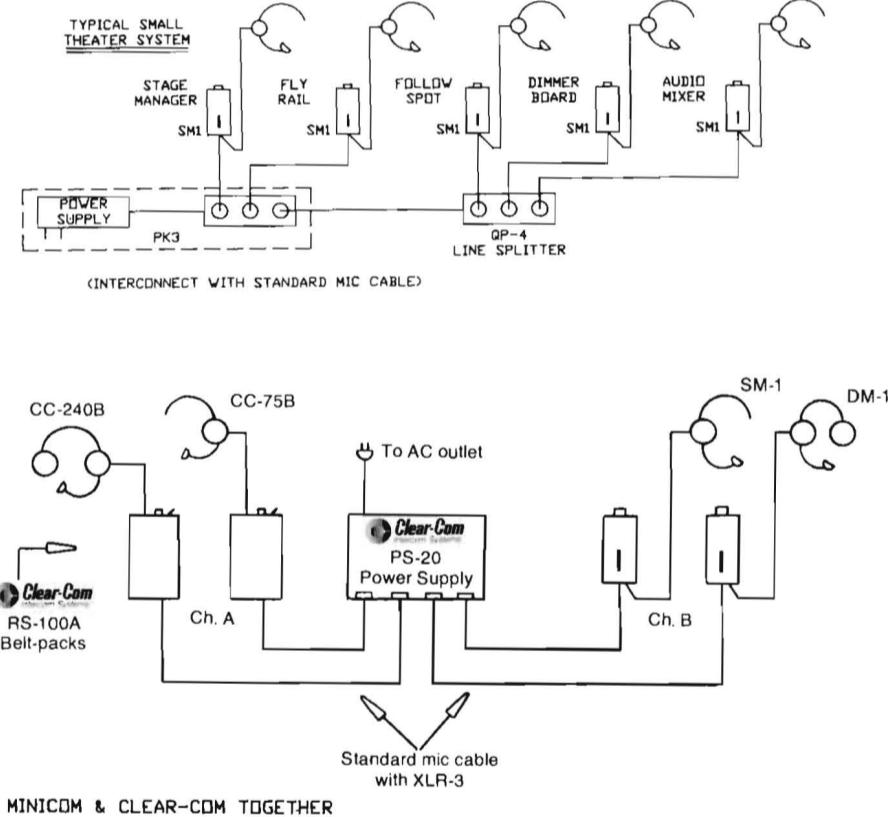
PK-3 Power Supply

The PK-3 Power Supply supports a system containing up to 25 Minicom headset stations. This compact unit supplies 24 volts DC at $\frac{1}{4}$ amp, terminates the system, is fully regulated, and incorporates short-circuit-protection.

Compact and rugged, the PK-3 is ideal for portable applications especially when they require speedy set-up and break-down. Enclosed in a heavy-duty metal box are three separate 3-pin, XLR connectors for intercom output to the headset stations. Simply plug the PK-3 into a standard AC outlet and it's ready to run Minicom!

ARCH/ENG SPECS

The intercom system shall be comprised of noise-isolating single-muff and/or double-muff headsets each having a boom-mounted, noise-cancelling 200Ω dynamic microphone that reject at least 12 dB of extraneous midband noise. Each headset/electronics package shall include a mic On/Off switch, and an in-line cast aluminum amplifier module which shall house a mic preamplifier, headphone power amplifier, and volume control, and shall be terminated by a cable having a female XLR-3 type connector. The power amp shall be capable of driving the headphone to a mid band level of 110dB SPL. The system shall operate using standard 2-conductor shielded microphone cable for interconnections of up to 5,280 feet. The microphone preamplifier shall have a frequency response contoured to enhance voice intelligibility, such that headphone response is ± 2 dB from 200 Hz to 10 kHz. The signal-to-noise ratio shall be at least 65 dB. The intercom system shall operate into a 200Ω common audio line at an average level of -15dBv. The intercom shall be current limited and shall have short circuit and reverse polarity protection. The power pack shall derive power from 115 VAC or 230 VAC nominal power mains, 50 or 60 Hz. The power pack shall be capable of supplying power for up to 25 headsets. The intercom system headsets shall operate from a power source of 12 to 32 VDC and shall draw an average of 10 millamps per headset. The power pack shall be a MINICOM Model PK-3; the double-muff headset shall be a MINICOM Model DM-1; the single-muff headset shall be a MINICOM Model SM-1.



HEADSETS & ACCESSORIES



HEADSETS, HANDSET, MICS & ACCESSORIES



FEATURES

- Noise-isolating dynamic headphones
- Noise-cancelling dynamic mics
- Single- & double-muff styles
- Designed for long-term wear without fatigue
- Rugged, comfortable & lightweight
- Soft, foam-filled ear-cushions
- Designed to match Clear-Com frequency response
- Audio signals are highly intelligible under all conditions
- Consistent, high-quality performance
- Handset, hand-held mic, and accessories available

DESCRIPTIONS

CC-35 Single-Muff Headset

This is our lightweight, low-cost headset, specially suited for television camera operators. Feather-light with an adjustable boom, the CC-35 has a dynamic mic that automatically turns off when the boom is swung upward. For extra comfort and consistent clarity, distance between the CC-35's headband and earpiece is adjustable. The CC-35 comes with a four-foot straight cord ending in a 4-pin XLR connector.

continued

CC-55 Double-Muff Headset

The CC-55 is identical to the CC-35 in comfort, features, and performance, except it has no auto-on/off in the boom. The CC-55 is double-muff style with two earphones wired in series.

CC-75B Single-Muff Headset

The CC-75 features a wide dynamic range earphone with a sound-seal cushion. Its adjustable headband contributes to the headset's fit and speech intelligibility. When the wearer swings the flexible boom into an upright position, the dynamic mic automatically shuts off. Our most rugged headset, the CC-75B is built with indestructible ABS plastic, ideal for "on-the-road" and rental applications. It is attached to a 5-foot, flat-coil cord terminating in a 4-pin XLR connector for input to any Clear-Com intercom.

CC-240B Double-Muff Headset

The CC-240B boasts the same high-quality features, sound attenuation, and functionality of the CC-75B, but provides two earmuffs wired in parallel.

PH-7 High-Fidelity, Double-Muff Headset

The PH-7 is a double-muff set that provides greater isolation from external noise than the CC-75B or CC-240B. This sound-attenuating headset is designed for critical applications and extremely high-noise environments. The PH-7 is attached to a six-foot, coiled cord ending in a 4-pin XLR connector.

DT-109/6 Stereo Headset by Beyer

This sophisticated double-muff set with dynamic mic and headphones is specially suited for professional broadcasting applications. Designed by Beyer to match Clear-Com specifications, the DT-109/6 is intended for use with the RS-201 Belt-Pack Station (two channels plus program), the TR-62 Talent IFB Receiver (split program feed), or any Clear-Com Station modified for a stereo headset. The DT-109/6 feeds a different audio signal to each side of the headset.

The DT-109/6 is designed to work under, and be unaffected by, extreme environmental conditions. Its nine-foot straight cord ends in a 6-pin, XLR connector for use with the intercom station.

Models CC-75B, CC-240B, PH-7, and DT-109/6 are supplied with 100% cotton, fitted covers for the vinyl earmuff; the "ear-sock" is available separately for use with other headsets.

HS-6 Intercom Handset

The HS-6 is a telephone-style handset with a high-output earphone, dynamic mic, and a push-to-talk switch. It connects to any standard Clear-Com intercom with its 4-pin, XLR connector attached to a six-foot coil cord. The HS-6 is supplied with a durable, black plastic wall cradle.

PT-4 Push-to-Talk Microphone

The PT-4 is a low-cost, hand-held mic. It features a convenient push-to-talk mic element and includes a five-foot cord with a 4-pin, XLR connector. Supplied with a mounting bracket, the PT-4 is rugged, compact, easy to handle, and an ideal accessory for any Clear-Com Speaker Station.

ACCES SORIES

QP-100 Interconnect Line-Splitter

Save cable! This convenient line-splitter provides one input connector and three output connectors (3-pin XLR's), mounted in a rugged, die-cast aluminum box.

WP-2 Wall Plate

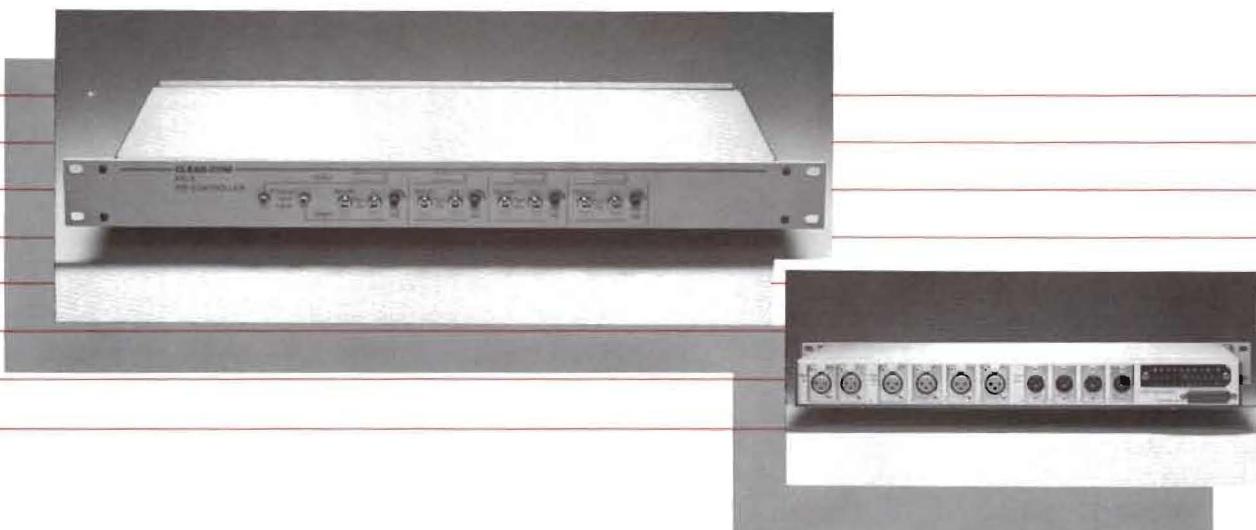
Connect your belt-pack or portable single-channel intercom to the WP-2 and select Channel A or Channel B for communicating! A handy, cable-saving accessory that is ideal for large facilities and permanent installations (especially security system applications).

HEADSET SPECIFICATIONS

EARPHONES	CC-35/55	CC-75B/240B	DT-109/6	PH-7
Type:	dynamic	dynamic	dynamic	dynamic
Impedance:	CC-35, 600Ω CC-55, 2 x 300Ω	CC-75B, 600Ω CC-240B, 2 x 300Ω	2 x 400Ω	2 x 300Ω
Sound Pressure Level:	102dB	123dB	124dB	110dB
Frequency Response:	30 - 12k Hz	100 - 10k Hz	30 - 20k Hz	20 - 18k Hz
MICS				
Type:	dynamic, noise-cancelling	dynamic, noise-cancelling	dynamic, noise-cancelling	dynamic, noise-cancelling
Impedance:	200Ω ±40Ω	200Ω	200Ω	200Ω
Frequency Response:	300 - 8k Hz	200 - 8k Hz	40 - 12k Hz	100 - 9k Hz
Noise Cancellation:	-10dB @ 1k Hz*	15dB*	30dB*	15dB*
Mic On/Off Switch:	CC-35 only (in boom)	in boom (shorting)	No	No
CONNECTORS				
Type:	4-pin XLR	4-pin XLR	6-pin XLR	4-pin XLR
WEIGHT:	CC-35, 9.25oz. (262g) CC-55, 13.25oz. (376g)	CC-75B, 16oz. (454g) CC-240B, 24oz. (680g)	27.5oz. (780g)	25oz. (709g)

*front-to-back

PROGRAM INTERRUPT SYSTEM



PIC-4 IFB CONTROLLER TR-50 TALENT RECEIVER

FEATURES

- Compatible with DLC Series and other Clear-Com Main Stations
- Fully integrated within intercom system
- PIC-4 features two program inputs & individual program level controls
- PIC-4 routes program and cues to as many as 8 Talent Receivers
- Program feeds are selectable to interrupt or non-interrupt
- Dip level individually adjustable for each talent output
- Split program feeds available
- Easy to install and interconnect
- Uses minimal rack space
- Broadcast-standard design

DESCRIPTION

The Clear-Com Program Interrupt System is a broadcast-quality "IFB" system that's fully integrated within the intercom system. It is designed for all teleproduction and broadcast facilities.

During production taping or airing, the talent (commentators, musicians, sportscasters, etc.) frequently need to monitor the program audio and also hear cues from the director. Clear-Com's IFB System lets talent monitor program and lets directors interrupt or dip the program to address the talent.

Our flexible IFB System sends one of two program signals to talent, and permits **multiple** intercom station operators to interrupt program and cue talent. (Split program feeds are possible, allowing the talent to monitor a continuous program in one ear and have program interrupted in the other ear. Particularly suited for remote sports applications.)

The components of the IFB System (PIC-4 and TR-50's) are powered by the connection to the Clear-Com system. The intercom system must include a DLC Series intercom station with at least one IFB Control Drawer (Model IFB-4) or a standard Clear-Com Main Station (rackmount models only) with channels modified for IFB use.

When the director (DLC Main Station operator) presses an IFB button on his station, the station's mic activates but is disconnected from the "talk" portion of the intercom system. The director can now talk to talent (which talent

depends upon which IFB button is pressed). The "listen" portion of the intercom system is not affected, thus allowing the director to continue monitoring the intercom channels during IFB use.

Each PIC-4 provides outputs to four talents. Intercom systems that use DLC Stations can include two PIC-4's, allowing access to up to eight talent.

PIC-4 IFB CONTROLLER

The PIC-4 contains all the controls and connectors needed to provide a link between the intercom/IFB stations and the talent receivers.

With each output to talent, the PIC-4 provides a control for dip level adjustment (the amount the program is attenuated when the director cues talent) and switches for selecting which continuous and/or interrupted program each talent will receive.

TR-50 TALENT RECEIVER

The TR-50 allows the talent to hear program and cues from the PIC-4 and intercom/IFB system.

The lightweight TR-50 is a miniature belt-pack with a volume control and a clip for attaching it to a belt or under a table-top. It contains an earphone connector, and is supplied with an earpiece, Model TS-1.



continued

THE INTERCOM/IFB SYSTEM

The IFB System also may be operated from a standard four-channel Clear-Com system; modifications are made at the factory to the intercom channels needed for IFB use. Any number of designated MS/RM-400 or SB-412A Stations can be set up for IFB.

A DLC System intended for IFB use must include an MS-808 Station with at least one IFB-4 Control Drawer. This Control Drawer contains four momentary push-buttons, each of which is associated with a separate Talent output from the PIC-4 Controller. The MS-808 Station contains an ALL IFB pushbutton that simultaneously accesses all talent.



SPECIFICATIONS

IFB SYSTEM SPECIFICATIONS

Frequency Response: 100Hz-15k Hz $\pm 2\text{dB}$
Distortion: <1% THD at 1kHz
Signal-to-Noise Ratio: Better than 65dB
Talent Output Level: -12dBv (nom)

PIC-4 SPECIFICATIONS

CIRCUIT DESIGN: IC amplifiers and solid state switching. Current limited with short circuit and reverse polarity protection

PROGRAM AMPLIFIERS (2)
Input: 100k Ω balanced (47k Ω single-ended), line level
Input Level: -15dBv nominal, +10dBv max before clipping*
Frequency Response: 150Hz-18kHz
Gain: 0dB

TALENT OUTPUTS (8)
Type: Internally terminated, send only (no listen). Four (4) have interruptible program and cueing. Four (4) have non-interruptible program and no cueing.

CONTROLS: Program gain adjust (2), Program source select (8), Dip depth (4)

CONNECTORS

Program Input: (2) 3-pin XLR female
Intercom Input: (4) 3-pin XLR female
Talent Output: (4) 3-pin XLR male (or 6-pin for split feed)
DLC Input: 30-pin Tuchel, male
Extension: 25-pin "D" connector, male

POWER REQUIREMENTS: 20-30vdc at 30mA max

DIMENSIONS: 19" W x 1.75" H x 6.6" D
 483mmW x 45mmH x 168mmD

WEIGHT: 3.56 lbs (1.62kg)

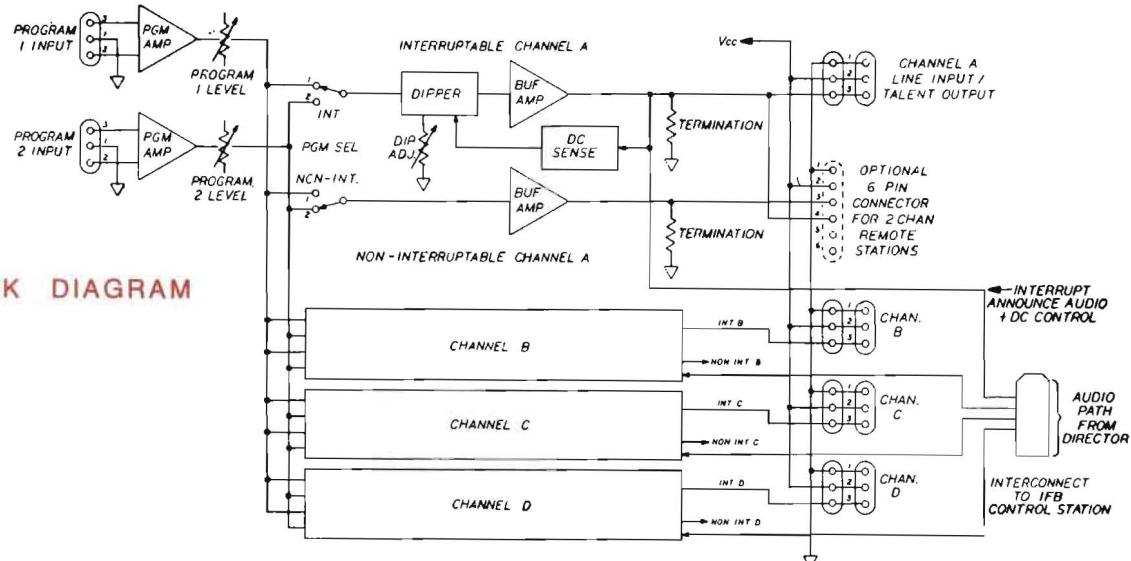
TR-50 TALENT RECEIVER SPECIFICATIONS

Earphone Type: Dynamic
Earphone Impedance: 30 Ω or greater
Max. Output Level: +20dBm
Power Required: 10mA quiescent at 28VDC supplied by Clear-Com line
Headset Connector: 1/8" miniature jack
IFB Connector: 3-pin XLR female (at end of 6' cord)
Dimensions: 1.5" x 1.5" x 3.6"
 38mm x 38mm x 91mm
Weight: 4.5 oz (0.28kg)

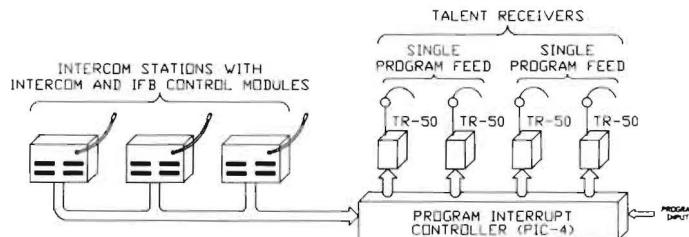
Specifications subject to change without notice

*0 dBv is referenced to 0.775 volts rms.

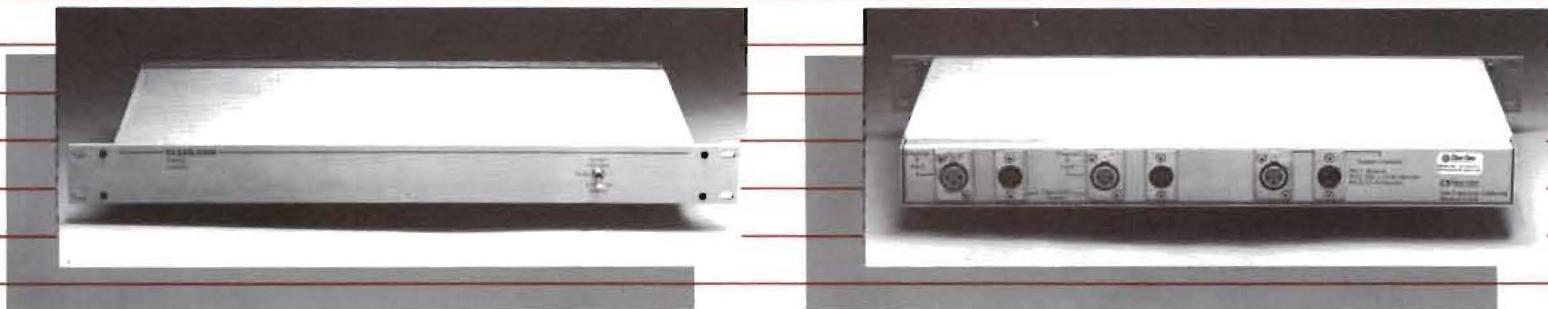
PIC-4 BLOCK DIAGRAM



TYPICAL IFB SYSTEM



S Y S T E M I N T E R F A C E



TW-12 UNIVERSAL TWO-WIRE INTERFACE

F E A T U R E S

- Interfaces Clear-Com to two-wire ("TW") intercom systems such as RTS
- Allows standard mic cable to carry two separate channels
- Uses minimal rack space
- Simple set-up
- Easy to interconnect
- Transparent to user
- Powered by Clear-Com line

D E S C R I P T I O N

The TW-12 is a transparent device that acts as an interface between the Clear-Com Intercom System and a two-wire ("TW," e.g. RTS) intercom system. Alternatively, the TW-12 can support up to six TW-type intercom stations with visual signalling (Clear-Com CP-300, RTS BP-300, or the equivalent), or 12 TW intercoms without signalling.

The standard Clear-Com System uses two-conductor shielded mic cable to support one channel of two-way communications, and two or more channels are transmitted via multi-pair cable. Other intercom systems, such as RTS, put **two** intercom channels on the **one** mic cable. The TW-12 Interface translates line levels and supply voltages from two separate

Clear-Com channels to provide a combined two-channel, two-wire output. The interface receives its power through the connection to the Clear-Com System. It also translates signalling between the two systems (tone to DC and vice versa).

The TW-12 provides one male and one female 3-pin, XLR connector for each of the Clear-Com Channels A and B, and a 3-pin XLR connector for the two-channel/two-wire output. The TW-12, once set up, is transparent to the user. It has only one control on the front panel: a toggle switch to select between the internal termination (for TW belt packs) or termination by RTS-type power supply (System Interface).

An auto-termination feature prevents oscillation in partially connected systems.



SPECIFICATIONS

LINE CHARACTERISTICS, CLEAR-COM SIDE

Level: -15dBv nominal, 0dBv max before clipping*

Impedance: 200Ω AC termination, 5000ΩDC

LINE CHARACTERISTICS, TW SIDE

Level: -5dBv nominal, +3dBv max*

Impedance: 200Ω AC

Gain, Clear-Com to TW: +12dB

Gain, TW to Clear-Com: -12dB

Frequency Response: 200-10kHz (± 3 dB)

SIGNALLING, TW SIDE

Frequency: 20,000Hz

Frequency Tolerance: ± 100 Hz send, ± 500 Hz receive

Tone Level: -6dBv minimum send, -25dBv minimum receive*

SIGNALLING, CLEAR-COM SIDE

4vdc maximum receive, 11vdc minimum send

POWER REQUIREMENTS:

12-32vdc, 50 mA quiescent plus current for TW stations

TW POWER CAPACITY:

500 ma maximum (6-12 stations)

DIMENSIONS:

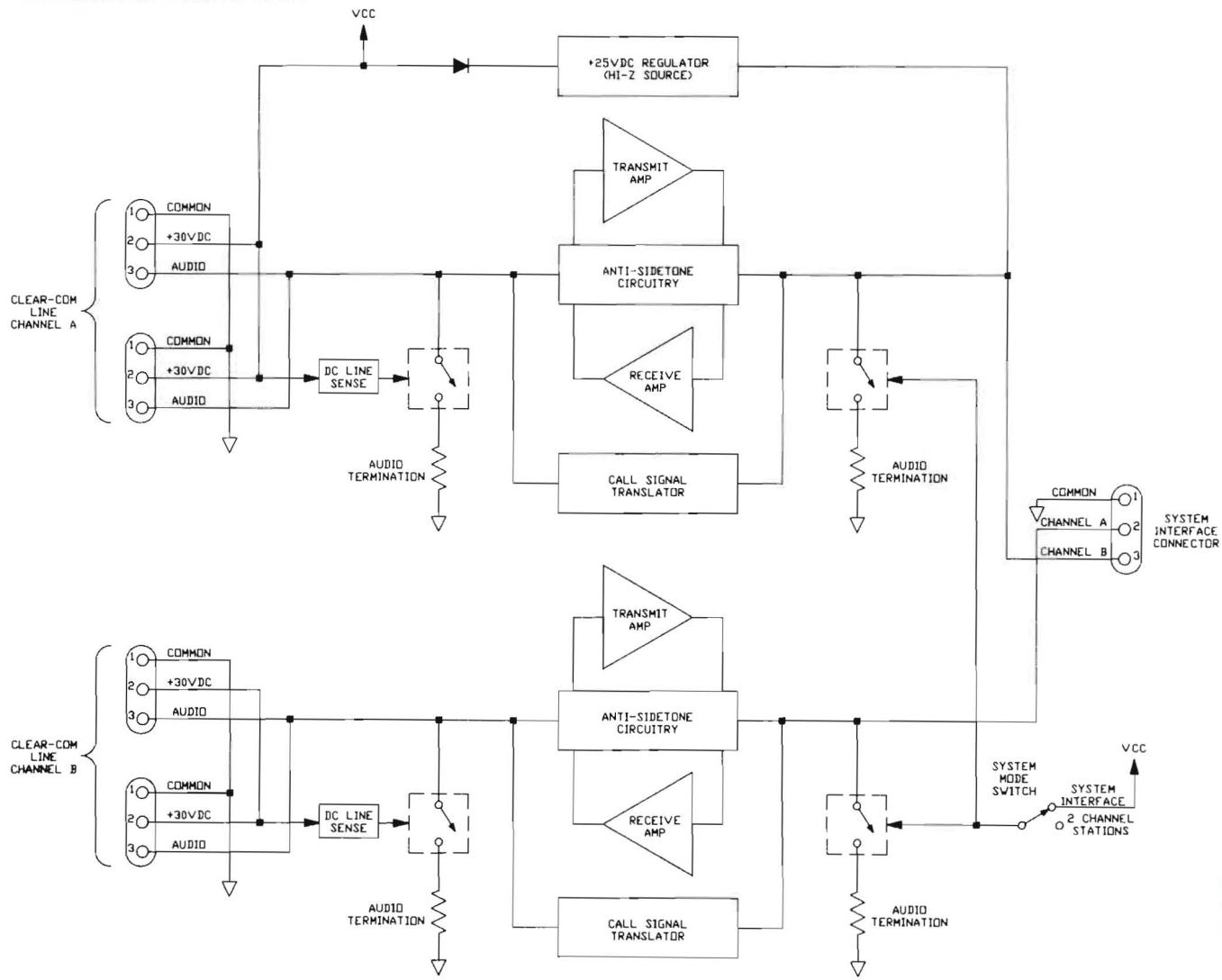
1.75" H x 19" W x 6" D

44mmH x 483mmW x 152mmD

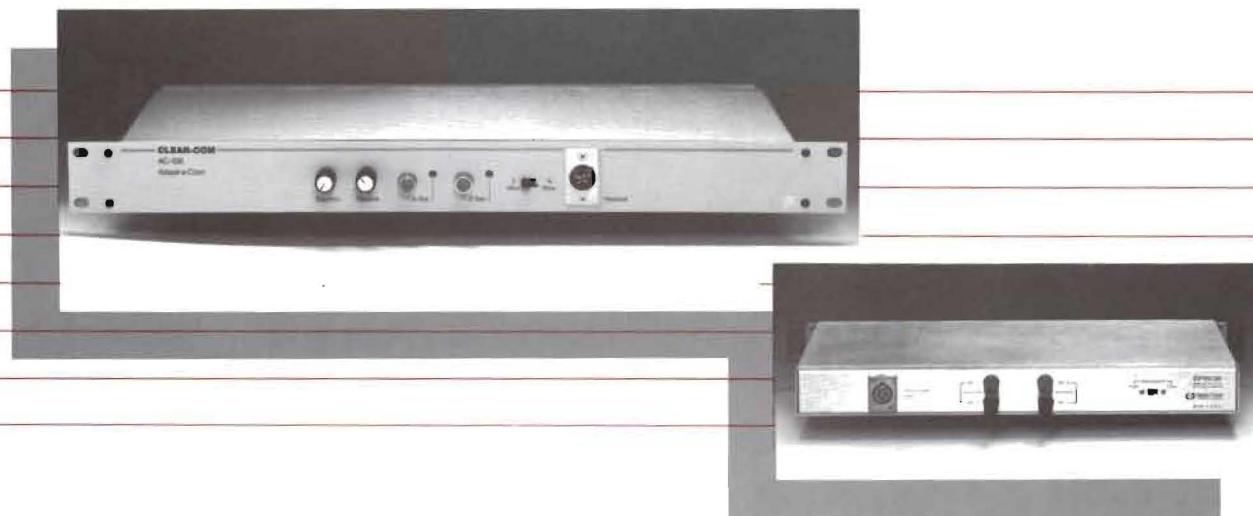
Specifications subject to change without notice

*0 dBv is referenced to 0.775 volts rms.

TW-12 BLOCK DIAGRAM



SYSTEM INTERFACE



AC-10K/AC-10H ADAPT-A-COM

FEATURES

- Universal interface for 2-, 3-, & 4-wire systems
- Balancing circuits
- Headset test connector
- Transmit & Receive gain controls
- Transformer-isolated
- Uses minimal rack space
- Easy to interconnect
- Available with telephone holding coil (Model AC-10H)
- Powered by Clear-Com line

DESCRIPTION

The AC-10K "Adapt-A-Com" is a versatile, active hybrid interface that connects the Clear-Com System to a variety of other communications systems. These include two-wire, three-wire, and four-wire telephone systems, carbon systems, and other closed-circuit intercoms.

The AC-10K provides built-in test tones and balancing circuits for fast, convenient set-up. A front panel connector lets you plug in a standard Clear-Com headset for listening to test tones during set-up. The front panel also provides Transmit and Receive controls to adjust the level from Clear-Com to the other system; these controls allow for at least 10 dB of gain.

In the two-wire mode, the AC-10K works with standard telephone company systems or dedicated telephone line pairs. You can feed the telephone line directly through the AC-10K to the Clear-Com System. **Model AC-10H** is a version of the Adapt-A-Com that includes a holding coil. This allows you to dial or receive a telephone call and then hang up the receiver, keeping the party on-line for intercom purposes.

When operating in the two-wire mode, the AC-10K can be set up for high impedance (600 ohm TELCO) or low impedance (16 ohm; e.g. RCA or DAVEN) lines.

In the three-wire mode, the AC-10K looks like a carbon headset, and so can be wired into the headset jack of a television camera, camera control unit, or other carbon headset system.

In the four-wire mode, the AC-10K connects to all four-wire TV camera intercoms and other four-wire intercom systems.

Any Clear-Com Power Supply connected to two Adapt-A-Coms wired together effectively creates an "anything-to-anything" adaptor.

The AC-10K mounts in a standard 19" rack, using only 1.75" vertically. It is powered through the Clear-Com System with standard two-conductor mic cable. The rear panel provides 5-way binding posts for fast, positive connection to the interfaced system.



SPECIFICATIONS

Frequency Response: 150Hz-10kHz, $\pm 3\text{dB}$

Load to Clear-Com: High Impedance (bridging)

Interface Impedance: In normal 2-WIRE mode, external unit "sees" 1100Ω across AC-10. In 3/4-WIRE mode, external unit "sees" 4Ω . In 3/4-WIRE mode, transmit output impedance is 200Ω , and receive input impedance is 500Ω (actual)

Controls: A & B Balance (to reduce side tone and permit increased gain before feedback).

A & B Test Switches (to inject test tone and switch monitor headset for balancing purposes)

Transmit Gain Control

Receive Gain Control

Mode Select Switch

Impedance Select Switch (for 2-wire systems only):

High Z, approx. 600Ω . Low Z, approx. 16Ω

Maximum Loop Gain: 10dB overall

Transmit Output: +8dBm maximum into 600Ω

(normal 2-wire mode)

125mV maximum into 4Ω (Low-Z 2-wire mode)

+4dBm maximum into 600Ω (3/4-wire mode)

Test Headset Output: Drives 300Ω or higher-Z

phones (4-pin XLR male connector)

Input & Output Connectors: Four 5-way binding posts for interface to other systems; one (3-pin XLR female connector) for interface to Clear-Com

Power Requirements: 18ma @ 28V from Clear-Com

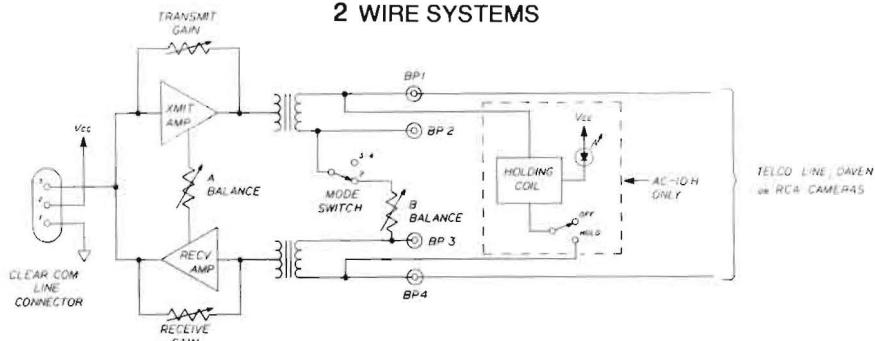
Dimensions & Weight: 1.75" H x 19" W x 6" D; 2lbs (4.5 x 19.1 x 15.2cm; 0.91kg)

Options: Telephone holding coil (AC-10H)

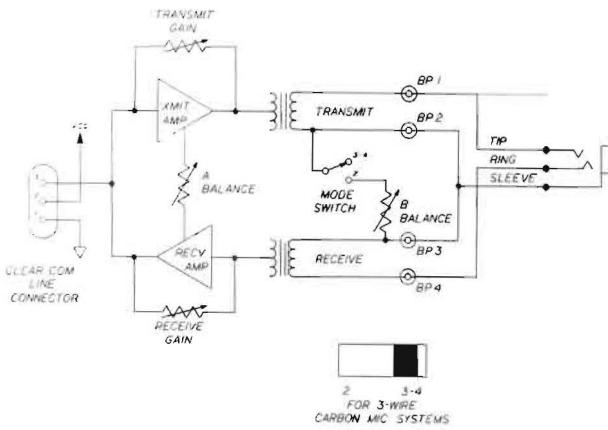
Specifications subject to change without notice

*0dBv is referenced to 0.775 volts rms.

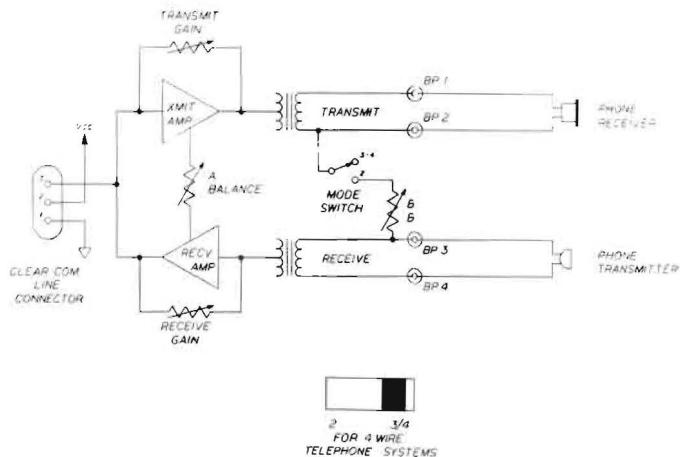
2 WIRE SYSTEMS



AC-10K/H BLOCK DIAGRAMS



3 WIRE CARBON SYSTEMS



4 WIRE TELEPHONE/CAMERA SYSTEMS

SYSTEM INTERFACE



IF4-4 CAMERA INTERFACE

FEATURES

- Interfaces standard 4-wire or 3-wire TV camera intercom systems
- 1 to 4 intercom channels
- Headset test connector
- Individual Transmit, Receive, & Sidetone controls
- Transformer-isolated
- Uses minimal rack space
- Easy to interconnect
- Powered by Clear-Com line

DESCRIPTION

The IF4-4 is a broadcast quality rack-mount device that interfaces one to four television camera intercoms with the Clear-Com System. Powered via the Clear-Com interconnect cable, the IF4-4 is designed to match the industry's standard 600 ohm transmit/receive lines (at normal levels) to Clear-Com line level. It works with balanced four-wire or unbalanced three-wire (i.e. carbon headset) systems.

For each of the four interfaces, the IF4-4 front panel provides Transmit and Receive controls to adjust the level between Clear-Com and the other system. It also has a sidetone adjustment for each system, allowing the user to vary

the level of his/her voice as heard in the user's headset.

The IF4-4 rear panel has four connectors for the interfaces (4-pin XLRs) and four connectors for the Clear-Com lines (3-pin XLRs). The 4-pin connectors accept a standard Clear-Com headset, which may be used to adjust levels prior to operation.

Toggle switches on the rear panel assign the interfaced systems to separate intercom channels, or put two, three, or all four systems on one "Party-Line."

The IF4-4 is powered by the Clear-Com System interconnection, using standard two-conductor mic cable. It mounts in a standard 19" rack, using only 1.75" vertically.



SPECIFICATIONS

Transmit Level: Adjustable, -55 to +15 dBv
Transmit Impedance: 600 Ω
Receive Level: Adjustable, -15 to +20 dBv
Receive Impedance: 10-15k Ω
Frequency Response: 200-15k Hz, 6dB down
Minimum Sidetone Null: 30dB
Distortion: 0.5% THD
Clear Com Line Level: -15dBv min., 0dBv max.
Line Impedance: 15kΩ bridging
Power Requirements: +12 to 32 volts DC @38mA (all 4 interfaces)
Connectors: (4) 3-pin XLR female. Clear-Com line (4) 4-pin XLR male, 3-or 4-wire interface line
Dimensions: 19" x 1.75" x 6.8" (487mm x 44.8mm x 179.4mm)
Weight: 3.25 lbs (1.47kg)

Specifications subject to change without notice

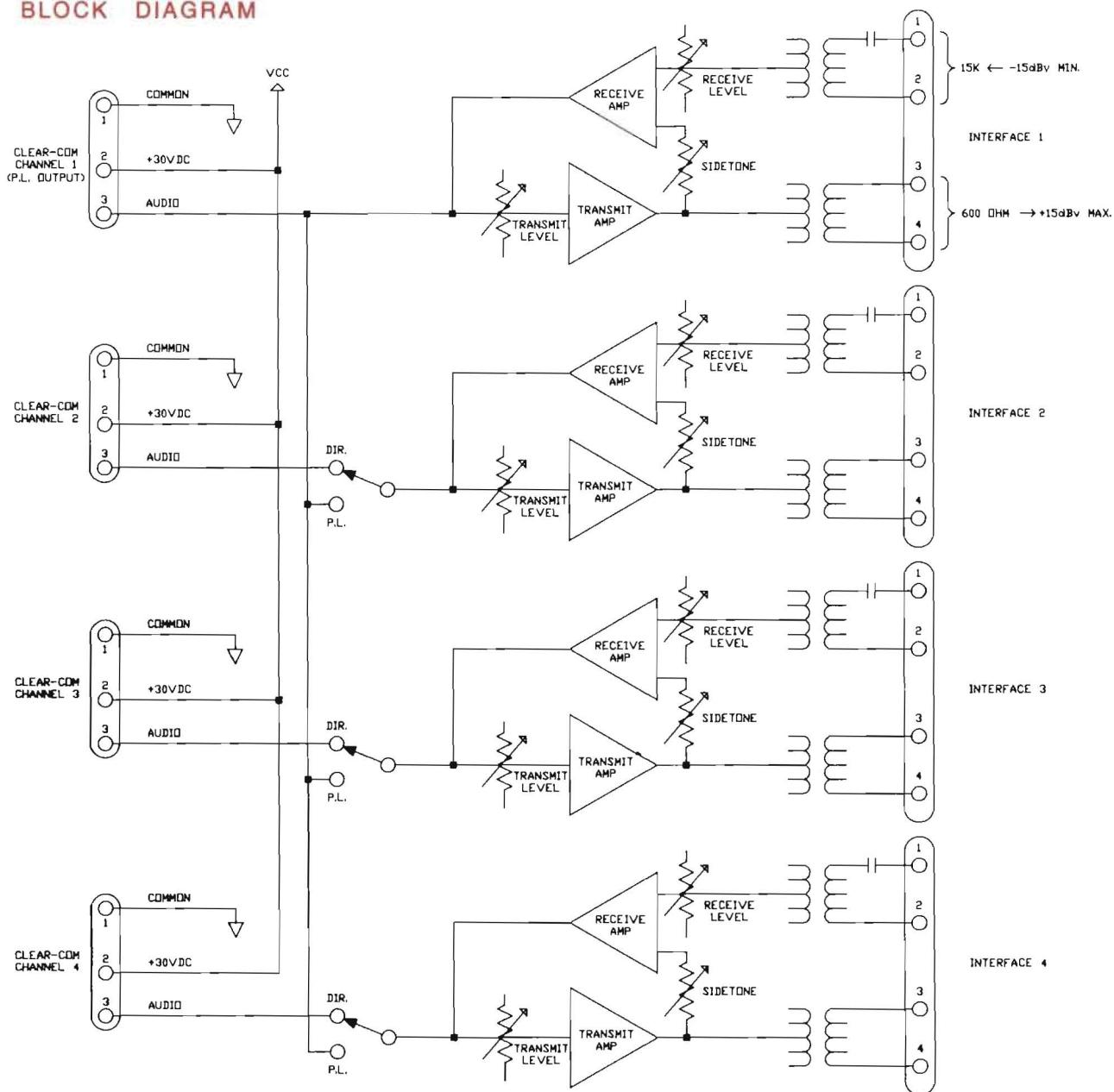
*0 dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The interface shall be a solid state rack mount unit. It shall contain 4 separate interface modules. Each module shall be capable of interfacing a standard Clear-Com system to a 3- or 4-wire communications system. The interface shall connect with the 3 or 4 wire system with 4-pin XLR male connectors. It shall have a individual transmit and receive level control and sidetone balance adjustment for each module on the front panel. The modules shall connect to a standard Clear-Com system through 4 individual 3-pin XLR female connectors. The transmit and receive pair shall be transformer isolated. The modules shall be capable of being tied together into a single channel of Clear-Com with individual select switches. The switches shall be mounted on the rear of the station.

The transmit level from a standard Clear-Com line shall be +15dBv max. The impedance shall be 600Ω. The minimum receive input level required shall be -15dBv. The impedance shall be 15kΩ. The frequency response shall be 200Hz to 15kHz ±3dB. The THD shall be 0.5% or less. The power requirements shall be 12V to 32V at not more than 40 millamps. The dimensions shall be 19" x 1.75" x 7" (487mm x 44.8mm x 179.4mm). The weight shall not exceed 3.25 lbs. (1.47kg). The interface shall be called a Clear-Com IF4-4.

IF4-4 BLOCK DIAGRAM



REMOTE MIC KILL CONTROL UNIT



RMK-1 CONTROL UNIT

FEATURES

- shuts off "live" intercom mics to cancel noise
- eliminates the need to locate open mics
- works with all Clear-Com Series 500 Belt-Packs and any Main Station or Remote Station
- can be operated by "call" button on any intercom station or by external "Mic Kill" pushbutton
- adjustable time delay circuitry



DESCRIPTION

Clear-Com has developed the RMK (Remote Mic Kill) System as a solution to one of the most common, disruptive problems encountered in intercom networks: the open microphone that cannot be easily located. If an intercom user removes their headset and sets it near a loudspeaker or video monitor — with the mic turned on — or if the user simply forgets to turn off their mic after speaking, the "open" mic can pick up uncontrolled ambient noise that can overwhelm normal communications.

Clear-Com's RMK System solves the problem by enabling all Series 500 Belt-Pack microphone circuits to be muted when the situation arises. The Visual Call Signal pushbutton on another intercom station, the RMK-1 Control Unit pushbutton, or an external pushbutton can be pressed to activate RMK. The RMK-1 Control Unit also provides an LED power-on indicator.

Use of the RMK System does not affect other belt-packs and intercoms in the system.

Time Delay Circuitry

Designed for operation by the call signal circuit, the RMK System features time delay circuitry which prevents the

Remote Mic Kill from being activated when a user wishes to send a standard call signal. The time delay is pre-set for seven seconds, so the intercom user must continuously depress the call button for seven seconds to activate RMK.

If required, provisions are included internally to adjust or disable the time delay feature.

RMK APPLICATIONS

Remote Mic Kill is designed for live performance situations, high-noise/industrial environments, broadcast facilities, and other places where remote control of mics is desirable.

Important: The RMK-1 can be used in many different configurations. This data sheet describes its use on *single intercom channels only*. For application notes and instructions on RMK use in large multi-channel systems (or in systems using the TWC-10 two-channel/single 3-pin cable adapter), please call Clear-Com.

RMK SET-UP & OPERATING INSTRUCTIONS

The RMK System works with the headset mics on all Clear-Com Series 500 belt-packs, which feature digitally controlled, electronic audio switching.

Theory of Operation

A momentary interruption (less than 100 mSec.) of the power to Series 500 Belt-Packs automatically turns off their headset microphone circuits. In some installations, it is not feasible to momentarily shut off power. The RMK-1 Control Unit lets operators kill mics on the RMK-equipped channel without affecting the other channel(s), and without interrupting the power to the entire intercom system. The RMK-1 Control Unit has a built-in pushbutton and external connections to momentarily interrupt power to these belt-packs.

RMK System Set-Up

The RMK System can operate with a maximum of 60 Clear-Com belt-packs. It is powered via its connection to the intercom system. Housed in a compact, rugged metal enclosure, it can be set up unobtrusively in any location.

CONNECTIONS

(Please refer to Figure 1: Block Diagram.)

J1: Input from Clear-Com power supply/main station. 3-pin XLR female; connects to standard two-conductor shielded mic cable.

Pin 1: ground

Pin 2: +VDC

Pin 3: audio signal

J2: RMK External Control: 3-pin XLR male; use with external pushbutton to provide instantaneous RMK (use any commercially available momentary pushbutton). See Figure 2: Wiring Diagram.

Pin 1: common (shield)

Pin 2: N/C

Pin 3: return from pushbutton

J3: Output to 500 Series Belt-Packs. 3-pin XLR male; refer to J1 above for pin connections and cable.

Multiple Power Supply Considerations

If your intercom system uses two or more power supplies, proper RMK operation requires proper interconnection between power supplies and Series 500 belt-packs. DO NOT install a power supply at each end of the line feeding the belt-packs. Please refer to Figures 3A and 3B when interconnecting your system. Use with TWC-10

Special consideration must be given to system design when using RMK in conjunction with TWC-10's and TW-optioned Belt-Packs. Please call Clear-Com for further information.

FIG. 1:
RMK SYSTEM BLOCK DIAGRAM

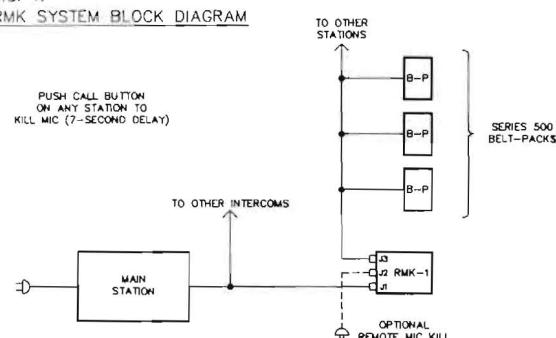


FIG. 2:
EXTERNAL PUSHBUTTON WIRING (OPTIONAL)

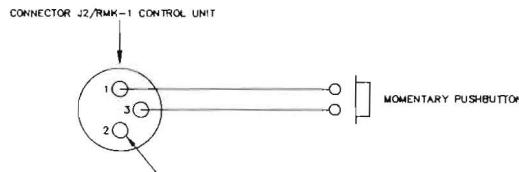


FIG. 3A:
CORRECT CONNECTIONS

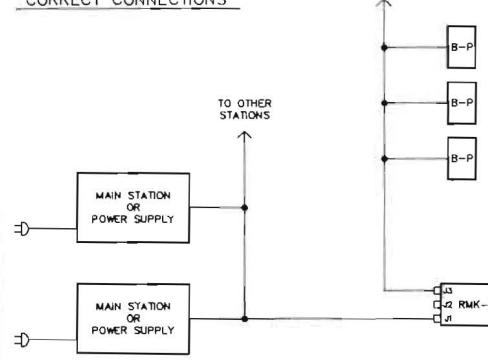
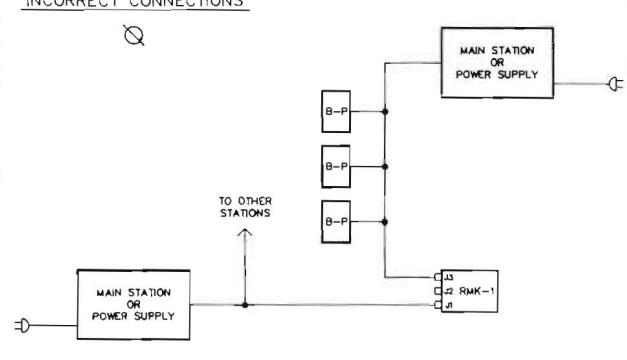
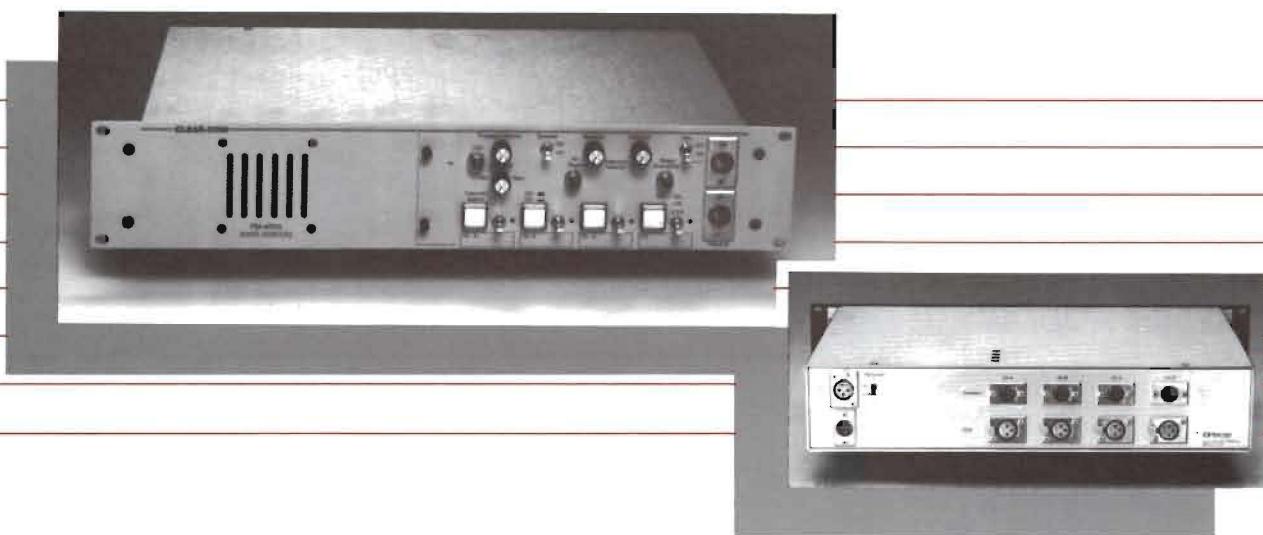


FIG. 3B:
INCORRECT CONNECTIONS



REMOTE STATION



RM-400A FOUR-CHANNEL SPEAKER STATION

FEATURES

- Selectable, 4-channel monitoring system
- Programmable talk/listen functions for each channel
- Wide response speaker with separate volume control and on/off switch
- Visual Signalling, All Page and Stage Announce
- Balanced auxiliary (program) input, mic or line level assignable to any or all channels
- Separate intercom, program, and sidetone level controls
- Available with gooseneck mic, adjustable length



DESCRIPTION

The RM-400A is a broadcast-quality four-channel main station with a versatile channel access arrangement. Additional features which enhance the station's utility include Stage Announce, All Page, and the Mic/Line Auxiliary Input. The sidetone null and program gain trim pots, as well as the talk pre-set and termination DIP switches, are accessible from the front panel. Special functions, such as ISO and IFB, are also possible. These are established with internal jumpers, which are usually set at the time of installation.

The station's mic preamp has a limiter in addition to Clear-Com's unique contoured response for constant levels and high voice clarity. A headset driver and four watt speaker amp with separate controls for each provide optimum output levels in all acoustic environments. An additional headset driver permits the split-feed option (program in one ear, intercom in the other). The speaker switch allows instant muting of the speaker without disturbing its Volume setting.

MONITORING SYSTEM

The RM-400A operator accesses the desired intercom channels with two types of switches: the push-on, push-off "Intercom Select" buttons and the On-Off-(On) Talk toggle switches. The Intercom Select buttons light dimly when engaged. They are individually programmable for Listen Only or Talk and Listen operation. The toggle switches control only the Talk function. Channels which are accessed simultaneously are not tied together.

An overall sidetone volume control and individual sidetone null trims for each channel provide precise control of the operator's voice level heard at that station. Sidetone control helps prevent acoustic feedback between a mic and speaker when they are on simultaneously at a station.

The station's connections to the intercom lines may be either high-impedance bridging (15k ohms) or terminating (200 ohms), as set by DIP switches behind the access plate.

SIGNALLING

Visual signalling attracts the attention of operators who have removed their headsets or turned off the speaker. When the RM-400A's Call button is pressed, the signal voltage is sent on all channel(s) with engaged Intercom Select button(s). A call signal from another station causes that channel's Select button to light brightly, whether it is engaged or not. The Visual Signal circuit is also used to activate remote control functions at special-purpose stations.

AUXILIARY INPUT

The RM-400A has Clear-Com's versatile new auxiliary (program) preamp. A rear panel switch sets its gain for either mic or line input levels. The signal may be monitored in the station's headset/speaker, adjusted by the front panel Program Volume control. The signal also may be sent onto one or more of the intercom channels, as determined by the settings of the four trim pots behind the front panel access plate.

ALL PAGE

Activated by pressing the front panel All Page button, this handy

continued

momentary function sends the station's mic signal to all four channels, whether or not any channels are currently accessed.

STAGE ANNOUNCE

Another momentary function similar to All Page, but the station's mic signal is diverted to a paging system separate from the intercom system. This transformer-balanced, line-level output is available at an XLR connector on the rear panel. The talk paths to the intercom channels are normally interrupted while the S/A is in use.

EASY INTERCONNECTION

The RM-400A connects to the remote stations with standard two conductor mic cable. The station's rear panel has one male and one female 3-pin XLR connector for connection to each intercom line (eight connectors total).

GOOSENECK MIC OPTION

A permanently attached noise-cancelling electret microphone on an adjustable length gooseneck is available as a factory installed option. It is installed in the upper headset connector. To help prevent acoustic feedback in units with the gooseneck mic, an automatic dipper circuit lowers the speaker approximately 6dB when any Talk toggle switches are in the momentary ON position.

SPECIFICATIONS

AMPLIFIER DESIGN: IC amplifiers including solid state switching and signalling circuits. Current limited and short circuit protected.

MICROPHONE PRE-AMP:

Input: 200Ω nominal, dynamic type
Input Level: -55dB nominal*, -10dBV max.*
Frequency Response: 250Hz-12k Hz, contoured for intelligibility
Limiter Range: 25dB
Gain Adjust: 5dB
Gain to Intercom Line: +3dB

HEADPHONE AMPLIFIER:
Load Impedance: 50-2,000Ω
Output Level: at least +20dBv across 600Ω
Distortion: <0.2% THD at 1kHz
Frequency Response: 150-18kHz (±)2dB
Gain from Intercom Line: +37dB

SPEAKER AMPLIFIER:
Load Impedance: 8-50Ω
Output Level: 4 watts into 8Ω
Distortion: <0.5% THD at 1 kHz
Frequency Response: 200 Hz-15 kHz ±2dB
Gain from Intercom Line: +41dB

AUXILIARY (PROGRAM) AMPLIFIER:
Gain to Intercom Line: +45dB (mic)/-5dB (line), switchable
Input Impedance: 3.6kΩ (mic) / 300kΩ (line), both balanced
Nominal Input Level: -65dBv (mic)/-10dBv (line)
Frequency Response: 150Hz-18,000Hz ±2dB
Gain to Headset/Speaker: +78dB

CONNECTORS:
Headset: Two 4-pin male XLR
Intercom Lines: Four 3-pin male XLR, four 3-pin female XLR
Program Input: 3-pin female XLR
S/A Output: 3-pin male XLR

DC POWER REQUIREMENTS: 12-30V, 50mA quiescent, 100mA avg. talk, 300mA max. maximum

DIMENSIONS: 19" x 3.5" x 9" (483mm x 89mm x 231mm)

WEIGHT: 8.3 lbs (2.9kg)

AMBIENT TEMPERATURE: 32°-122°F (0°-50°C)

SYSTEM OPERATING CONDITIONS:
Maximum Distance: 1,000 feet (from terminating station to maintain all specifications - using standard cable, Belden #8778)
System Level: -15dBv nominal, 0dBv max.*

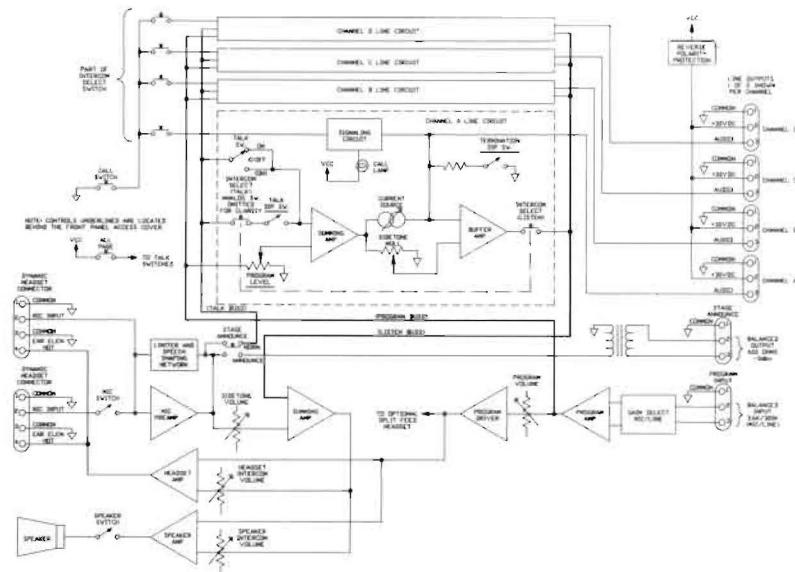
STATION OPERATION:
Channel Access: Illuminated locking pushbutton monitor switches: (4) individually programmable for listen only function or simultaneous talk/listen; 3-position on-off-(on) toggle switches (4) for talk function.
Channel Separation: ≥50dB
Signal to Noise Ratio: >60dB
Visual Signal Send: Call button sends signal only on lines with intercom select switch engaged. Minimum output 11VDC.
Visual Signal Receive: independent of switch settings. Minimum sensitivity: 4VDC
Line Impedance: Terminating (200Ω) or bridging (>15kΩ, 200Hz-10k Hz), switchable.

Specifications subject to change without notice
*0dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The intercom unit shall be a rack-mount 4-channel remote station. It shall have four illuminated Intercom Select switches for listen and talk access to any or all channels. The talk function of the Intercom Select switches shall be programmable. The program level, talk preset, and termination switches for each channel shall be accessible from the front panel, located behind a removable cover plate. When accessing any two or more channels, the operator shall be able to communicate with them simultaneously without combining the channels into a common or partyline system. The station shall have a built-in speaker controlled by a separate volume control and on-off switch. It shall accept a balanced auxiliary input signal of mic or line level, as determined by a rear panel switch. This signal shall be assignable to any intercom channels. A front panel control shall adjust this signal's level in the headset/speaker. The station shall also have a stage announce function which routes the station's mic signal to a balanced, line level output on the rear panel. An all page function (talk to all channels simultaneously) shall also be provided. The station shall supply a switchable terminating network for each channel. It shall have provision for connecting two dynamic headsets to the station, and a level control to adjust the intercom volume to the headphones. It shall also have a front panel sidetone adjustment. Other stations shall be able to visually signal this station by causing the appropriate monitor select switch to be brightly illuminated. The rear panel shall contain one male and one female 3-pin XLR connector for connection to each channel, A-D. The electronics shall be solid-state, IC plug-in printed circuit amplifier modules. It shall be field-serviceable and replaceable. The station shall accept a 200Ω dynamic microphone with a nominal level of -55dBv. The mic preamp shall incorporate a limiter, and shall automatically shut off when the headset is disconnected from the station. The station shall also have a mic on/off switch on the front panel. The station's intercom frequency response shall be 250Hz to 12kHz. It shall be capable of driving the line of any channel to a maximum level of 0dBv. The headphone amplifier shall be able to operate a headset with an impedance of 300 to 2000Ω and shall be capable of delivering an output level of +20dBv at 600Ω. The distortion shall be less than 0.2% THD at 1kHz. The auxiliary input shall have a frequency response of 150Hz-18kHz (±2dB). The station's dimensions shall be no greater than 19" x 3.5" x 9" deep (483mmL x 89mmH x 229mmD). It shall weigh no more than 6.3 lbs. (2.9 kg). It shall have all necessary controls and connectors for compatible operation with Clear-Com products, and shall be called an RM-400A.

RM-400A BLOCK DIAGRAM



REMOTE STATION



MR-102A HEADSET STATION

FEATURES

- Two channels, selectable
- Headset volume control
- Ultra-stable sidetone control
- Visual Call Signalling
- Low current drain & high impedance bridging
- Easy to install & interconnect

DESCRIPTION

The MR-102A is a broadcast-quality two-channel headset station that allows selectable communicating on one of two channels (but not both simultaneously) in a Clear-Com System. It features excellent speech intelligibility under high- or low-noise conditions.

The MR-102A drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets if connected with a suitable Y-cord. A recessed sidetone control is included in the front panel. It enables the operator to adjust his/her own voice level as heard in the headset. Sidetone level needs to be set just once, if at all, even if other stations join or leave the intercom line.

The station features Visual Call Signalling to attract the attention of operators who have removed their headsets or turned off their speakers.

The MR-102A is mounted on a charcoal-brown, brushed aluminum panel that installs in a standard two-gang outlet box. Only 1-3/4" depth is needed for installation.

The MR-102A connects to the intercom system with standard shielded mic cable (wire run in conduit is also suitable). It provides a clearly-labelled, 5-pin

terminal strip for intercom/power input. Bidirectional current sourcing, high impedance bridging, and low current drain allow as many as 100 MR-102A stations to be connected over one mile of cable, with one Clear-Com Main Station or Power Supply supporting the system. The circuit design virtually eliminates all hum and noise pick-up from SCR dimmer and AC power sources.



SPECIFICATIONS

AMPLIFIER DESIGN

Solid state, integrated circuit amplifiers which include a mic preamp, headset/speaker power amplifier and signalling circuitry. Current limited with short circuit and reverse polarity protection.

MIC PREAMPLIFIER

Frequency Response: 250-12kHz with contoured response to enhance voice intelligibility.

Mic Input: 200Ω

Mic Preamp Gain: 37dB

Max Input Before Clipping: -34dBV*

HEADPHONE AMPLIFIER

Frequency Response: 150-18kHz ± 2dB

Load Impedance Range: 300-2000Ω

Output Level: +20dBV, 26 volts p-p @600Ω

Headset Level: >110dB SPL with standard Clear-Com headsets

Distortion: 0.2% THD at 1kHz

Headphone Amp Gain: 37dB

CONNECTORS

Dynamic Headset: 4-pin male XLR type

Line: 5 screw terminal block

GENERAL

Line Level: -15dB nominal, 0dBV max.*

Side Tone Adjustment: 35dB null to full on

Signalling Voltage: 11 volts DC on audio line

Call Light Sensitivity: 4 volts

Signal-to-Noise: 75dB*

Equivalent Input Noise: -118dBV*

Station Bridging Impedance: >15 kΩ (200-10kHz)

Voltage Range: 12-32 volts, 28 volts nominal.

Power Requirements: 10 mA quiescent, 15 mA talk, 55 mA signalling.

Dimensions: Size: 4.5" (114mm) square; 1.75" (438mm) deep. Weight: 7.25 oz (.21kg)

Specifications subject to change without notice

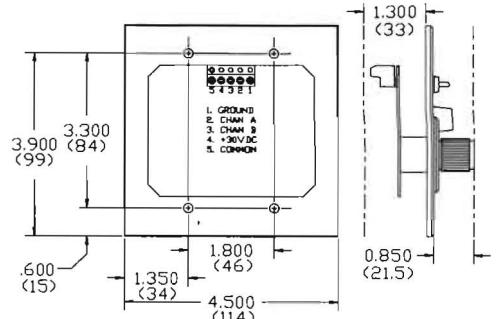
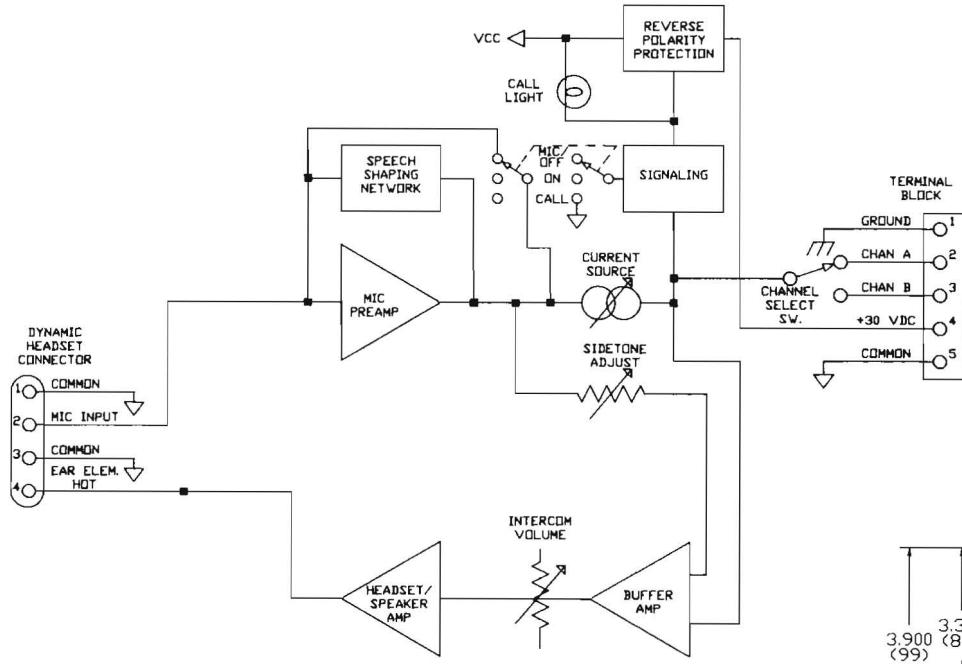
*0 dBV is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The intercom station shall be a wall-mount unit that allows two-way selectable communication on one of two channels. It shall have all the necessary controls and connectors to interface with a standard Clear-Com System. The intercom shall be mounted on a charcoal brown aluminum panel and shall fit in a standard two-gang outlet box, measuring no more than 1.75" in depth. The station shall provide a channel-select switch on the front panel. It shall have a volume control and an adjustable sidetone circuit. The station shall also incorporate a combination Mic On/Off and "call" switch on the front panel. An amber lamp for indicating call signals shall also be provided. The station shall include a four-pin male XLR-type connector for use with a dynamic headset. It shall provide screw terminals on the rear panel to allow individual signals and power to be brought to the intercom station. The station's electronics shall consist of a mic preamplifier/headset amplifier, and signalling circuit. It shall be current limited and short-circuit-protected, and shall have reverse polarity protection. It shall be field-serviceable and replaceable. The station's preamplifier shall automatically shut off when the station's headset is disconnected. The preamplifier shall have an overall response of 250Hz to 12kHz. The mic preamplifier shall accept a dynamic mic of nominal 200Ω impedance at a -55dB level. The headset amplifier shall be capable of driving 300-2000Ω headsets to a level of +20dBV with less than 0.2% THD. The station bridging impedance shall be greater than 15kΩ over a frequency range of 200Hz to 10kHz. The headphone amplifier's frequency response shall be 150Hz to 18kHz, ±2dB. The signal-to-noise ratio shall be a minimum of 75dB with an equivalent input noise of -118dBV. Power supply RF EMI rejection shall be greater than 60dB referenced to the audio line. The station shall operate from a power source of 12-32 volts DC and

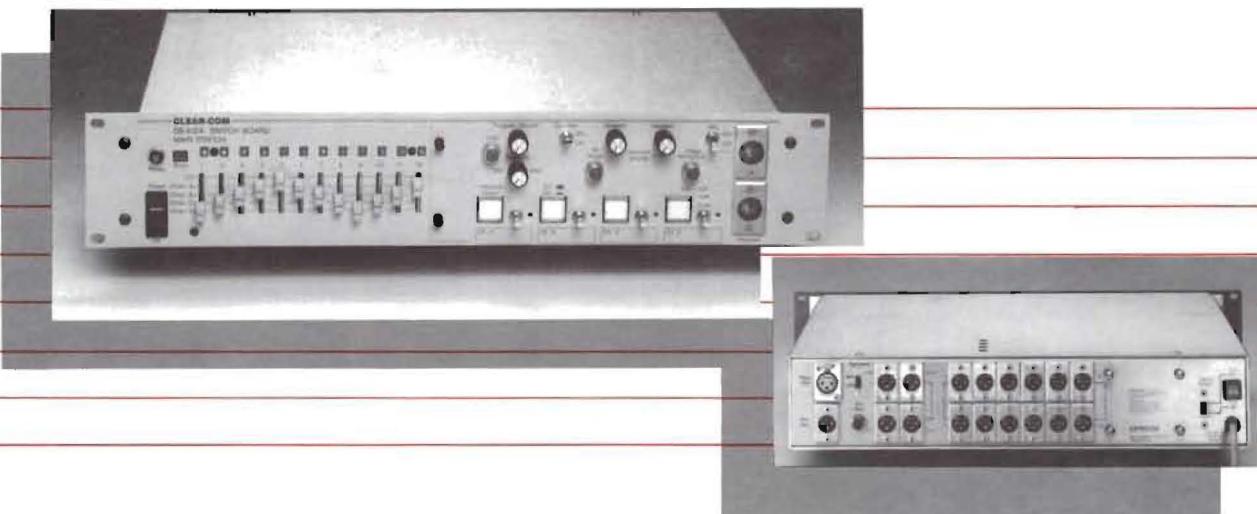
shall draw no more than 10 mA quiescent. The dimensions shall not exceed 4.5" square by 1.75" deep (114mm x 44mm), and it shall weigh no more than 7.25 oz. (0.21kg). It shall be called a Clear-Com MR-102A.

MR-102A BLOCK DIAGRAM



MR-102A REAR VIEW

MAIN STATION



SB-412A FOUR-CHANNEL MAIN SWITCHBOARD STATION

FEATURES

- Supports up to 100 Remote Stations on 4 channels
- Selectable monitoring system
- Programmable talk/listen functions for each channel
- 5 x 12 switchboard matrix
- Switchboard inputs assignable to any channel or OFF
- Functions include Visual Signalling, Stage Announce and All Page
- Balanced auxiliary (program) input, mic or line level, assignable to any or all channels
- Separate intercom, program, and sidetone level controls
- External speaker jack
- Circuit-breaker-protected with short circuit indicator and re-set button
- Available with gooseneck mic, adjustable length



DESCRIPTION

The SB-412A is a broadcast-quality four-channel main station and switchboard with a versatile channel access arrangement. Its regulated power supply can operate up to 100 belt-pack or 20 speaker stations. Additional features which enhance the station's utility include Stage Announce, All Page, and the Mic/Line Auxiliary Input. The sidetone null and program gain trim pots, as well as the talk preset and termination DIP switches, are accessible from the front panel. Special functions, such as ISO and IFB, are also possible. These are established with internal jumpers, which are usually set at the time of installation.

The station's mic preamp has a limiter in addition to Clear-Com's unique contoured response for constant levels and high voice clarity. A headset driver and a four watt speaker amp with separate controls for each provide optimum output levels in all acoustic environments. An additional headset driver permits the split-feed option (program in one ear, intercom in the other). The speaker switch permits instant muting of the speaker without disturbing its Volume setting.

MONITORING SYSTEM

The SB-412A operator accesses the desired intercom channels with two types of switches: the push-on, push-off "Intercom Select" buttons and the On-Off-(On) Talk toggle switches. The Intercom Select buttons light dimly when engaged. They are individually programmable for Listen Only or Talk and Listen operation. The toggle switches control only the Talk function. Channels which are accessed simultaneously are not tied together.

An overall sidetone volume control and individual sidetone null trims for each channel provide precise control of the operator's voice level heard at that station. Sidetone control helps prevent acoustic feedback between a mic and speaker when they are on simultaneously at a station.

The station's connections to the intercom lines may be either high-impedance bridging (15k ohms) or terminating (200 ohms), as set by DIP switches behind the front panel access plate.

SIGNALLING

Visual signalling attracts the attention of operators who have removed their headsets or turned off the speaker. When the SB-412A's Call button is pressed, the signal voltage is sent on all channel(s) with engaged Intercom Select button(s). A call signal from another station causes that channel's Select button to light brightly, whether it is engaged or not. The Visual Signal circuit is also used to activate remote control functions at special-purpose stations.

SWITCHBOARD MATRIX

The SB-412A contains a switchboard matrix that permits twelve locations (stations or groups of stations) to be assigned to any one of the four main channels or an OFF position. Communication between two or more locations is possible only when those locations are assigned to the same main channel, but conversations between stations on the same location are not affected by the matrix assignments. An LED above each slide switch indicates a call signal from a remote station on that location, even if that location is in the OFF position.

AUXILIARY INPUT

The SB-412A has Clear-Com's continued

versatile new auxiliary (program) preamp. A rear panel switch sets its gain for either mic or line input levels. The signal may be monitored in the station's headset/speaker, adjusted by the front panel Program Volume control. The signal may also be sent onto one or more of the intercom channels, as determined by the settings of the four trim pots behind the front panel access plate.

ALL PAGE

Activated by pressing the front panel All Page button, this handy momentary function sends the station's mic signal to all four main channels and the twelve matrix locations (even those in the OFF position), whether or not any channels are currently accessed.

STAGE ANNOUNCE

Another momentary function similar to All Page, but the station's mic signal is diverted to a paging system separate from the intercom system. This transformer-balanced, line-level output is available at an XLR connector on the rear panel. The talk paths to the intercom channels are normally interrupted while the S/A is in use.

POWER SUPPLY

The SB-412A's power supply is the same one proven in years of use. It has the capacity to operate up to 100 belt-pack type stations or 20 speaker stations. A front panel LED indicates a short circuit, and the circuit breaker reset button restores operation instantly after the short is cleared. A rear panel switch selects operation from 115 or 230 VAC.

EASY INTERCONNECTION

The SB-412A connects to the remote stations with standard two conductor mic cable. The station's rear panel has one male 3-pin XLR connector for each of the four main channels and the twelve matrix locations (sixteen connectors total).

GOOSENECK MIC OPTION

A permanently attached noise-cancelling electret microphone on an adjustable length gooseneck is available as a factory installed option. It is installed in the upper headset connector. To help prevent acoustic feedback in units with the gooseneck mic, an automatic dipper circuit lowers the speaker approximately 6dB when any Talk toggle switches are in the momentary ON position.

SPECIFICATIONS

AMPLIFIER DESIGN: IC amplifiers including solid state switching and signalling circuits. Current limited and short circuit protected.

MICROPHONE PRE-AMP:

Input: 200Ω nominal, dynamic type

Input Level: -55dBv nominal*, -10dBv max.*

Frequency Response: 250Hz-12k Hz, contoured for intelligibility

Limiter Range: 25dB

Gain Adjust: 5dB

Gain to Intercom Line: +37dB

HEADPHONE AMPLIFIER:

Load Impedance: 50-2,000Ω

Output Level: at least +20dBv across 600Ω

Distortion: <0.2% THD at 1kHz

Frequency Response: 150-18kHz (±)2dB

Gain from Intercom Line: +37dB

SPEAKER AMPLIFIER:

Load Impedance: 8-50Ω

Output Level: 4 watts into 8Ω

Distortion: <0.5% THD at 1kHz

Frequency Response: 200 Hz-15k Hz ±2dB

Gain from Intercom Line: +41dB

AUXILIARY (PROGRAM) AMPLIFIER:

Gain to Intercom Line: +45dB (mic)/-5dB (line), switchable

Input Impedance: 3.6kΩ (mic)/300kΩ (line), both balanced

Nominal Input Level: -65dBv (mic)/-10dBv (line)

Frequency Response: 150Hz-18,000Hz ±2dB

Gain to Headset/Speaker: +7dB

POWER SUPPLY:

Output voltage: 30 volts, regulated, with electronic overvoltage protection

Output current: 2 amperes maximum, circuit breaker protected, with electronic short circuit current limit.

Hum and noise: <1mV

Capacity: 100 headset or 20 speaker stations

CONNECTORS:

Headset: Two 4-pin male XLR

Intercom Lines: Four 3-pin male XLR, four 3-pin female XLR

Matrix Locations: Twelve 3-pin male XLR

Program Input: 3-pin female XLR

S/A Output: 3-pin male XLR

AC POWER REQUIREMENTS:

105-130VAC/210-260, 48-62 Hz, 80 watts maximum

DIMENSIONS: 19" x 3.5" x 9" (483mm x 89mm x 231mm)

WEIGHT: 11 lbs. (5.0kg)

AMBIENT TEMPERATURE: 32°-122°F (0°-50°C)

SYSTEM OPERATING CONDITIONS:

Maximum Distance: 1,000 feet (from terminating station to maintain all specifications - using standard cable, Belden #8778)

System Level: -15dBv nominal, 0dBv max.*

STATION OPERATION:

Matrix Assignment: Each of the 12 locations may be connected to one of the 4 main channels or an isolated OFF position.

Channel Access: Illuminated locking pushbutton monitor switches: (4) individually programmable for listen only function or simultaneous talk/listen; 3-position on-off-(on) toggle switches (4) for talk function.

Channel Separation: ≥50dB

Signal to Noise Ratio: ≥60dB

Visual Signal Send: Call button sends signal only on lines with intercom select switch engaged.

Minimum output: 11VDC.

Visual Signal Receive: independent of switch settings. Minimum sensitivity: 4VDC

Line Impedance: Terminating (200Ω) or bridging (>15kΩ, 200Hz-10k Hz), switchable.

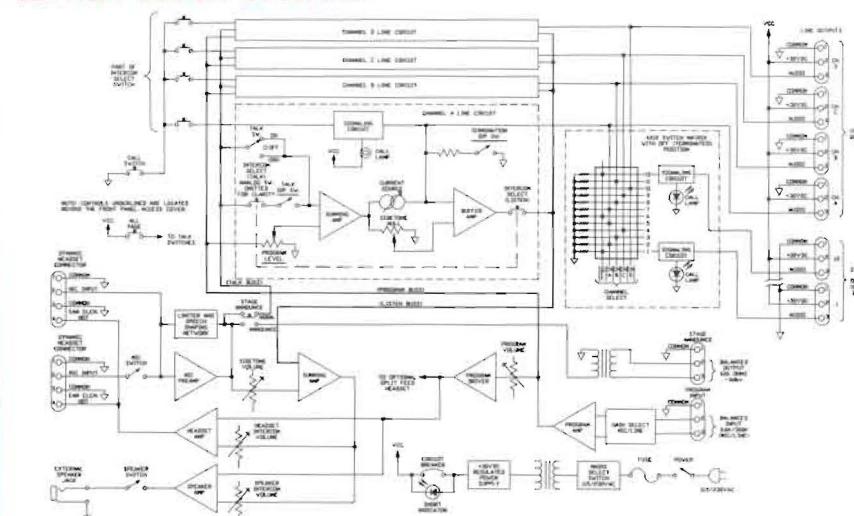
Specifications subject to change without notice

*0dBv is referenced to 0.775 volts rms.

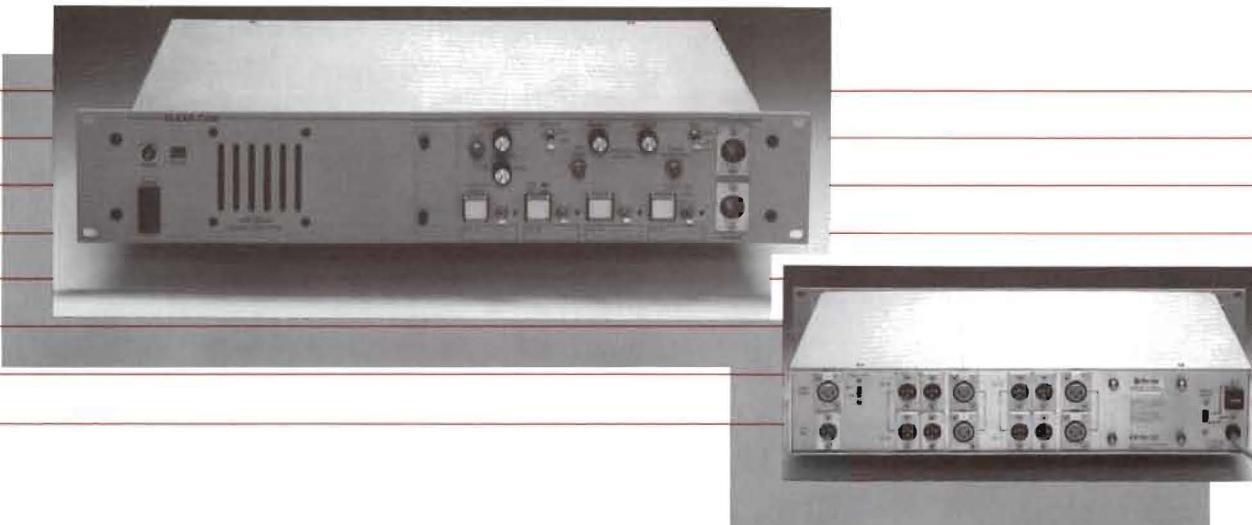
ARCH/ENG SPECS

The intercom unit shall be a rack-mount 4-channel main station, with an integral 12 input × 5 position matrix. It shall have four illuminated Intercom Select switches for listen and talk access to any or all channels. The talk function of the Intercom Select switches shall be programmable. The program level, talk preset, and termination switches for each channel shall be accessible from the front panel, located behind a removable cover plate. When accessing any two or more channels, the operator shall be able to communicate with them simultaneously without combining the channels into a common or partyline system. 12 inputs to the matrix shall be assignable to one of the four main channels or an isolated OFF position. The station shall have a speaker jack controlled by a separate volume control and on-off switch. It shall accept a balanced auxiliary input signal of mic or line level, as determined by a rear panel switch. This signal shall be assignable to any intercom channels. A front panel control shall adjust this signal's level in the headset/speaker. The station shall also have a stage announce function which routes the station's mic signal to a balanced, line level output on the rear panel. An all page function (talk to all channels simultaneously including matrix locations in OFF position) shall also be provided. The station shall supply a switchable terminating network for each channel. It shall have provision for connecting two dynamic headsets to the station, and a level control to adjust the intercom volume to the headphones. It shall also have a front panel sidetone adjustment. Remote stations shall be able to visually signal the main station by causing illumination of the appropriate monitor select switch or LED on the matrix. The rear panel shall contain one male 3-pin XLR connector for connection to each channel A-D and matrix location 1-12. The electronics shall be solid-state, IC plug-in printed circuit amplifier modules. It shall be field-serviceable and replaceable. The station shall accept a 200Ω dynamic microphone with a nominal level of -55dBv. The mic preamp shall incorporate a limiter, and shall automatically shut off when the headset is disconnected from the station. The station shall also have a mic on/off switch on the front panel. The station's frequency response shall be 250Hz to 12kHz. It shall be capable of driving the line of any channel to a maximum level of 0dBv. The headphone amplifier shall drive a headset with an impedance of 300-2000Ω, and be able to deliver an output level of +20dBm at 600Ω. The distortion shall be less than 0.2% THD at 1kHz. The auxiliary program input shall have a frequency response of 150Hz-18kHz (±2dB). The station shall have the capacity to power 100 headset stations or 20 speaker stations. The power supply shall operate from 105-125 VAC or 210-280 VAC, 50-60Hz with maximum power consumption of 80 watts. The station's dimensions shall be 19" W x 3.5" H x 9" D. It shall weigh 11.0 lbs (5.0kg). It shall be called a Clear-Com SB-412A.

SB-412A BLOCK DIAGRAM



M A I N S T A T I O N



MS-400A FOUR-CHANNEL MAIN INTERCOM STATION

F E A T U R E S

- Regulated power supply supports up to 100 Remote Stations
- Selectable, 4-channel monitoring system
- Programmable talk/listen functions for each channel
- Wide response speaker with separate volume controls and on/off switch
- Visual signalling, All Page and Stage Announce
- Balanced auxiliary (program) input, mic or line level assignable to any or all channels
- Separate intercom, program, and sidetone level controls
- Circuit-breaker-protected with short circuit indicator and re-set button
- Available with gooseneck mic, adjustable length



D E S C R I P T I O N

The MS-400A is a broadcast-quality four-channel main intercom station, with a versatile channel access arrangement and a regulated power supply that operates up to 100 belt-pack or 20 speaker stations. Additional features which enhance the station's utility include Stage Announce, All Page, and the Mic/Line Auxiliary Input. The sidetone null and program gain trim pots, as well as the talk preset and termination DIP switches, are accessible from the front panel. Special functions, such as ISO and IFB are also possible. These are established with internal jumpers, which are usually set at the time of installation.

The station's mic preamp has a limiter in addition to Clear-Com's unique contoured response, for constant levels and high voice clarity. A headset driver and a four watt speaker amp with separate controls for each provide optimum output levels in all acoustic environments. An additional headset driver permits the split-feed option (program in one ear, intercom in the other). The speaker switch allows instant muting of the speaker without disturbing its Volume setting.

MONITORING SYSTEM

The MS-400A operator accesses the desired intercom channels with two types of switches: the push-on, push-off "Intercom Select" buttons and the On-Off-(On) Talk toggle switches. The Intercom Select buttons light dimly when engaged. They are individually programmable for Listen Only or Talk and Listen operation. The toggle switches

control only the Talk function. Channels which are accessed simultaneously are not tied together.

An overall sidetone volume control and individual sidetone null trims for each channel provide precise control of the operator's voice level heard at that station. Sidetone control helps prevent acoustic feedback between a mic and speaker when they are on simultaneously at a station.

The station's connections to the intercom lines may be either high-impedance bridging (15k ohms) or terminating (200 ohms), as set by DIP switches behind the access plate.

SIGNALLING

Visual signalling attracts the attention of operators who have removed their headsets or turned off the speaker. When the MS-400A's Call button is pressed, the signal voltage is sent on all channel(s) with engaged Intercom Select button(s). A call signal from another station causes that channel's Select button to light brightly, whether it is engaged or not. The Visual Signal circuit is also used to activate remote control functions at special-purpose stations.

AUXILIARY INPUT

The MS-400A has Clear-Com's versatile new auxiliary (program) preamp. A rear panel switch sets its gain for either mic or line input levels. The signal may be monitored in the station's headset/speaker, adjusted by the front panel Program Volume control. The signal also may be sent onto one or more of the intercom channels, as determined by the settings of the four trim pots behind the front panel access plate.

continued

ALL PAGE

Activated by pressing the front panel All Page button, this handy momentary function sends the station's mic signal to all four channels, whether or not any channels are currently accessed.

STAGE ANNOUNCE

Another momentary function similar to All Page, but the station's mic signal is diverted to a paging system separate from the intercom system. This transformer-balanced, line-level output is available at an XLR connector on the rear panel. The talk paths to the intercom channels are normally interrupted while the S/A is in use.

POWER SUPPLY

The MS-400A's power supply is the same one proven in years of use. It has the capacity to operate up to 100 belt-pack type stations or 20 speaker stations. A front panel LED indicates a short circuit, and the circuit breaker reset button restores operation instantly after the short is cleared. A rear panel switch selects operation from 115 or 230 VAC.

EASY INTERCONNECTION

The MS-400A connects to the remote stations with standard two conductor mic cable. The station's rear panel has two male and one female 3-pin XLR connectors for connection to each intercom line (twelve connectors total).

GOOSENECK MIC OPTION

A permanently attached noise-cancelling electret microphone on an adjustable length gooseneck is available as a factory installed option. It is installed in the upper headset connector. To help prevent acoustic feedback, in units with a gooseneck mic, an automatic dipper circuit lowers the speaker approximately 6dB when any Talk toggle switches are in the momentary ON position.

SPECIFICATIONS

AMPLIFIER DESIGN: IC amplifiers including solid state switching and signalling circuits. Current limited end short circuit protected.

MICROPHONE PRE-AMP:

Input: 200Ω nominal, dynamic type
Input Level: -55dBv nominal*, -10dBv max.
Frequency Response: 250Hz-12kHz, contoured for intelligibility
Limiter Range: 25dB
Gain Adjust: 5dB
Gain to Intercom Line: +37dB

HEADPHONE AMPLIFIER:

Load Impedance: 50-2,000Ω
Output Level: at least +20dBv across 600Ω
Distortion: <0.2% THD at 1kHz
Frequency Response: 150-18kHz (±)2dB
Gain from Intercom Line: +37dB

SPEAKER AMPLIFIER:

Load Impedance: 8-50Ω
Output Level: 4 watts into 8Ω
Distortion: <0.5% THD at 1kHz
Frequency Response: 200 Hz-15k Hz ±2dB
Gain from Intercom Line: +41dB

AUXILIARY (PROGRAM) AMPLIFIER:
Gain to Intercom Line: +45dB (mic)/-5dB (line), switchable
Input Impedance: 3.6kΩ (mic)/300kΩ (line), both balanced
Nominal Input Level: -65dBv (mic)/-10dBv (line)
Frequency Response: 150Hz-18,000Hz ±2dB
Gain to Headset/Speaker: +78dB

POWER SUPPLY:

Output voltage: 30 volts, regulated, with electronic overvoltage protection
Output current: 2 amperes maximum, circuit breaker protected, with electronic short circuit current limit.
Hum and noise: <1mV
Capacity: 100 headset or 20 speaker stations

CONNECTORS:

Headset: Two 4-pin male XLR
Intercom Lines: Eight 3-pin male XLR, four 3-pin female XLR
Program Input: 3-pin female XLR
S/A Output: 3-pin male XLR

AC POWER REQUIREMENTS:
 105-130VAC/210-260, 48-62 Hz, 80 watts maximum

DIMENSIONS: 19" x 3.5" x 9" (483mm x 89mm x 231mm)

AMBIENT TEMPERATURE: 32°-122°F (0°-50°C)

SYSTEM OPERATING CONDITIONS:
Maximum Distance: 1,000 feet (from terminating station to maintain all specifications - using standard cable, Belden #8778)
System Level: -15dBv nominal, 0dBv max.*

STATION OPERATION:

Channel Access: Illuminated locking pushbutton monitor switches (4) individually programmable for listen only function or simultaneous talk/listen; 3-position on-off-(on) toggle switches (4) for talk function.

Channel Separation: ≥50dB

Signal to Noise Ratio: >60dB

Visual Signal Send: Call button sends signal only on lines with monitor switch engaged. Minimum output: 11VDC.

Visual Signal Receive: independent of switch settings. Minimum sensitivity: 4VDC

Line Impedance: Terminating (200Ω) or bridging (>15kΩ, 200Hz-10kHz), switchable.

Specifications subject to change without notice

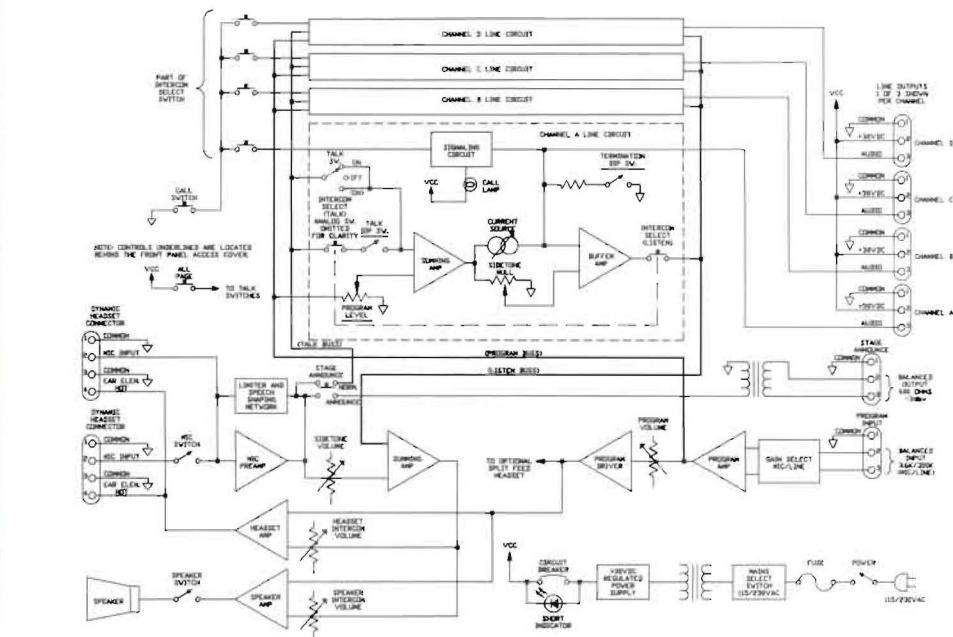
*0dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The intercom unit shall be a rack-mount 4-channel main station. It shall incorporate a 30 volt regulated power supply capable of delivering 2 amps, circuit-breaker protected against external shorts, and have

an LED indicator to indicate a shorted condition. It shall have four illuminated Intercom Select switches for listen and talk access to any or all channels. The talk function of the Intercom Select switches shall be programmable. The program level, talk preset, and termination switches for each channel shall be accessible from the front panel, located behind a removable cover plate. When accessing any two or more channels, the operator shall be able to communicate with them simultaneously without combining the channels into a common or party-line system. The station shall have a built-in speaker controlled by a separate volume control and on-off switch. It shall accept a balanced auxiliary input signal of mic or line level, as determined by a rear panel switch. This signal shall be assignable to any intercom channels. A front panel control shall adjust this signal's level in the headset/speaker. The station shall also have a stage announce function which routes the station's mic signal to a balanced, line level output on the rear panel. An all page function (talk to all channels simultaneously) shall also be provided. The station shall supply a switchable terminating network for each channel. It shall have provision for connecting two dynamic headsets to the station, and a level control to adjust the intercom volume to the headphones. It shall also have a front panel sidetone adjustment. Remote stations shall be able to visually signal the main station by causing the appropriate monitor select switch to be brightly illuminated. The rear panel shall contain two male and one female 3-pin XLR connectors for connection to each channel, A-D. The electronics shall be solid-state, IC plug-in printed circuit amplifier modules. It shall be field-serviceable and replaceable. The station shall accept a 200Ω dynamic microphone with a nominal level of -55dBv. The mic preamp shall incorporate a limiter, and shall automatically shut off when the headset is disconnected from the station. The station shall also have a mic on/off switch on the front panel. The station's intercom frequency response shall be 250Hz to 12kHz. It shall be capable of driving the line of any channel to a maximum level of 0dBv. The headphone amplifier shall be able to operate a headset with an impedance of 300 to 2000Ω and shall be capable of delivering an output level of +20dBv at 600Ω. The distortion shall be less than 0.2% THD at 1kHz. The auxiliary input shall have a frequency response of 150Hz-18kHz (±2dB). The station shall have the capacity to power 100 headset stations or 20 speaker stations. The power supply shall operate from 105-130 VAC or 210-260 VAC, 50-60Hz, switchable from the rear panel, with maximum power consumption of 80 watts. The station's dimensions shall be no greater than 19" x 3.5" x 9" deep (483mm x 89mm x 231mm). It shall weigh no more than 10.5 lbs. (4.8 kg). It shall have all necessary controls and connectors for compatible operation with Clear-Com products, and shall be called an MS-400A.

MS-400A BLOCK DIAGRAM



M A I N S T A T I O N



CS-210 TWO-CHANNEL MAIN STATION

F E A T U R E S

- Supports up to 60 Remote Stations on 2 channels
- Accepts mic-level or line-level Program input
- Program assignable to either or both channels
- Visual Call Signalling
- Stage Announce to external systems
- Separate intercom, program, and sidetone level controls
- Mic limiter
- Circuit-breaker-protected with short circuit indicator and re-set button
- Switch-selectable operation from 115 VAC or 230 VAC mains
- Lightweight, weather-proof, portable enclosure

D E S C R I P T I O N

The CS-210 is a portable main station with a regulated power supply and a versatile monitoring system. It features Clear-Com's excellent speech intelligibility in high- and low-noise environments.

The CS-210 contains a mic preamp with limiter and drives a standard Clear-Com headset to levels greater than 110 dB SPL.

MONITORING SYSTEM

The CS-210 supports two channels containing as many as 60 remote headset stations or 12 speaker stations. The operator monitors the intercom activity on the channels with locking "Monitor Select" buttons. These buttons light dimly when engaged. Either channel may be accessed (monitored) separately or both simultaneously (without the two being tied together).

For paging applications, the CS-210 provides a balanced, line-level output signal to a "Stage Announce" connector on the rear panel. The front panel button labelled "S/A" activates the output, giving the operator access to an external speaker/amp system.

SIGNALLING

Visual Signalling attracts the attention of operators who've removed their headsets or turned off their speakers. The CS-210 Call button signals all stations on the channel(s) that have been previously chosen with the Monitor Select buttons. For instance, if the Channel A Select button is engaged, pressing the

Call button signals all stations using Channel A.

When a remote station operator sends a Call signal, the Monitor Select button (on the CS-210) associated with that station's channel will light brightly, whether in the "on" or "off" position. The Visual Signal Circuit is also used to activate the optional remote page feature at other stations.

SIDETONE

Sidetone control allows the operator to vary the level of his/her own voice as heard in the headset; it also suppresses acoustic feedback when using an external speaker. The CS-210 provides a sidetone adjustment for the station operator, who need not readjust it, even when other stations join or leave the system.

PROGRAM INPUT

The CS-210 accepts a balanced, mic- or line-level program input for monitoring in the station's headset or for mixing with the intercom audio on either or both channels. The CS-210 provides a single program volume control for intercom line headset level.

POWER SUPPLY PROTECTION

The CS-210 provides a red LED to indicate a short circuit in the system, and a circuit-breaker re-set button that enables instant operation once the short is removed. The station's power supply is regulated, current-limited, and provides 30 volts DC,

continued



using a 115V or 230V AC mains supply. The CS-210 also provides audio termination for each channel.

EASY INTERCONNECTION

The CS-210 connects to the remote stations with standard two-conductor mic cable. The station's rear panel provides three 3-pin, male XLR connectors for the output of Channel A and three for Channel B (six connectors total).

ACCESSORY

Part # 820020 CS-210 Rack-ear Kit converts CS-210 to rack-mounting intercom; fits in standard 19" equipment racks.

SPECIFICATIONS

Amplifier Design: Solid state IC. Current limited and short circuit protected

MICROPHONE PREAMP

Input: Low impedance ($\sim 1\text{k}\Omega$) for 200Ω nominal dynamic elements

Input Level: -55dBv nominal, -10dBv maximum before clipping*

Nominal Gain: $+37\text{dB}$

Limiter Compression Range: 25dB

Frequency Response: 250Hz - 12kHz with a contoured response to enhance voice intelligibility

HEADPHONE AMPLIFIER

Drives any load of at least 150Ω to full output ($+20\text{dBv}^*$)

Distortion: $<2\%$ THD at 1kHz

Gain: (from intercom line) $+37\text{dB}$ max

Frequency Response: 150Hz - 18kHz $\pm 2\text{dB}$

PROGRAM AMPLIFIER

Gain, Input to Intercom Line, Max: $+54\text{dB}$ (mic)

-1dB (line) (the gain to headset output is a maximum of 37dB more than to intercom line)

Input Impedance: 3.6k balanced (mic) 300Ω balanced (line)

Input Level: Nominal: -75dBv (mic) -15dBv (line) max before clipping, volume full on: -52dBv (mic) $+3\text{dBv}$ (line)*

Frequency Response: 150Hz - 18kHz

POWER SUPPLY

Output Voltage: 30VDC , regulated

Output Current: 1 amp maximum, circuit breaker protected

Channel Separation: $>50\text{dB}$

Signal to Noise: $>65\text{dB}$

OPERATING CONDITIONS

Channel Monitoring: Pushbutton-selectable A, B or both

Call Circuitry: Receives a signal from remote stations whether or not channel is monitored. The Call button sends a signal to remotes only on the channel(s) being monitored

System Impedance: 200Ω , internally terminated (jumper removable)

System Level: -15dBv nominal, 0dBv before clipping*

Call Light Sensitivity: 4V max

Call Voltage: 11V min

Stage Announce: Balanced, line level ($\sim 0\text{dBv}^*$) transformer-isolated 600Ω output from mic preamp

CONNECTIONS

Headset: Two XLR 4-pin male connectors (one has mic on/off switch)

Channel Outputs: Three XLR 3-pin male connectors for each channel

S/A: XLR 3-pin male

Program Input: XLR 3-pin female

External Speaker: $1/4"$ mono phone jack

Power Requirements: $105\text{-}125$ or $210\text{-}250$ VAC, $50\text{-}60\text{Hz}$, switch selectable from rear panel; 60 watts maximum

Dimensions: $3\text{ 1/2"} \times 9\text{ 11/16"} \times 11\text{ 11/16"}$ Depth (front to back)
 $89\text{mmH} \times 254\text{mmW} \times 305\text{mmD}$

Weight: $6.5 \text{ lbs. (2.95kg)}$

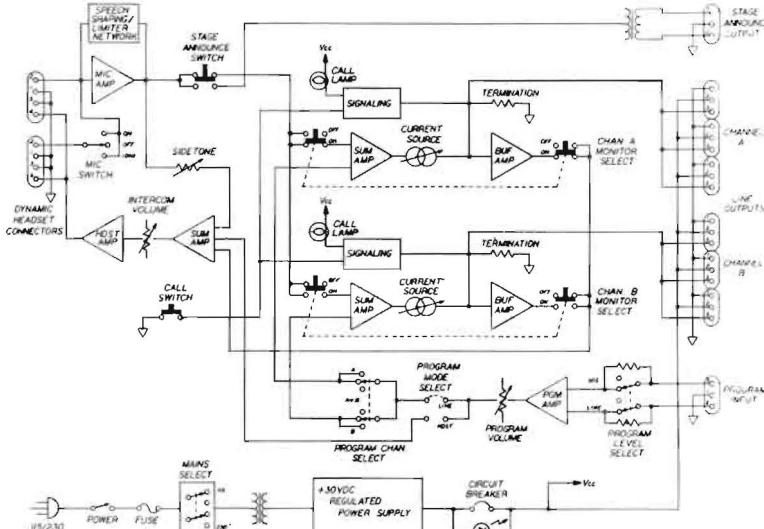
Environmental: Operating temperature range $0\text{-}50^\circ\text{C}$ ($32\text{-}122^\circ\text{F}$)
 Specifications subject to change without notice
 $*0\text{dBv}$ is referenced to 0.775 volts rms.

ARCH/ENG SPECS

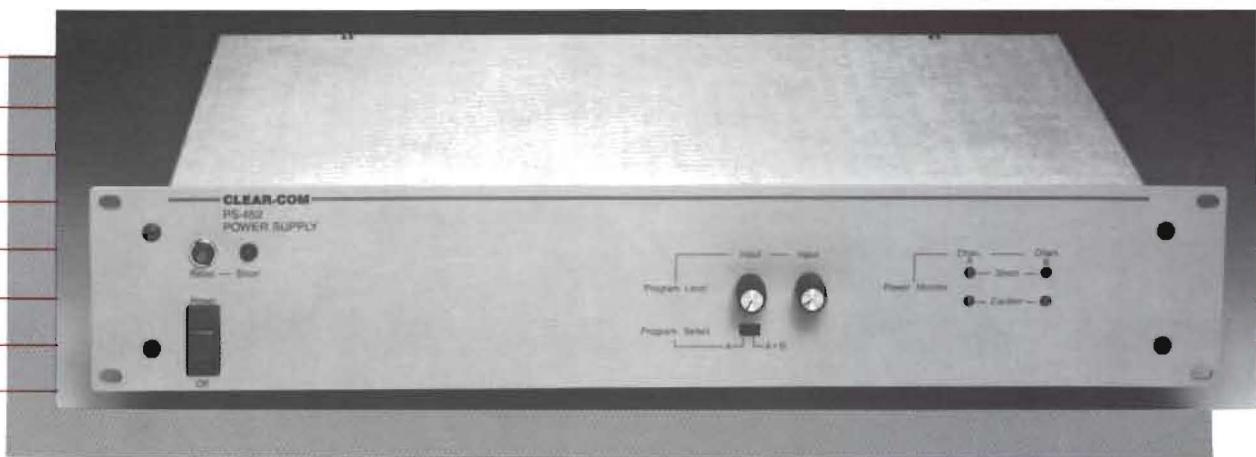
The main station shall be a 2-channel portable intercom station. It shall have an internal power supply with an output of 30VDC , regulated, and a current capacity of 1 ampere, maximum. The power supply shall be short circuit protected, with an LED short indicator and circuit breaker reset button on the front panel. The LED shall glow when the circuit breaker trips in response to a short. Clearing the short shall cause the LED to go out and permit normal operation as soon as the reset button is pushed. The power supply shall operate on an AC line voltage of $105\text{-}125$ or $210\text{-}250$ VAC, $50\text{-}60\text{Hz}$, switch-selectable from the rear panel. It shall consume no more than 60 watts, and shall provide power for up to 60 headset or 12 speaker stations. The rear panel shall have a fuse for the primary circuit. The station shall have two lighted pushbutton channel monitor switches. These will permit selection of either or both (simultaneously) the channels (A and B) for two-way communications with the main station. Stations on one channel shall remain isolated from the other channel even when the operator is communicating with both channels. The electronics shall be solid state plug-in printed circuit board type with socketed ICs, for ease in field service and replacement. The intercom microphone preamp shall be accessible from either of the two front panel headset connectors (one of which is switched). It shall shut off automatically when no headsets are plugged in. It shall accept a 200Ω dynamic type microphone with a nominal level of -55dBv and a gain to intercom line of $+37\text{dB}$. The limiter circuit shall maintain a level of approximately -20 to -10dBv on the intercom line from a mic level of -55 to -30dBv . The preamp's frequency response shall be 250Hz to 12kHz , contoured for enhanced intelligibility. It shall be able to drive both intercom lines to 0dBv before

clipping. The program preamp's gain shall be switch-selectable from the rear panel for either mic level (-75dBv nominal) or line level (-15dBv nominal). The input shall be balanced (may be operated single-ended) 300Ω in line position, $3\text{-}6\text{k}\Omega$ in mic position. Its response shall be 150Hz - 18kHz . Internal jumpers shall determine whether the program signal is fed to the intercom line(s) or fed directly to the station's headset(s). A single front panel volume control shall set the program level to either. A rear panel switch shall route the program to either or both of the intercom lines when the jumpers are set to feed program to the intercom lines. The intercom line circuits shall be of the high-impedance bridging type, with individual sidetone null controls. The intercom line terminations shall be jumper-removable, thus allowing operation as a remote station. The headset amplifier shall be short circuit protected and capable of driving any headset(s) of 150 to $2\text{k}\Omega$ impedance (combined) to the maximum output of $+20\text{dBv}$ before clipping. A front panel control shall adjust the overall intercom level in the station's headsets; the maximum gain from line to headset shall be $+37\text{dB}$. A separate front panel adjustment shall allow the operator to add the desired amount of sidetone to the station's headsets without affecting the null of the individual channels. The amplifier's frequency response shall be 150Hz - 18kHz , and THD at 1kHz shall be less than $.2\%$. For paging applications, a balanced line level ($\sim 0\text{dBv}$) signal from the intercom mic preamp shall be applied to a rear panel 3-pin male XLR connector when the front panel S/A switch is pressed. This switch shall also normally interrupt the mic feed to the intercom channels (defeatable by addition of an internal jumper). The integral lamps in the monitor buttons shall glow dimly to indicate monitoring of that channel, or brightly to indicate a call to/from a remote station. A call signal shall be received from a remote station regardless of whether that channel's monitor button is engaged, but the main station's call button shall send a call signal only to the channel(s) being monitored. The rear panel shall also have three XLR 3-pin male connectors for each channel and a 3-pin female XLR type for the program input. Its dimensions shall not exceed 3.50" height (excluding feet and strap), 9.68" width and 11.66" depth. It shall weigh 6.5 lbs. (2.95kg). It shall have all necessary controls and connectors for compatible operation with Clear-Com products, and shall be called a Clear-Com CS-210.

CS-210 BLOCK DIAGRAM



POWER SUPPLY



PS-452 TWO-CHANNEL POWER SUPPLY

FEATURES

- Supports up to 100 Remote Stations on two channels
- Accepts 1 or 2 Program inputs, assignable to one or both channels
- Individual Program volume controls
- Power Monitor checks current drain of each channel
- Line-and load regulation & over-voltage protection
- Compatible with all Clear-Com Intercoms
- Operates from 105-125 VAC or 210-250 VAC
- May be paralleled with other Power Supplies/Main Stations for increased system capacity & back-up support

DESCRIPTION

The PS-452 is a fail-safe, broadcast-standard power supply that supports a two-channel Clear-Com System. It supplies 30 volts at two amperes (total for both channels). The PS-452 provides the intercom system with circuit-breaker protection against shorts in the cabling. In addition, over-voltage protection saves the system in the rare case of internal power supply failure.

The PS-452 provides power for as many as 100 remote headset stations or 20 remote speaker stations. It features a Power Monitor that keeps constant check of each channel's current drain. With two sets of red and amber LEDs, the Power Monitor provides instant fault indication to help determine potential line problems in the intercom system.

The PS-452 rear panel has six 3-pin, XLR connectors for intercom output (three in parallel for Channel A, the same for Channel B). It also contains two auxiliary inputs (3-pin XLR) for external program audio signals. The PS-452 can mix one or two program signals with the intercom audio on one or both channels. Volume controls on the front panel allow level adjustment of each Program individually.

The PS-452 contains two easily accessible, internal slide-switches to provide the necessary audio termination for each channel.

The Power Supply connects to remote stations with standard, two-conductor shielded mic cable. The unit mounts in a standard 19"

equipment rack, using only 3-1/2" vertically.

Clear-Com designed the PS-452 as a "half-regulated" supply, which means that, up to a certain point (approximately half the rated output), it provides a regulated 30 volts. When the current drain goes over 1 amp, the output is reduced. The PS-452 efficiently continues to support a full-capacity system at the reduced output, unlike standard types of regulator circuits that shut down when current drain increases.

The PS-452 conforms to the highest standards of reliability and performance, providing trouble-free service over a wide range of environmental conditions. It may be rack-mounted in an enclosed space and can tolerate an ambient temperature of 32°-120°F without failure.



SPECIFICATIONS

ARCH/ENG SPECS

POWER SUPPLY:

Output Voltage: 30 VDC
Circuit Breaker Rating: 2.0 amp hold
Output Current: 2 amp (total)
Load Regulation: 30v, ± 1 v, 0-1 amp; 26v at 2 amps
Line Regulation: 0.1 volt from 105-125 VAC input voltage
Ripple: <1 mv
Protection Circuitry: Circuit breaker, internal primary fuse, and over-voltage crowbar circuit

PROGRAM AMPLIFIERS:

Transformerless Balanced Differential Input
Frequency Response: 150-18kHz (± 2 dB)
Input Impedance: 47k Ω balanced
Input Level: (at maximum gain setting) -2dBv for maximum output; -17dBv nominal*

SYSTEM SPECIFICATIONS:

Impedance: 200 Ω terminating (switchable)
Level: -15dBv nominal; 0dBv before clipping*
System Capacity: 100 headset stations; 20 speaker stations

CONNECTORS:

Program Input: 2 D3F (3-pin female)
Intercom Output: 6 D3M (3-pin male/3 in parallel for Channel A; 3 in parallel for Channel B)

POWER REQUIREMENTS: 105-125 VAC, 50-60Hz, 80 watts maximum. May be wired for 210-260 VAC.

ENVIRONMENTAL:

Temperature range: 0-50° C (32-122° F)

DIMENSIONS: 19" x 3.5" x 7" deep, standard rack mount
 483mm x 89mm x 178mm

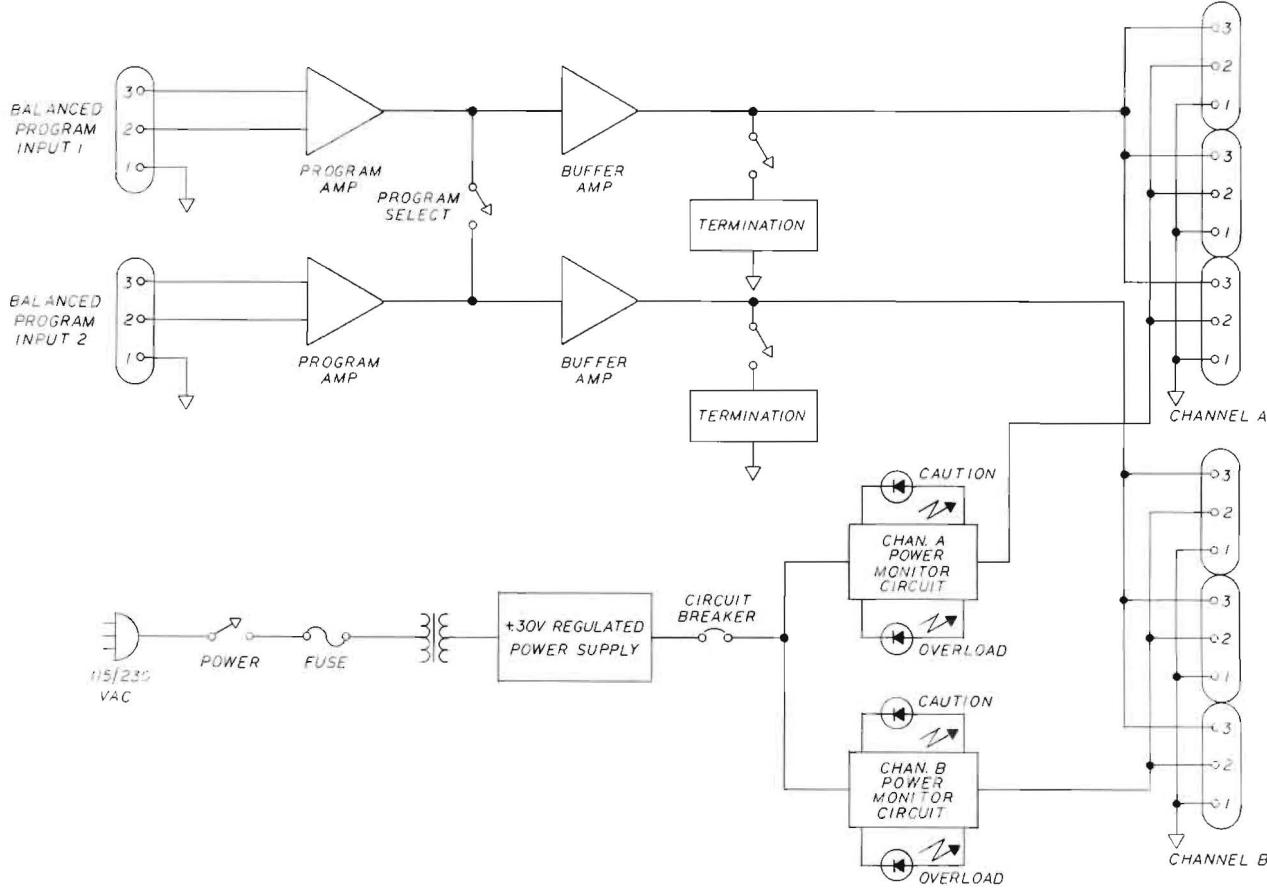
WEIGHT: 10 lbs. (4.5 kg)

Specifications subject to change without notice

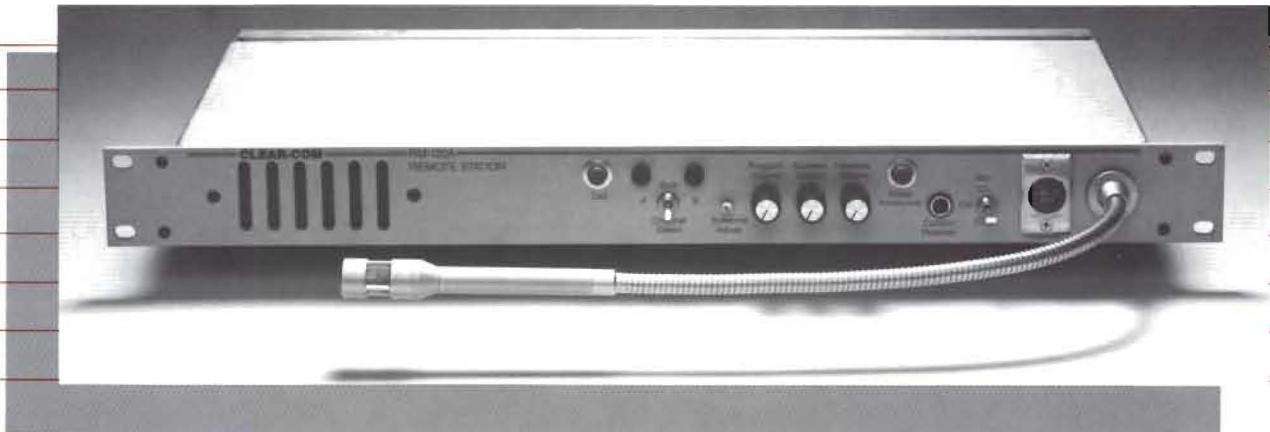
*0 dBv is referenced to 0.775 volts rms.

The power supply shall be a solid-state, rack-mount unit. It shall supply an output of up to 2 amperes. The power supply shall have line-and-load regulation and over-voltage protection. It shall have short circuit protection with an LED indicator. When the circuit breaker trips in response to short circuit, the LED shall light; removal of the short and resetting the circuit breaker shall restore the power supply to normal operation. The unit shall contain a Power Monitor that checks the current drain of each channel and uses red and amber LEDs to indicate potential line problems. The power supply shall have the capacity to power 100 remote headset stations or 20 remote speaker stations. The power supply shall accept two auxiliary program inputs, and each input shall have a volume control on the front panel. The program shall be assignable to Channel A, B, or both, depending on which input is used and the setting of the front panel combine switch. The power supply shall have six 3-pin XLR-type male connectors on the rear panel for Channel A and B outputs. The power supply shall have two 3-pin XLR-type female connectors on the rear panel for the auxiliary program inputs. The auxiliary program inputs shall have a frequency response of 150Hz-18kHz (± 2 dB), and an input impedance of 47k Ω (balanced or unbalanced) with an input level of +2dB for maximum output. The power supply shall terminate the intercom system with an impedance of 200 Ω for each channel. It shall have a hum and ripple factor of less than 1 mv. The power supply shall operate from 105-125 VAC or 210-260 VAC, 50-60Hz, at 80 watts maximum. It shall have an operating temperature range of 0-50° C, 32-122° F. The dimensions shall not exceed 19" x 3.5" x 7" deep, and the weight shall not exceed 10 pounds. The power supply shall have all the necessary controls and connectors to interface to all Clear-Com products. The power supply shall be called a Clear-Com PS-452.

PS-452 BLOCK DIAGRAM



REMOTE STATION



RM-120A TWO-CHANNEL SPEAKER STATION

FEATURES

- Allows selectable two-channel communicating
- Uses just one unit of rack space
- Wide frequency response speaker with on/off switch
- Intercom volume control
- Balanced program input with volume control
- Operates with carbon or dynamic headsets
- Mic on/off switch and adjustable sidetone
- Visual Call Signalling
- External speaker jack
- Mic limiter
- Available with optional gooseneck mic, length adjustable (1" - 12")

DESCRIPTION

The RM-120A is a broadcast-standard, remote speaker station that allows selectable talking and/or listening in a Clear-Com System. The operator communicates on either of the channels or on both at once.

Compatible with all Clear-Com intercoms, the RM-120A features excellent speech intelligibility in high-and low-noise environments. The wide response speaker delivers crisp sound pressure levels, high enough to be heard in the noisiest surroundings.

The RM-120A operates with a carbon headset or a dynamic headset/telephone-style handset. It drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets and an external speaker. The RM-120A's speaker volume can be turned all the way down, independently of the headset volume setting, when private conversation via the headset is desired. Alternately, a mic on/off switch is provided to let the RM-120A function as a "listen-only" or remote page station.

The RM-120A features automatic headset detection, which mutes the mic preamp when the headset is not plugged in. Therefore background noise is not increased by an unused yet online station.

The RM-120A accepts a balanced Program input for monitoring external audio in the headset or speaker. The station mixes the Program with the audio from the intercom and provides a Program level adjustment.

The RM-120A contains a sidetone control that allows the operator to vary the level of his/her own voice as heard in the headset/speaker. Sidetone control also suppresses acoustic feedback when the mic and speaker at that station are on simultaneously.

The RM-120A features Visual Call Signalling to attract the attention of operators who have removed their headsets or turned off their speakers. The station's Call button activates the signal circuit at all other stations using the same channel(s) as the RM-120A. For receiving Call signals, the RM-120A provides two amber lamps (one per channel) that light when another operator activates the signal on the associated channel. The Visual Signal circuit also activates the optional remote control at other stations.

"Stage Announce" is another RM-120A feature, useful for paging applications. The station provides a balanced, line-level output signal to a rear panel "Stage Announce" connector. A front panel button labelled "S/A" activates the output, giving the operator access to an external speaker/amp system.

The RM-120A installs in a standard 19" equipment rack, using only 1.75" vertically. Standard mic cable connects the RM-120A to the intercom system; wire run in conduit is also suitable. The station provides two 3-pin, XLR connectors for input and loop-through extension of Channel A, and the same for Channel B (four connectors total).

Bidirectional current sourcing and low current drain allow as

continued



many as 20 RM-120A stations (powered by a suitable Main Station/Power Supply) to operate along one mile of wire with no significant loading effects. The circuit design virtually eliminates all hum and noise pick-up from SCR dimmer and AC power sources.

GOOSENECK MIC OPTION

The RM-120A is available with a permanently-attached, noise-cancelling electret mic on a gooseneck with adjustable length (up to 12"). When the mic toggle switch is set to momentary ("on"), the mic activates and the speaker is attenuated by 10 dB to reduce the possibility of feedback.

SPECIFICATIONS

AMPLIFIER DESIGN:

Solid-state, integrated circuit amplifiers which include a mic preamp with limiter, headset/speaker power amp, signalling circuitry. Current-limited with short circuit and reverse polarity protection.

MIC PREAMPLIFIER

Frequency Response: 250Hz-12kHz with contoured response to enhance speech intelligibility

Mic Input: 200Ω

Mic Preamp Gain: 37dB

Max Input Before Clipping: -10dBv*

HEADSET/SPEAKER AMPLIFIER

Frequency Response: 100Hz-18kHz, ±2dB

Load Impedance Range: 300-2000Ω (dynamic headset)

Output Level: +20dBm, 26v p-p at 100Ω

Headset Level: +110dB SPL with standard Clear-Com headset

Speaker Level: +98dB SPL at 3 feet

Speaker Type: 16Ω 3" x 1.5" oval

Power Output: 2.0w into 16Ω

Distortion: 0.5% THD at 1kHz

Headphone Amp Gain: 37dB

GENERAL SPECS

Line Level: 0dbv max, -15dBv nominal*

Sidetone Adjust: 35dB null to full on

Signal Voltage: 11v DC on audio line

Call Light Sensitivity: 4 volts

Signal-to-Noise: 65dB

Equivalent Input Noise: -118dBv

Station Bridging Impedance: >15kΩ (200Hz-10kHz)

Voltage Range: 12-32 volts, 28v nominal

Power Required: 25mA quiescent, 80mA talk,

60mA signalling, 200mA short circuit

Dimensions: 19" x 1.75" x 6.5" deep;

483mm x 44mm x 165mm

CONNECTORS

Dynamic Headset: One (1) male 4 pin XLR

Carbon Headset: 1/4" phone jack (ring/tip/sleeve)

Line: Two (2) male, two (2) female, 3-pin XLR

Program: One (1) female 3-pin XLR

External Speaker: 1/4" phone jack (tip/sleeve) (disconnects internal speaker)

Specifications subject to change without notice

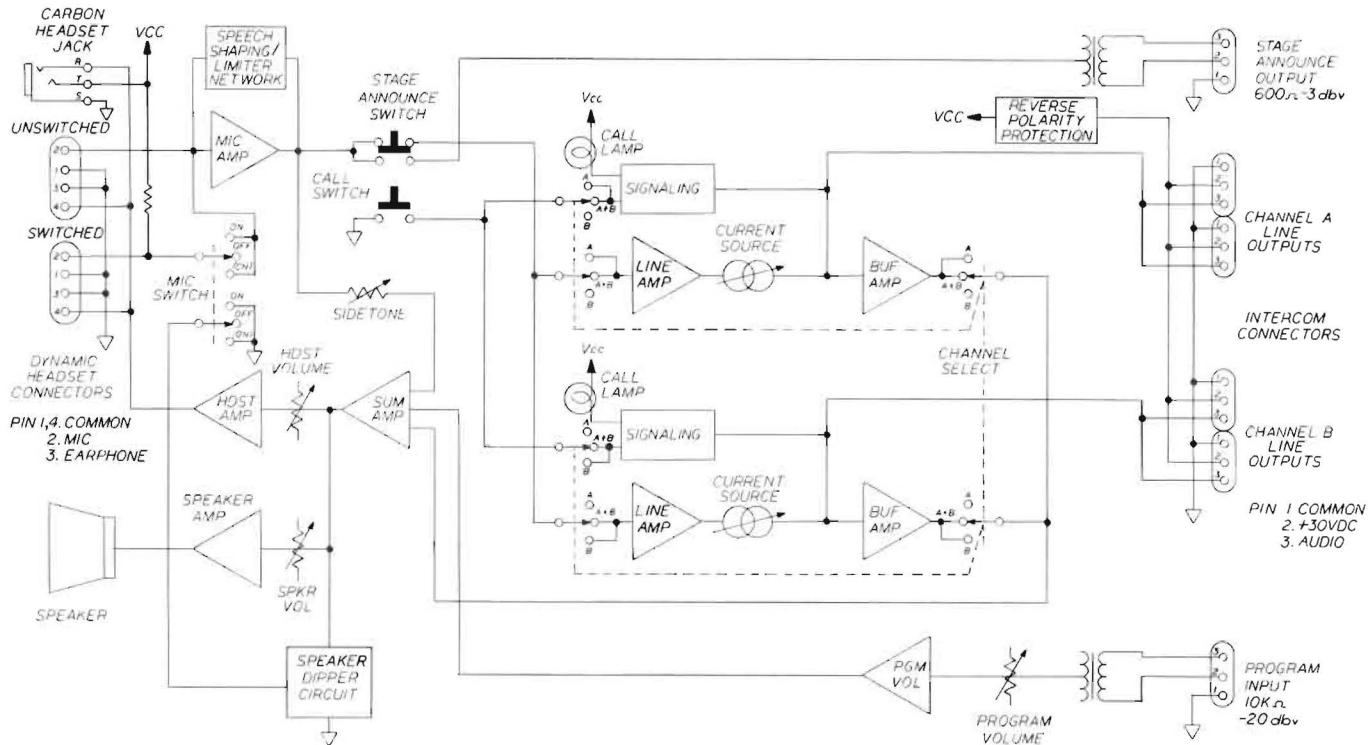
*0dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The intercom shall be a 2-channel speaker station designed to mount in 1.75" rack space. The station shall have all the necessary controls and connectors to interface to a standard Clear-Com System. It shall accept two discrete intercom channels as well as a balanced line-level program signal that is fed to the speaker and headset. The headset and speaker shall have separate controls for adjustment of overall intercom volume. The program volume shall adjust program level in both the headset and speaker simultaneously. The front panel shall provide one 4-pin, XLR-type male connector for use with dynamic headsets/handsets, plus a .25" phone jack for use with a carbon headset. It shall provide a mic on/off/momentary on switch, associated with the headset connector. The station shall be supplied with one input and one extension connector for each intercom channel (4 connectors total; 3-pin, XLR-type) and an auxiliary connector (3-pin, XLR-type female) for the program input. The program input shall be 10kΩ bridging, and shall have a THD of less than 0.5% at 1kHz. The station's electronics shall include a mic preamplifier with limiter, a 4 watt power amplifier, and a program amplifier. It shall be current-limited and short-circuit-protected and shall have reverse polarity protection. The station shall contain an adjustable sidetone circuit and visual signal circuitry for each channel. The intercom bridging impedance shall be greater than 15kΩ, over a frequency range of 200Hz to 10kHz. The bridging circuit shall use no transformers. The intercom shall have an overall response of 250Hz-12kHz. The mic preamplifier shall accept input from one or two dynamic mics, each of nominal 200Ω impedance at a -55dBv level. The signal-to-noise ratio shall be minimum of 65dB. The station shall operate from a power source of 12-32 volts DC and shall draw no more than 25mA quiescent. Its dimensions shall not exceed 19"(483mm) wide by 1.75"(44mm) high (front panel) by 6.5"(165mm) deep. It shall be called a Clear-Com RM-120A. It shall weigh not more than 3.31 lbs (1.5kg).

The station shall be made available with an electret mic, permanently attached to the front panel with a field-adjustable gooseneck extension. When this mic is turned on, the station's speaker shall be attenuated by 10dB to reduce the possibility of feedback. The station shall be called a Clear-Com RM-120A. GM.

RM-120A BLOCK DIAGRAM



REMOTE STATION



KB-111A TWO-CHANNEL SPEAKER STATION

FEATURES

- Allows selectable two-channel communicating
- Wide frequency response speaker with on/off switch
- Intercom volume control
- Operates with carbon or dynamic headsets
- Mic on/off switch and adjustable sidetone
- Visual Call Signalling
- Portable or permanent installation

DESCRIPTION

The KB-111A is a broadcast-standard, remote speaker station that allows talking and/or listening on either of two channels in a Clear-Com System (but not both simultaneously).

Compatible with all Clear-Com intercoms, the KB-111A features excellent speech intelligibility in high- and low-noise environments. The wide frequency response speaker delivers crisp sound pressure levels, high enough to be heard in the noisiest surroundings.

The KB-111A operates with a carbon headset or a dynamic headset/telephone-style handset. It drives a standard Clear-Com headset to levels greater than 110 dB SPL, and can support two dynamic headsets at once (if connected with the suitable "Y" cord). The KB-111A's speaker can be turned off when private conversation via the headset is desired; alternately, a mic on/off switch is provided to let the KB-111A function as a "listen-only" or remote page station.

The KB-111A contains a recessed sidetone control, which allows the operator to vary the level of his/her own voice as heard in the headset/speaker. Sidetone control also suppresses acoustic feedback when the mic and speaker at that station are on simultaneously.

The KB-111A features Visual Call Signalling; the Call button

allows you to attract the attention of operators who have removed their headsets or turned off their speakers. The KB-111A's amber Call lamp lights when another operator (using the same channel) sends a Call signal.

The KB-111A is a custom-mounting station; its no-glare charcoal-brown, aluminum front panel installs in a cut-out in a wall, console, or rack, or inside a 6" x 8" screw cover electrical box.

Standard mic cable connects the KB-111A to the intercom system; wire run in conduit is also suitable. The station provides a clearly-labelled, 5-pin terminal strip for interconnection behind the front panel.

Bidirectional current sourcing and low current drain allow as many as 20 KB-111A stations (powered by one Main Station/Power Supply) along one mile of wire with no significant loading effects. The circuit design virtually eliminates all hum and noise pick-up from SCR dimmer and AC power sources.

ACCESSORY

P-Box

For portable use, the KB-111A installs in the Clear-Com P-Box, a sturdy, lightweight aluminum enclosure with a sloped front, walnut sides, and carry strap. Provides 3-pin input and extension connectors (allows one channel only).



SPECIFICATIONS

AMPLIFIER DESIGN

Solid state, integrated circuit amplifiers which include a mic preamp, headset/speaker power amplifier and signalling circuitry. Current limited with short circuit and reverse polarity protection.

MIC PREAMPLIFIER

Frequency Response: 250-12kHz with contoured response to enhance voice intelligibility.

Mic Input:

200Ω
Mic Preamp Gain: 37dB
Max Input Before Clipping: -20dBv

HEADPHONE AMPLIFIER

Frequency Response: 100-18kHz ±2dB
Load Impedance Range: 8Ω-2kΩ
Output Level: +20dBv, 26v p-p at 100Ω
Headset Level: >110 dB SPL with standard Clear-Com headsets

Speaker Level:

>98dB SPL at 3 feet

Speaker Type:

3" square, 16Ω

Power Output:

2 watts into 16Ω

Distortion:

0.5% THD at 1kHz

Headphone Amp Gain:

37dB

CONNECTORS

Headset: 4-pin male XLR type

Line: 5 screw terminal block

GENERAL

Line Level: -15dBv nom*, 0dBv max

Sidetone Adjustment: 35dB null to full on

Signalling Voltage: 11 volts DC on audio line

Call Light Sensitivity: 4 volts

Signal-to-Noise: 75dB

Equivalent Input Noise: -118dBv

Station Bridging Impedance: <15kΩ (200-10kHz)

Power Requirements: 20 mA quiescent, 60 mA average talk, 60 mA signalling, 200 mA short circuit.

Voltage Range: 12-32 volts, 28 volts nominal.

Dimensions: 8.6" x 6.5" x 3.25" deep

218mm x 165mm x 83mm deep

Weight 1.6 lbs (0.73kg)

Specifications subject to change without notice

*0 dBv is referenced to 0.775 volts rms.

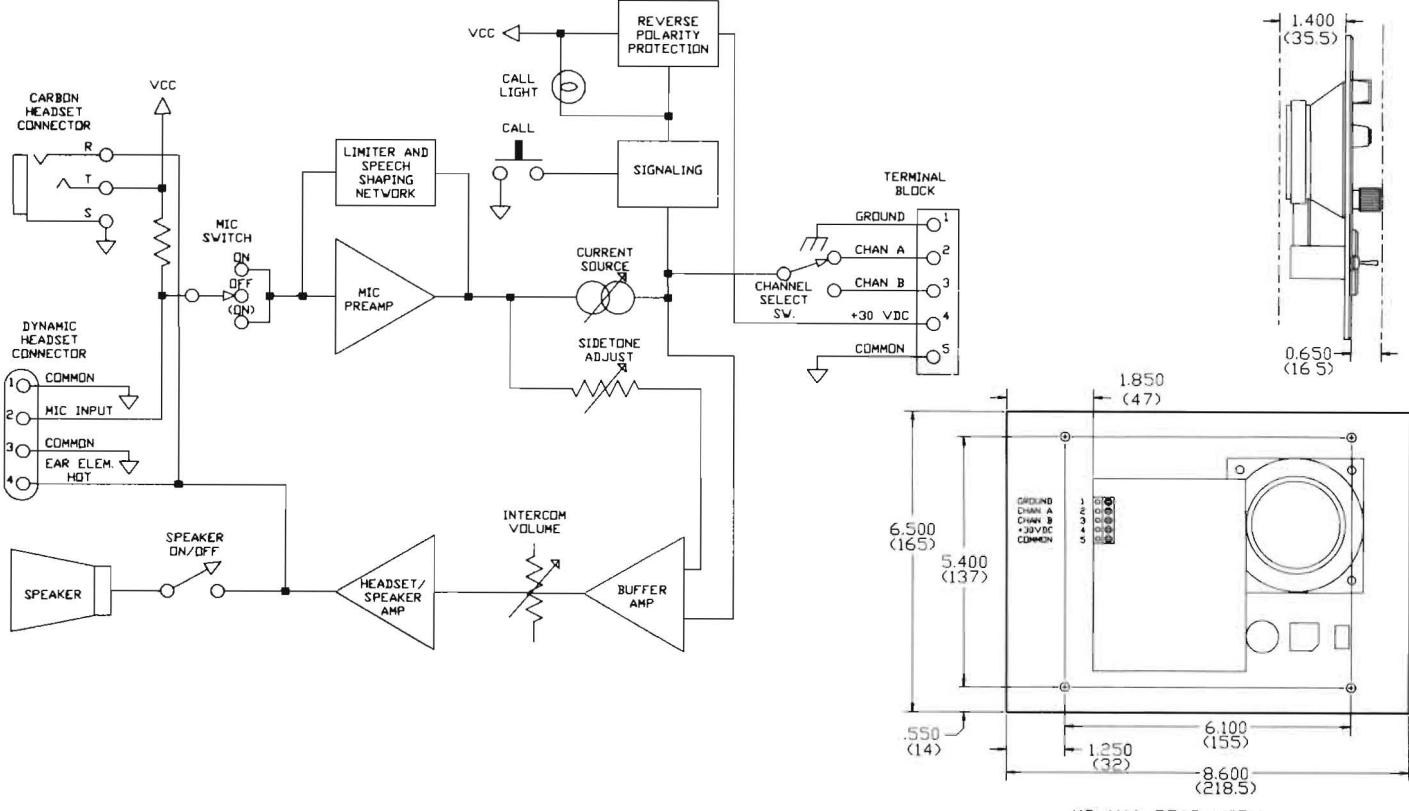
ARCH/ENG SPECS

The intercom station shall be a custom-mounting, 5/32" aluminum panel painted charcoal-brown. It shall be a two-channel intercom speaker station with front panel connectors for carbon and dynamic headsets. The intercom shall have the necessary provisions for interfacing to the standard Clear-Com system. It shall have a 5-screw terminal strip on the PC Board for intercom signal and power to be brought to the station. The intercom shall be able to mount inside a 6" by 8" screw cover electrical box. The intercom's speaker shall be a 3" square, 16Ω type. The intercom's controls shall include an intercom volume adjustment, a channel select switch, momentary Call signal button and Call signal lamp, a mic on/off/momentary-on switch, a speaker on/off switch, and a recessed sidetone adjustment. The intercom electronics shall consist of a mic preamplifier, power amplifier and signalling circuit. The intercom shall be current-limited and short-circuit-proof and shall have reverse polarity protection. It shall be field-serviceable and replaceable. The intercom station preamplifier shall automatically shut off when the headset is disconnected. The intercom bridging impedance shall be greater than 15kΩ over a frequency range of 200Hz to 10kHz. The intercom shall use no transformers for connecting to the intercom line. The frequency response and impedance of the intercom shall not change as other stations join or leave the system. The intercom shall have an adjustable sidetone circuit that will allow up to 35dB null of sidetone. The mic preamplifier shall have an overall response of 250Hz-12kHz, contoured to enhance speech intelligibility. The intercom shall accept a standard carbon headset or a dynamic headset with a nominal 200Ω impedance, -55dB mic and earphones from 8 to 2000Ω. The headset/speaker power amplifier shall have a response of 100Hz to 18kHz, ±2dB. It shall deliver a level of >110dB SPL with 0.5% distortion. The power amplifier shall be capable of delivering 2 watts into 8Ω. The speaker shall be capable of a maximum level of 98dB at 3 feet. The signal-to-noise ratio shall be 75dB with an equivalent input noise of -118dBv. Power supply

RF EMI rejection shall be greater than 60dB referenced to the audio line. It shall operate from a power source of 12-32 volts DC and shall draw no more than 25 mA quiescent. The dimensions shall not exceed 8.6" x 6.5" x 3.25" deep (218mm x 165mm x 83mm). The weight shall not exceed 1.6 lbs. (.73kg). It shall be called a Clear-Com KB-111A.

The intercom station shall also be convertible to a single-channel portable type. It shall have the same specifications and functions as above. The intercom shall be housed in a portable, sloped-front enclosure constructed of .050 cold-rolled steel, with a carry strap and rubber feet. It shall have two 3-pin, XLR-type connectors, one male and one female, for input and extension of the intercom line. The enclosure shall be called a Clear-Com P-Box.

KB-111A BLOCK DIAGRAM



KB-111A REAR VIEW

P O W E R S U P P L Y



PS-20 TWO-CHANNEL POWER SUPPLY

FEATURES

- Supports up to 60 Remote Stations
- Provides two channels of two-way communications
- Line-and-load regulation
- Compatible with all Clear-Com Intercoms
- Operates from 105-125 VAC or 210-260 VAC
- Can be paralleled with other Power Supplies/Main Stations for increased system capacity & back-up support
- Heavy-duty construction
- Portable, lightweight, weather-resistant enclosure
- Available with optional rackmount kit

DESCRIPTION

The PS-20 is a fail-safe, portable power supply that provides two separate channels for smaller Clear-Com Systems. It supplies 30 volts at one ampere (total for both channels) and terminates each channel. The PS-20 provides circuit-breaker protection against shorts in the cabling.

The PS-20 provides power for up to 60 remote headset stations or 12 remote speaker stations. It features a Short Circuit Indicator Lamp and a Circuit-Breaker Re-set Button. If there is a short circuit in the system cabling, the lamp will light. Pressing the button after the short is removed instantly restores normal operation.

The PS-20 front panel has two 3-pin, XLR connectors for output to remote stations located near the Power Supply; each connector is switch-selectable to Channel A or Channel B. A third switch combines both channels at all outputs while maintaining proper termination (Party Line). The PS-20 rear panel provides four 3-pin, male XLR connectors for intercom output to the system (two in parallel for Channel A, the same for Channel B).

The Power Supply connects to remote stations with standard, two-conductor shielded mic cable.

The PS-20 satisfies the highest standards of reliability and performance, providing trouble-free service over a wide range of environmental conditions. It can

tolerate an ambient temperature of 32-140°F without failure.

ACCESSORY

Rack Mount Kit

Adapts PS-20 enclosure to rack-mount type chassis; fits in standard 19" equipment racks.



SPECIFICATIONS

POWER SUPPLY:
Output Voltage: 30 VDC, regulated
Output Current: 1 amp max
Load Regulation: 30V±1V at 5A, 26V at 1A
Line Regulation: ±1V from 105-125 VAC line voltage
Ripple: <3mV
Protection Circuits: Circuit breaker in DC circuit, fuse in transformer primary.
Connections: Provides two 3-pin male XLR connectors per channel on rear panel. Two additional front panel connectors may be switched independently to either channel. A front panel switch combines both channels while maintaining proper termination.

SYSTEM SPECIFICATIONS:

System Impedance: 200Ω
System Level: -15dBv nominal, 0dBv before clipping*
System Capacity: Will support 60 headset or 12 speaker stations

POWER REQUIREMENTS: Line voltage 105-125 or 210-250 VAC, 50-60Hz, selectable from rear panel. 60 VA max

ENVIRONMENTAL: Operating temperature range 0-50°C (32-122°F)

DIMENSIONS: 6 11/16" W x 9 7/16" D x 2 5/8" H (170mm W x 240mm D x 67mm H)

WEIGHT: 3.8 lbs (1.7kg)

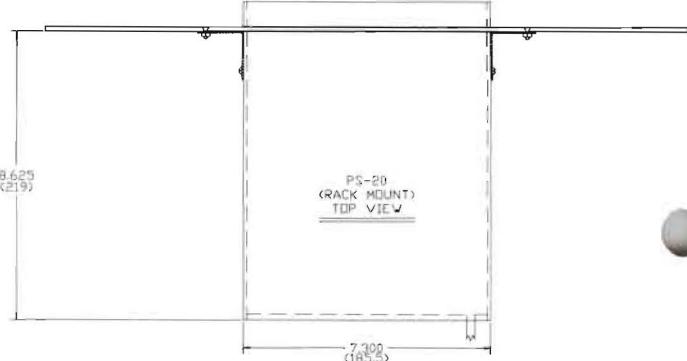
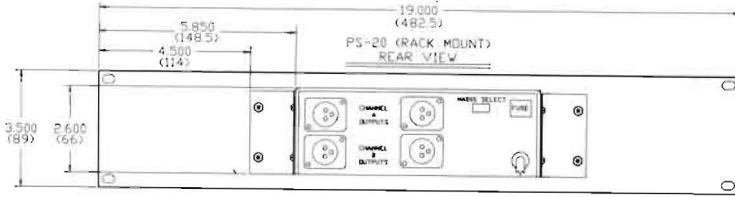
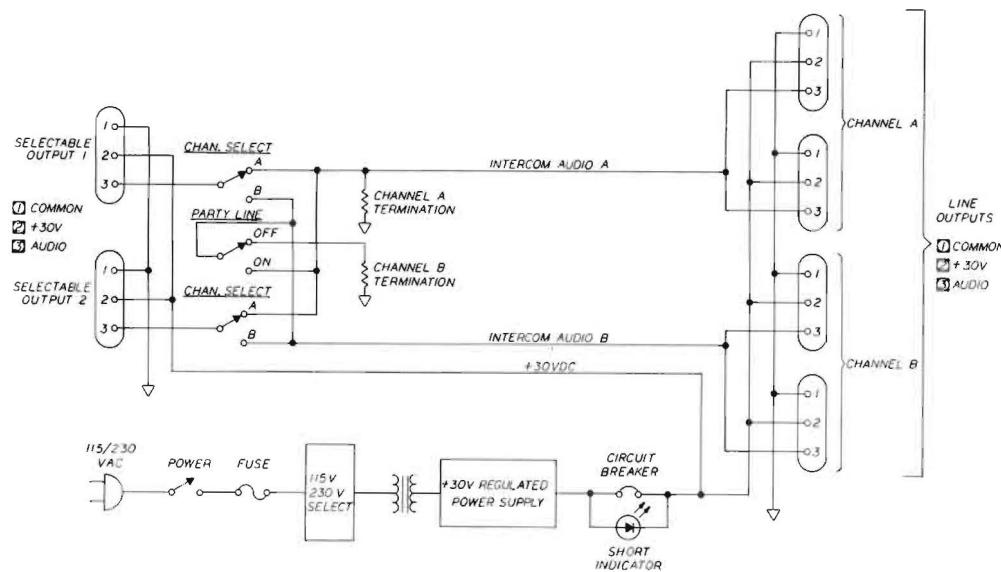
Specifications subject to change without notice

*0 dBv is referenced to 0.775 volts rms.

ARCH/ENG SPECS

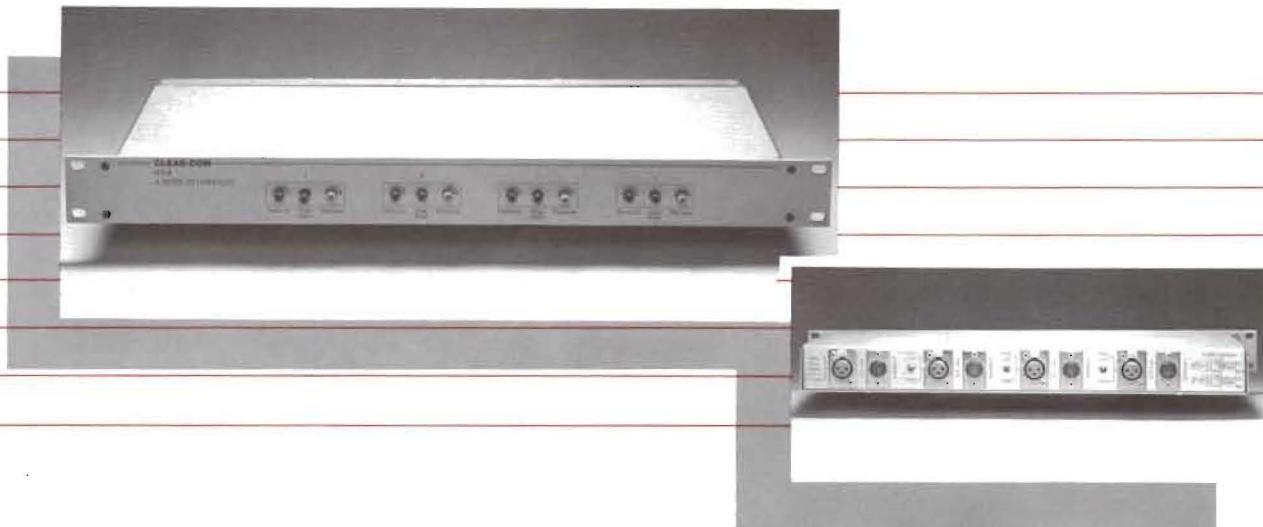
The power supply shall be a solid state two channel portable unit. It shall provide an output of 30 volts DC, regulated, with a maximum current capacity of 1 ampere. The power supply shall have line and load regulation. It shall have short circuit protection and a front panel LED indicator, which shall light only when the circuit breaker trips in response to a short. The power supply shall resume normal operation as soon as the short is cleared and the circuit breaker is reset. The power supply shall have the capacity to power 60 headsets or 12 speaker stations. Two separately terminated audio channels shall be provided (A and B). A front panel switch shall combine the two channels into one while maintaining proper 200Ω termination in either combined or separate mode. The unit shall have four male 3-pin XLR-type connectors on the rear panel, two for each channel. On the front panel, two additional XLR connectors shall be independently switchable to either channel. The power supply shall operate on an AC line voltage of 105-125 or 210-250 VAC, 50 to 60Hz, switch-

selectable from the rear panel. The maximum power consumption shall be 60 watts. Its operating temperature range shall be 0-50°C (32-122°F). Its dimensions shall not exceed a width of 6.70" (170mm), a depth (front to back) of 9.44" (240mm), and a height (excluding feet) of 2.62" (67mm). It shall weigh no more than 3.8 lbs. (1.7kg). It shall have all necessary controls and connectors for compatible operation with Clear-Com products, and shall be called a Clear-Com PS-20.



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SYSTEM INTERFACE



IF4-4 CAMERA INTERFACE

FEATURES

- Interfaces standard 4-wire or 3-wire TV camera intercom systems
- 1 to 4 intercom channels
- Headset test connector
- Individual Transmit, Receive, & Sidetone controls
- Transformer-isolated
- Uses minimal rack space
- Easy to interconnect
- Powered by Clear-Com line

DESCRIPTION

The IF4-4 is a broadcast quality rack-mount device that interfaces one to four television camera intercoms with the Clear-Com System. Powered via the Clear-Com interconnect cable, the IF4-4 is designed to match the industry's standard 600 ohm transmit/receive lines (at normal levels) to Clear-Com line level. It works with balanced four-wire or unbalanced three-wire (i.e. carbon headset) systems.

For each of the four interfaces, the IF4-4 front panel provides Transmit and Receive controls to adjust the level between Clear-Com and the other system. It also has a sidetone adjustment for each system, allowing the user to vary

the level of his/her voice as heard in the user's headset.

The IF4-4 rear panel has four connectors for the interfaces (4-pin XLRs) and four connectors for the Clear-Com lines (3-pin XLRs). The 4-pin connectors accept a standard Clear-Com headset, which may be used to adjust levels prior to operation.

Toggle switches on the rear panel assign the interfaced systems to separate intercom channels, or put two, three, or all four systems on one "Party-Line."

The IF4-4 is powered by the Clear-Com System interconnection, using standard two-conductor mic cable. It mounts in a standard 19" rack, using only 1.75" vertically.



SPECIFICATIONS

Transmit Level: Adjustable, -55 to +15 dBv
Transmit Impedance: 600 Ω
Receive Level: Adjustable, -15 to +20 dBv
Receive Impedance: 10-15k Ω
Frequency Response: 200-15k Hz, 6dB down
Minimum Sidetone Null: 30dB
Distortion: 0.5% THD
Clear Com Line Level: -15dBv min., 0dBv max.
Line Impedance: 15kΩ bridging
Power Requirements: +12 to 32 volts DC @38mA (all 4 interfaces)
Connectors: (4) 3-pin XLR female, Clear-Com line (4) 4-pin XLR male, 3-or 4-wire interface line
Dimensions: 19" x 1.75" x 6.8" (487mm x 44.8mm x 179.4mm)
Weight: 3.25 lbs (1.47kg)

Specifications subject to change without notice

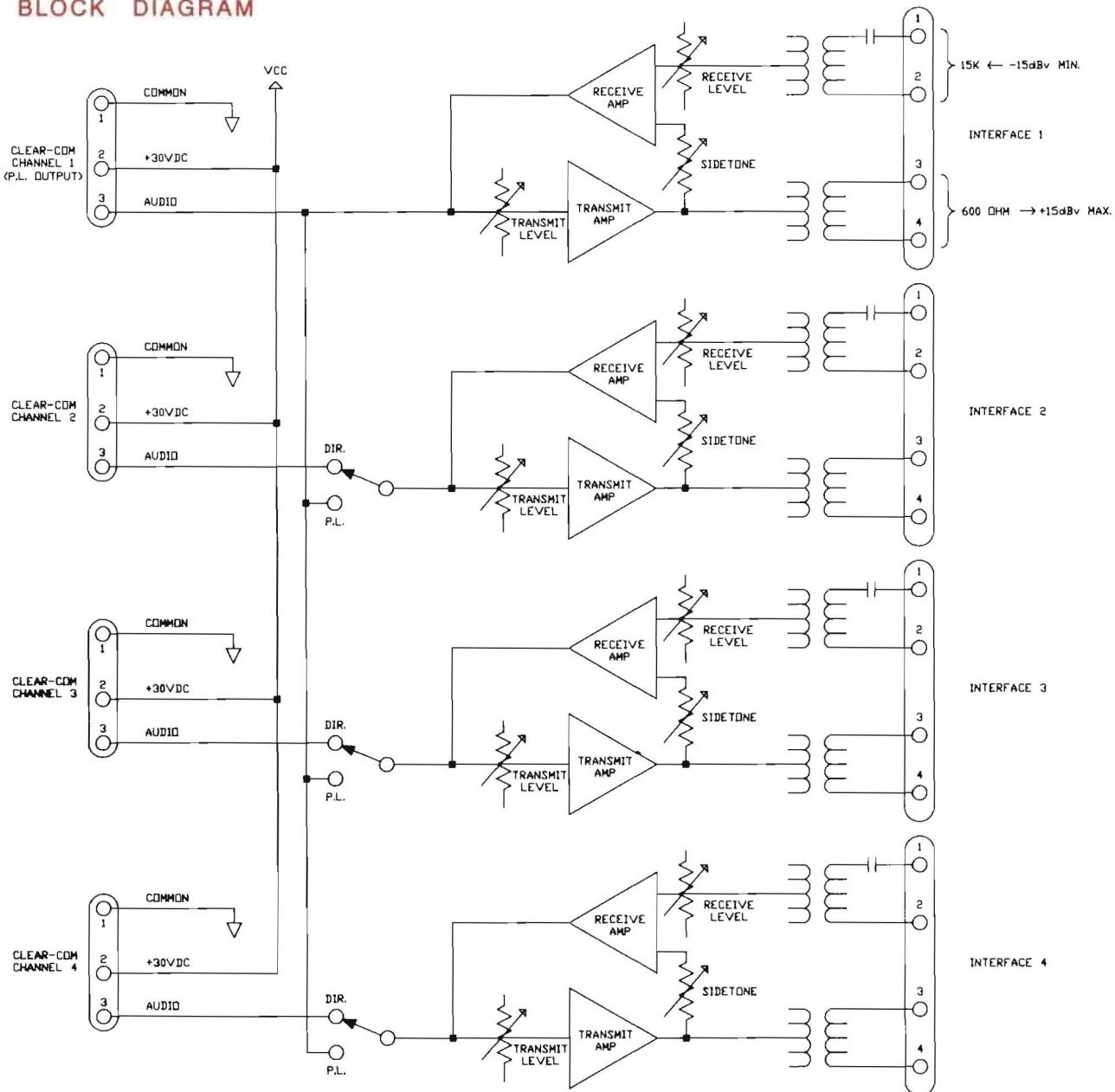
*0 dBv is referenced to 0.775 volts rms

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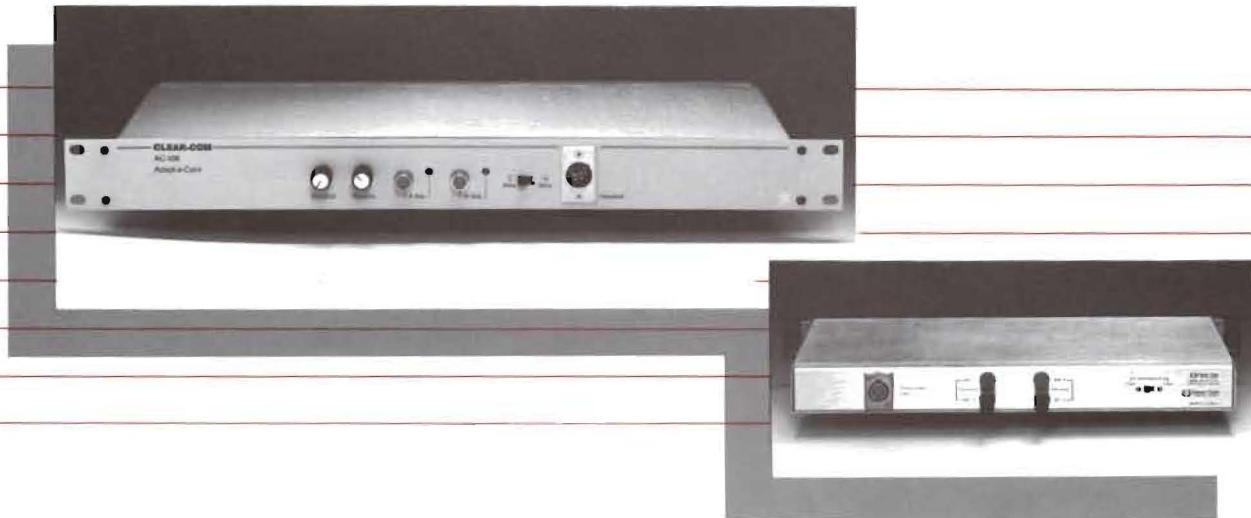
The interface shall be a solid state rack mount unit. It shall contain 4 separate interface modules. Each module shall be capable of interfacing a standard Clear-Com system to a 3- or 4-wire communications system. The interface shall connect with the 3 or 4 wire system with 4-pin XLR male connectors. It shall have a individual transmit and receive level control and sidetone balance adjustment for each module on the front panel. The modules shall connect to a standard Clear-Com system through 4 individual 3-pin XLR female connectors. The transmit and receive pair shall be transformer isolated. The modules shall be capable of being tied together into a single channel of Clear-Com with individual select switches. The switches shall be mounted on the rear of the station.

The transmit level from a standard Clear-Com line shall be +15dBv max. The impedance shall be 600Ω. The minimum receive input level required shall be -15dBv. The impedance shall be 15kΩ. The frequency response shall be 200Hz to 15kHz ±3dB. The THD shall be 0.5% or less. The power requirements shall be 12V to 32V at not more than 40 millamps. The dimensions shall be 19" x 1.75" x 7" (487mm x 44.8mm x 179.4mm). The weight shall not exceed 3.25 lbs. (1.47kg). The interface shall be called a Clear-Com IF4-4.

IF4-4 BLOCK DIAGRAM



SYSTEM INTERFACE



AC-10K/AC-10H ADAPT-A-COM

FEATURES

- Universal interface for 2-, 3-, & 4-wire systems
- Balancing circuits
- Headset test connector
- Transmit & Receive gain controls
- Transformer-isolated
- Uses minimal rack space
- Easy to interconnect
- Available with telephone holding coil (Model AC-10H)
- Powered by Clear-Com line

DESCRIPTION

The AC-10K "Adapt-A-Com" is a versatile, active hybrid interface that connects the Clear-Com System to a variety of other communications systems. These include two-wire, three-wire, and four-wire telephone systems, carbon systems, and other closed-circuit intercoms.

The AC-10K provides built-in test tones and balancing circuits for fast, convenient set-up. A front panel connector lets you plug in a standard Clear-Com headset for listening to test tones during set-up. The front panel also provides Transmit and Receive controls to adjust the level from Clear-Com to the other system; these controls allow for at least 10 dB of gain.

In the two-wire mode, the AC-10K works with standard telephone company systems or dedicated telephone line pairs. You can feed the telephone line directly through the AC-10K to the Clear-Com System. **Model AC-10H** is a version of the Adapt-A-Com that includes a holding coil. This allows you to dial or receive a telephone call and then hang up the receiver, keeping the party on-line for intercom purposes.

When operating in the two-wire mode, the AC-10K can be set up for high impedance (600 ohm TELCO) or low impedance (16 ohm; e.g. RCA or DAVEN) lines.

In the three-wire mode, the AC-10K looks like a carbon headset, and so can be wired into the headset jack of a television camera, camera control unit, or other carbon headset system.

In the four-wire mode, the AC-10K connects to all four-wire TV camera intercoms and other four-wire intercom systems.

Any Clear-Com Power Supply connected to two Adapt-A-Coms wired together effectively creates an "anything-to-anything" adaptor.

The AC-10K mounts in a standard 19" rack, using only 1.75" vertically. It is powered through the Clear-Com System with standard two-conductor mic cable. The rear panel provides 5-way binding posts for fast, positive connection to the interfaced system.



SPECIFICATIONS

Frequency Response: 150Hz-10kHz, $\pm 3\text{dB}$

Load to Clear-Com: High Impedance (bridging)

Interface Impedance: In normal 2-WIRE mode, external unit "sees" 1100 Ω across AC-10. In LOW-Z 2-WIRE mode, external unit "sees" 4 Ω . In 3/4-WIRE mode, transmit output impedance is 200 Ω , and receive input impedance is 500 Ω (actual)

Controls: A & B Balance (to reduce side tone and permit increased gain before feedback). A & B Test Switches (to inject test tone and switch monitor headset for balancing purposes)

Transmit Gain Control

Receive Gain Control

Mode Select Switch

Impedance Select Switch (for 2-wire systems only):

High Z, approx. 600 Ω . Low Z, approx. 16 Ω

Maximum Loop Gain: 10dB overall

Transmit Output: +8dBm maximum into 600 Ω (normal 2-wire mode)

125mV maximum into 4 Ω (Low-Z 2-wire mode)

+4dBm maximum into 600 Ω (3/4-wire mode)

Test Headset Output: Drives 300 Ω or higher-Z phones (4-pin XLR male connector)

Input & Output Connectors: Four 5-way binding posts for interface to other systems; one (3-pin XLR female connector) for interface to Clear-Com

Power Requirements: 18ma @ 28V from Clear-Com

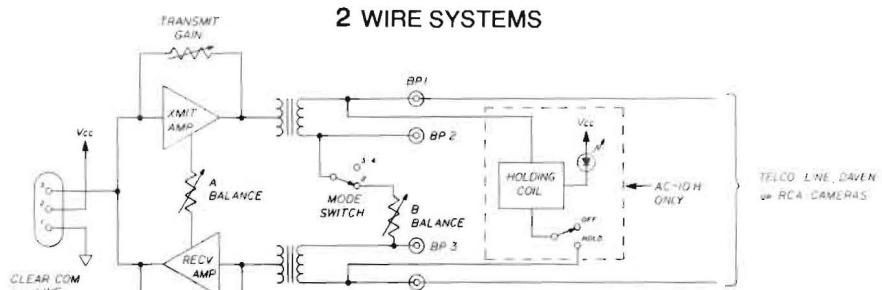
Dimensions & Weight: 1.75" H x 19" W x 6" D; 2lbs (4.5 x 19.1 x 15.2cm; 0.91kg)

Options: Telephone holding coil (AC-10H)

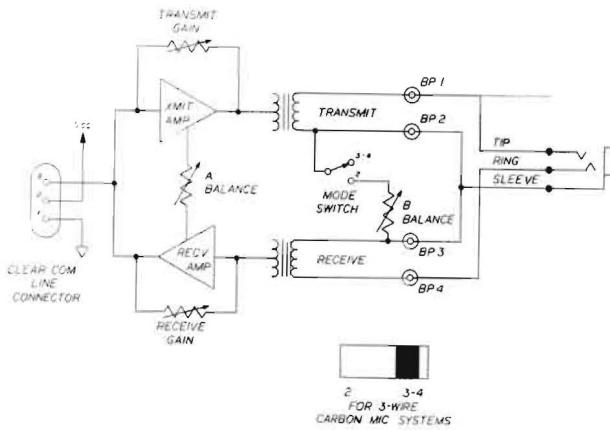
Specifications subject to change without notice

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2 WIRE SYSTEMS



AC-10K/H BLOCK DIAGRAMS



3 WIRE CARBON SYSTEMS

4 WIRE TELEPHONE/CAMERA SYSTEMS

