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 queuing system that support 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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Beltpacks

RS-501 Beltpack
Single-channel beltpack. Recessed volume control, mic on/off switch, signal button and indicator, sidetone adjust, 4-pin headset connector and belt clip. 3-pin intercom and loop-through connectors. Surface-mount adapter included.

RS-502 Beltpack
Two-channel, dual-listen, with monaural output. Programmable switching lets user listen to both channels simultaneously, and select which channel to talk on. Includes individual volume control for each channel, mic on/off, call signal button and indicators, sidetone adjust, 4-pin headset connector, 6-pin intercom connector.

RS-522 Beltpack
2-channel unit allows simultaneous listening and talking on two intercom channels. Headphone output operates in a “split-feed” stereo mode, feeding each channel into a separate ear of a double-muff headset. Includes individual volume control for each channel, mic on/off, call signal button and indicators, sidetone adjust, 6-pin headset and intercom connector.

RS-501/502-TW Beltpack
Identical to the RS-502 and RS-522, except uses a single mic cable for 2-channels of communications. 3-pin intercom and loop-through connectors. Requires TWC-10 Adapter to connect to Clear-Com system. Call signalling on channel B.

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

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: 3.5”H x 8.125”W x 10”D
(“6 x 206 x 254mm)

Weight: 5.2 lbs. (2.3 kg)

RK-101
2RU rackmount kit for CS-222.
KB-112 Speaker Station
Dimensions: 6.5" H x 8.6" W x 1.5" D (165 x 218 x 38 mm)
Weight: 1.6 lbs (0.73 kg)

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: 60 mA avg
Dimensions: 6.5" H x 8.6" W x 1.5" D (165 x 218 x 38 mm)
Weight: 1.6 lbs (0.73 kg)

MR-102A Headset Station
Dimensions: 4.5" (114 mm) square x 1.75" (44 mm) deep
Weight: 7.25 oz (0.21 kg)

MR-104A Headset Station
Identical to the MR-102A. Rotary switch allows selection of 4 intercom channels.
**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:** 2 amps  

**Dimensions:** 5.5"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)

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**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:** 11 lbs (5.0 kg)

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

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**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)
MS-SI2 Master Station
Rack mount microprocessor based master station with menu driven programming. The MS-SI2 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, adjustable button brightness, and the ability to program internal and external IFB and ISO, privacy, relays, "walkie-talkies" and much more.

The MS-SI2'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-SI2 is the LCD display screen. When programming the station, messages "prompt" the operator through the programming sequence, simplifying station setup.

The MS-SI2 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-SI2 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-SI2 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
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.

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).

PH-7 Noise Attenuating Headset
Double-muff, 200Ω version of DT-108.

Clear-Com

MX-S40 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 × 19"W × 2"D (89 × 483 × 51 mm)
Weight: 1 lb (0.45 kg)

MX-820 Matrix Switch
(Same as MS-840 except it has 20 switches)

MX-DC Power Adapter
Adapts an intercom system to use a 12-30 VDC battery power supply. Can also be used as an audio isolator.

WP-2 Intercom Outlet Wall Plate
Selective, 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.

VC-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 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 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 belt packs by the addition of receiver boards in the base station. Separate audio level controls for each "Receive" channel.

The WTR-2 wireless belt pack is a rugged, lightweight unit with momentary or latching mic switch and volume control. Two standard 9 V batteries will provide 8-10 hours of continuous belt pack operation.

**BASIC SPECIFICATIONS**
- **Operating Frequency:** 150-216 MHz
- **Frequency Stability:** ±0.005%, -20 to +60 degrees C
- **Transmission Modulation:** Direct FM
- **Audio Frequency Response:** 200 to 7,500 kHz (± 3 dB)
- **Range:** to 1,500 feet or more (line of sight)
- **Distortion:** <2%
- **Base Station:**
  - Dimensions: 11.75"H × 16.75"W × 10"D
  - Weight: 115 lbs (52.2 kg)
  - Power: 115-250 VAC
- **Belt Pack:**
  - Dimensions: 11.25"H × 16"W × 4.25"D
  - Weight: 5 lbs (2.25 kg)
- **Headset Connector:** 4-pin XLR

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

Consult factory for pricing and delivery.
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 carset.
Dimensions: 1.5" H x 1.5" W x 3.6" D
(38 x 38 x 91 mm)
Weight: 4.5 oz (0.28 kg)

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 10" W x 9" D
(44 x 254 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. ¼" 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 x 98 x 35 mm)
Weight: 11 oz (0.31 kg)
**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

**Weight:** 4.7 lbs. (2.1 kg)

**RK-101**

2RU rackmount kit for PS-22.

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**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

**Weight:** 7.8 lbs. (4.0 kg)

**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

**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.

**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.
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 were 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.

Frequency Response: 100-12 kHz ± 2.5 dB
Power Output: 18 watts to speaker system
Dimensions: 17"H x 19"W x 9"D
(44 x 483 x 50-mm)
Power Supply: 115/230 VAC, 18 W
Weight: 9 lbs (5.85 kg)

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

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)
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.

Stations
Four different intercom stations, plus expansion panels, are available for this system. Non-Display stations and expansion panels are programmable from Display Station or computer.

ICS-2000 Display Station
This unique 12-key intercom station is the most powerful component of Matrix-Plus and provides unprecedented audio quality and flexibility. 8-line x 80-character backlit LCD display shows all functions, key assignments and operations. Programming keypad conceals built-in speaker and allows programming of station or entire system. Direct telephone dialing, Call signalling with AnswerBack. Easily assignable talk and listen keys. Programmable relays and much more.

ICS-1500 Station
A 24-key, non-display, nonprogramming station. Other features are similar to ICS-2000, plus user-definable key ID strip.

ICS-60 & ICS-100 Stations
6-key and 10-key stations. Compact (1 RU), low-cost, similar to ICS 1500 in processing power and noise-free digital operation.

XP-10/XP-20 Expansion Panels
Increases capacity of Matrix-Plus stations by adding up to 50 talk/listen keys.
## General System Specifications

### Intercom Line
- **Line Impedance:** 2000ohms
- **Line Level:** -14dB +5dB max
- **Line Type:** 22 gauge, 2 conductor shielded mic cable
- **Line Impedance:** 30pF/ft
- **Line Length:** Up to 5000 ft to meet published specs 20,000 ft usable
- **Dynamic Range:** 75 dB

### Signalling
- **Call Signal Send:** +11VDC
- **Call Signal Receive:** +4VDC
- **Amplifier Design:** Solid state IC amplifiers, current-limited and short-circuit protected

### System Specs
- **Signal-to-Noise:** -75 dB
- **Station Bridging Impedance:** >15k ohm
- **Channel Separation:** >50 dB up to 1000 ft
- **EMI & RFI Rejection:** >60 dB
- **Sidetone Adjustment:** >30 dB

### Mic Preamp
- **Headset Mic Impedance:** 2000ohms
- **Mic Gain:** 41dB
- **Frequency Response:** 200-12 kHz

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

### Program Input
- **Balanced Line Level:** 0dB nominal
- **Balanced Mic Level:** -60 dB nominal
- **Stage Announce:** Balanced line level 0dB nominal

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

### Power Supplies (115/220V mains, selectable)
- **Output Voltage:** 30VDC regulated, circuit breaker protected
- **Hum and Noise:** < 2 mV RMS

*Prices and specifications are subject to change without notice.*
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

KB-111A SPEAKER STATION
2-channel select speaker station, uses hands-free or push-to-talk mic. Mount in 6" x 8" electrical box or portable enclosure. Applications include: theatre/security. 263.00

POWER SUPPLIES

PS-452 2-CHANNEL POWER SUPPLY
2-channel, regulated, with short circuit & overload monitoring. Supports up to 100 stations. For all large permanent installations. 502.00

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

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.

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-canceling, ideal for TV camera operators. 86.00

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

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-lead earphones. Broadcast-quality mic. High noise-canceling, very comfortable. Applications include: sports casting. 220.00

PH-7 HEADSET
Double-muff, high-fidelity noise-canceling mic—our most sound attenuating model. 225.00

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

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

ACCESSORIES

MX-820/MX-840 MATRIX SWITCH
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. MX-820 475.00 MX-840 625.00

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
- RMX-1 remote microphones 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

Short Form Catalog - July 1987
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
- Selectable talk/listen/program functions; Stage Announce. Applications include: fixed installations; video/theatre directors.

**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 patching 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, lighting design. Replaces 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.

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 Master Station.

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 talent's 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.

MA-4 TALENT ACCESS MASTER CONTROL STATION 615.00
This unit provides individual access to four talent channels and "A 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.
All functions selectable. Applications include dressing room/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.

SYSTEM INTERFACES

AC-10H INTERFACE 616.00
Universal interface to two-wire cameras and telephone lines; has holding coil and built-in decoders for balancing.

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.

Tw-12 INTERFACE 532.00
Interface to RT5 type systems or allows up to 12 RTS-type bellpacks to work in Clear-Cam System. 1½" rack-mount.

PA-10 SPEAKER STATION 250.00
Portable or wall-mount. Regulated. Selectable one- or two-channel. Supports up to 60 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-Cam intercom station. Multiple ICP-4 s can be linked together to select larger numbers of ISO stations.

ISO-4000 ISO CENTER 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.

IKM-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 IKM-4 modules can be installed in the ISO-4000 to provide the maximum system capacity of sixteen ISO stations.

ITM-1 ISO TRANSFER MODULE
This is a factory modification for 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.

MINICOM

SM-1 HEADSET 215.00
Single-muff headset station with in-line, two-channel intercom electronics (no headphones). Applications include police 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.

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/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 CENTER 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.

ORDERING AND PRICING NOTES:
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.

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.
**DYNAMIC HEADSETS**

**CC·26 HEADSET**

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

**CC·35 HEADSET**

- Our lightweight, low-cost headset. Field-serviceable, noise-cancelling. Ideal for TV camera operators.
- Price: $86.00

**CC·55 HEADSET**

- Double-muff version of CC·35.
- Price: $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.
- Price: $130.00

**CC·240B HEADSET**

- Double-muff version of CC·75B.
- Price: $150.00

**DT·108 HEADSET**

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

**DT·109 HEADSET**

- Double-muff version of DT·108.
- Price: $236.00

**DT·109/6 HEADSET**

- Price: $248.00

**PH·7 HEADSET**

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

**HS·6 HANDSET**

- Telephone-style handset with push-to-talk switch.
- Price: $78.00

**PT·4 MIC**

- Rugged push-to-talk mic.
- Price: $48.00

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**ACCESSORIES**

**MX-820/MX-840 MATRIX SWITCH**

- 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.
- Prices: $475.00 / $625.00

**WP·2 WALL PLATE**

- Selectable 2-channel wall plate for connection to portable single-channel stations. Ideal for large facilities/permanent installations.
- Price: $39.00

**QP·100A LINE SPLITTER**

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

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**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.
- BP-10 battery pack with batteries.
- RMK-1 remote microphone kill control unit.
- BA-1 battery adapter/audio isolator.
- 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 fuchel connectors installed.

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Short Form Catalog - April 1988
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 200-750 Hz "comanderized" 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 (fT) and receives from the beltpacks on different individual “Receive” frequencies (fR1-fR6). 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.
SPE CFIC ATI ONS

WI RELESS 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: v 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 mV)
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: 3.6" W x 5.2" H x 1.5" D (9.2 cm x 13.3 cm x 3.8 cm)
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 -50 dBc
Freq. Deviation: +/-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, 2060 Hz or external 11 to 20 VDC
Current Drain: AC - 25-35mA maximum
DC - 1.0A maximum, 600mA typical
Dimensions: 19.75" W (19" with ears) x 3.5" H x 10" D (42.5 cm x 8.9 cm x 25.4 cm)
Weight: 11.5 lbs max (5.2 kg)
Construction: aircraft alloy aluminum
STATION "ISO" SYSTEM

FEATURES
- microprocessor-controlled
- full system "tally" indication
- user-selectable priority levels
- minimal control wiring — regardless of system size
- modular and easily exandable: 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.
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 150-4000 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.
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-programmed 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 cross-talk 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
- Conventional: 680B between ISO bus and normal intercom
- ISOB between individual ISO channels

**ISO-400 CENTRAL ELECTRONICS**
- Microprocessor
- Power Supply (100% isolated from intercom system)
- Supply power for internal relays, tally lamps (six control modules maximum), and ISM-630 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**
- LED test indicators (relay test and data bus)
- 8-position DIP switch bank for priority function and modes
- Two (2) LED test indicators (relay test and data bus)
- Four (4) electronically locking/momentary pushbuttons with integral incandescent lamps and user-legible caps.

**CONNECTORS**
- ISO Input: J-pin male XLR (up to 24)
- ISO Outputs: J-pin male XLR (paralleled)
- Control Module Output: two (2) six-pin connectors
- Party Line Input: one 8-pin female XLR
- External Assignment Matrix: 30-pin connector

**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 (ISO-4):**
- 178 x 127 x 44 (47 x 5 x 114 mm)
- 6.75 lb. (3.1 Kg)

**DIMENSIONS (ICP-4):**
- 5/8 x 1.75 x 2.75 (127 x 44 x 70 mm)
- 1.75 lb. (0.8 Kg)

**WEIGHT:**
- 1.44 lb. (0.65 Kg)
Ordering Configuration

**MODEL 1/: 150-4000-3 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 DM-40 expansion card for each additional group of four ISO Stations (four cards maximum).

**MODEL 1/: 150-4000-6 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 x six (6) control locations—order one DM-46 expansion card for each additional group of four ISO Stations (four cards maximum).

**MODEL 1/: 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.

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**SYSTEM BLOCK DIAGRAM**

**ISO INTERCONNECT DIAGRAM**

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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 MONOaural OUTPUT**

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

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**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-shutdown 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.

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**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-reed" 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 5x10^5 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 belt packs can accommodate either a dynamic or an electret microphone, simply by setting an externally accessible switch. An optional ¼” 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 belt clip 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 belt clip is also designed to snap into the provided Surface Mounting Adapter. This adapter enables the belt pack 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 belt packs, either at a portable belt pack 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 belt packs.

“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 intercom 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


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 (max) +20dB before clipping (drives standard CC headphones)
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 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
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 (average talk/25 mA signalling)
DC Voltage Range: 12-32 Volts (12 volts nominal)

DIMENSIONS:
RS-501 3.25"h x 3.875"w x 1.5"d
RS-502 3.125"h x 3.875"w x 1.5"d
RS-522 3.125"h x 3.875"w x 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 MONOURAL 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 belt packs, 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, 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 belt packs use elastomeric switches, with a life of more than 5x10^5 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 belt pack 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.

### 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 belt pack 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.

<table>
<thead>
<tr>
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</tr>
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<tbody>
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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 pushbuttons 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.

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 16 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


MICROPHONE PRE-AMP:

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: +23dB. Frequency Response: 100 Hz - 18kHz +/2dB.

CONNECTORS:

ENVIRONMENTAL:

GENERAL:

DIMENSIONS:
RS-501 = 3 25/8 h x 3 67/8 w x 1 5/8 d. RS-502 = 4 1/2 h x 3 87/8 w x 1 5/8 d. RS-522 = 4 1/2 h x 3 87/8 w x 1 5/8 d.

WEIGHT:

0 dBv is referenced to 0.775 volts RMS.

1111 17th St • 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. Selectable talk/listen/program functions; Stage Announce. 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. 1599.00

### 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-field” 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.

**SP-4 SPEAKER MODULE**
This double space module provides an internal loudspeaker, eliminating the need to use an external speaker.

**BP-4 BLANK PANEL**
This single space panel is required to fill any spaces not occupied by an operational DLC module.

**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.

**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.

**I50-4 ISO CONTROL MODULE**
This four button control module, electrically equivalent to the ICP-4, designed for installation in a MS-808 Main Station.

**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 talent's 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.

**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.

**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.

**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.

**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.

**IFB-4 PROGRAM INTERRUPT MODULE**
This unit is the equivalent of the AX-4, designed for mounting in the MS-808 Master Station.
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

![PK-3 Power Supply Image](https://example.com/pk3-power-supply-image)

**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

![MINICOM® Headset Stations Image](https://example.com/minicom-headset-stations-image)

**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 amplifier, current-limited with reverse polarity and short-circuit protection.
- **Signal-to-Noise Ratio**: 65dB
- **Microphone Input**: 2000 kHz
- **Dynamic Distortion**: 0.3\% THD @ 1 kHz
- **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**: 20-12k Hz
- **Input Impedance**: 400kΩ
- **Pressure Level**: 110dB SPL maximum
- **Sound Pressure Level**: 110dB
- **Signal-to-Noise Ratio**: 65dB
- **Control & Connector**: Mic on/off switch and headphone volume control; cable terminates in female XLR 3-pin connector
- **Power Requirements**: 6mA quiescent, 10 mA average talk; voltage range 12-32 VDC
- **Power Consumption**: 15 VA
- **Output Voltage**: +24 VDC regulated. Short circuit protection.
- **Cable Length**: 6' (from AC/DC box to splitter)
- **Length**: 1.5 lbs. (.66kg)

**PK-3 Power Supply**
- **Output Voltage**: +24 VDC regulated. Short circuit protection.
- **Output Current**: 15 A
- **Power Requirements**: 105-130 VAC, 60 Hz or 220-230 VAC, 50 Hz
- **Output Connectors**: (3) male, 3-pin XLR type
- **Dimensions**: Line splitter, 3.5" (89mm) L x 1" (25mm) W x 1.5" (38mm) D

### Arch/Eng Specs

The intercom system shall be comprised of noise-attenuating single-muff and/or double-muff headsets each having a boom-mounted, noise-cancelling 2000 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 mid level of 110dB SPL. The system shall operate using standard 2-conductor shielded microphone cable for interconnections of up to 5280 feet. The microphone preamplifier shall have a frequency response contoured to enhance voice intelligibility, such that headphone response is -12dB from 200 Hz to 10 kHz. The signal-to-noise ratio shall be at least 70dB.

The intercom system shall operate into a 20000 common audio line at an average level of -15dB. 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 30 VDC and shall draw an average of 15 milliamperes per headset. The power pack shall be a MINICOM Model PE-3, the double-muff headset shall be a MINICOM Model SM-1; the single-muff headset shall be a MINICOM Model SM-1.

### Arch/Eng Specs Diagram

[Diagram showing intercom system connections and components]

**Arch/Eng Specs Diagram**

The diagram illustrates the connections and components of the intercom system, showing how the cables and devices are interconnected to ensure clear communication. It includes components such as microphone preamplifiers, volume controls, and power supplies, emphasizing the system's ability to handle high-quality audio transmission in various settings.

**MINICOM & CLEAR-COM Together**

[Diagram showing collaboration between MINICOM and CLEAR-COM]
HEADSETS & ACCESSORIES

HEADSETS, HANDSET, MICS & ACCESSORIES

Clear-Com Intercom Systems

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.
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. Its 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 broadcast 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.

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. Supplied with a mounting bracket, the PT-4 is rugged, compact, easy to handle, and an ideal accessory for any Clear-Com Speaker Station.

ACCESSORIES

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).

ACCESSORIES

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.

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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

<table>
<thead>
<tr>
<th>EARPHONES</th>
<th>CC-35</th>
<th>CC-75B/240B</th>
<th>DT-109/6</th>
<th>PH-7</th>
</tr>
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<tbody>
<tr>
<td>Type</td>
<td>dynamic</td>
<td>dynamic</td>
<td>dynamic</td>
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<tr>
<td>Impedance</td>
<td>CC-35: 600Ω</td>
<td>CC-75B: 600Ω</td>
<td>CC-240B: 2 x 600Ω</td>
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<td>40 - 12 kHz</td>
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<td>Noise Cancellation</td>
<td>-10 dB (0 kHz)*</td>
<td>-10 dB</td>
<td>30 dB*</td>
<td>15 dB*</td>
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<td>Mix On/Off Switch</td>
<td>CC-35 only</td>
<td>(in boom)</td>
<td>No</td>
<td>No</td>
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<tr>
<td>CONNECTORS</td>
<td>Type</td>
<td>4-pin XLR</td>
<td>4-pin XLR</td>
<td>4-pin XLR</td>
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<tr>
<td>WEIGHT</td>
<td>CC-35: 9.25 oz (262g)</td>
<td>CC-75B: 16 oz (454g)</td>
<td>CC-240B: 24 oz (680g)</td>
<td>25 oz (709g)</td>
</tr>
</tbody>
</table>

*feet-to-lock
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 let 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-15kHz ±2dB
- Distortion: <1% THD at 1kHz
- Signal-to-Noise Ratio: Better than 85dB
- Talent Output Level: -12dBv (nom)

**PIC-4 SPECIFICATIONS**
- Program Amplifiers (2)
  - Input: 5k Ohm balanced +10dB single-ended, line level
  - Input Level -15dBB (nominal) +10dBV max before clipping
  - Frequency Response: 100Hz-18kHz
  - Gain: 0dB

**Talent Outputs (8)**
- Type: Internally terminated, self-ohms (no listener)
- Format: Rack mountable program and cueing
- Four (4) have non-interruptible program and cueing.

**CONTROL**
- Program gain adjust (2), Program source select (1), Dip depth (1)

**CONNECTORS**
- Program Input: (2) 5-pin XLR female
- Intercom Input: (4) 5-pin XLR female
- Talent Output: (4) 5-pin XLR male (or 6-pin for split feed)
- DLC Input: 30-pin Tuchat, male
- Extension: 26-pin "O" connector, male

**POWER REQUIREMENTS**
- 20-30Vdc at 30mA max

**DIMENSIONS**
- 19" W x 1.75" H x 6.6" D
- 483mm W x 45mm H x 168mm D

**WEIGHT**
- 3.56 lbs (1.62kg)

**TR-4D TALENT RECEIVER SPECIFICATIONS**
- Earphone Type: Dynamic
- Earphone Impedance: 350 or greater
- Max. Output Level: +20dBm
- Power Required: 1mA consumption at 24VDC supplied by Clear-Com line

**DLC Input:** 30-pin Tuchat, male
- (at end of 6' cord)

**Power Requirements:**
- 4.5 oz (0.28kg)

Specifications subject to change without notice

*0dBv is referenced to 0.775 volts rms*
TW-12 UNIVERSAL TWO-WIRE INTERFACE

FEATURES
- 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

DESCRIPTION
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, use 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, +6dBv max before clipping

*Impedance:* 2000Ω AC termination, 5000ΩOC

**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:* 200-1000Hz (+3dB)

**SIGNALLING, TW SIDE**

*Frequency:* 20.000Hz

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

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

**SIGNALLING, CLEAR-COM SIDE**

440Hz maximum receive, 1144Hz minimum send

**POWER REQUIREMENTS:** 12-32vdc, 50 mA quiescent plus current for TW selection

**TW POWER CAPACITY:** 500 ma maximum (6-12 stations)

**DIMENSIONS:** 1.75"H x 19"W x 6"D

44mmH x 483mm W x 152mmD

Specifications subject to change without notice

*0 dBv is referenced to 0.775 volts rms.*

---

**TW-12 BLOCK DIAGRAM**

- Common
- +30VDC
- Audio
  - TRANSMIT AMP
  - CLEAR-COM CHANNEL A
  - TRANSLATOR
  - CALL SIGNAL TERMINATION
  - AUDIO TERMINATION
- Common
- +30VDC
- Audio
  - TRANSMIT AMP
  - CLEAR-COM CHANNEL B
  - TRANSLATOR
  - CALL SIGNAL TERMINATION
  - AUDIO TERMINATION

1111 17th St • San Francisco, CA 94107 • 415/661-6666
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, ±3dB
Load to Clear-Com: High Impedance (bridging)
Interface Impedance: In normal 2-WIRE mode, external unit "sees" 1100 across AC-10. In LOW-Z 2-WIRE mode, transmit output impedance is 200Q, receiver input impedance is 5000 ohms.
Controls: A & B Balance (to reduce side tone and permit increased gain before feedback)  
A & B Test Switch (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. 6000. Low Z, approx. 150
Maximum Loop Gain: 10dB overall
Transmit Output: +6dBm maximum into 600Q (normal 2-WIRE mode) 
+4dBm maximum into 600Q (3-WIRE mode)
Receive Headset Output: Drives 300-Q or higher-Z phones (5-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: 1.79" x 13" x 6"; 3lbs (4.5 x 33 x 15.2cm; 1.36kg)
Options: Telephone holding coil (AC-10H)
Specifications subject to change without notice *0 dBv is referenced to 0.775 volts rms.

AC-10K/H BLOCK DIAGRAMS

2 WIRE SYSTEMS

3 WIRE CARBON SYSTEMS

4 WIRE TELEPHONE/CAMERA SYSTEMS

Clear-Com Intercom Systems, Inc. 
1111 17th Street, San Francisco, CA 94107 
Phone: 415-861-6666
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 Q
Receive Level: Adjustable, -15 to +20 dBv
Receive Impedance: 10-15k Q
Frequency Response: 200-15kHz ±6dB down
Minimum Sidetone Null: 30dB
Distortion: 0.5% THD

Clear Com Line Level: 0dBv min. (dBv max. 3dB)
Line Impedance: 15k Q

Power Requirements: 12 to 30 volts DC @38mA

Dimensions: 19" x 1.75" x 6.8"
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 pairs shall be transformer isolated. The modules shall be capable of connecting each Clear-Com channel 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 500 Q. The minimum receive input level required shall be -15dBv. The impedance shall be 15k Q. The frequency response shall be 200Hz to 15kHz ±3dB. The power requirements shall be 12V to 32V at not more than 40 milliamps. The dimensions shall be 19" x 1.75" x 6.8" (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

1111 17th St • San Francisco, CA 94107 • 415/661-6666
**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.

**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 ClearCom 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 is built-in push-button 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 ClearCom 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.)

- **Pin 1:** Input from ClearCom 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

- **Pin 2:** 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.

**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 ClearCom for further information.

---

**FIG. 1: RMK System Block Diagram**

**FIG. 2: External Pushbutton Wiring (Optional)**

**FIG. 3A: Correct Connections**

**FIG. 3B: Incorrect Connections**
**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 trimpots, 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.

**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 trimpots 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 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 SI 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 holder. 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 turned on. When the gooseneck mic, an adjustable length gooseneck is in the momentary ON position.

SPECSIFICATIONS

AMPLIFIER DESIGN: E-amplifiers including solid state switching and signalling circuits. Current feedback and short circuit protection.

MICROPHONE PRE-AMP:
Input: 200Q nominal, dynamic type
Input Level: -55dB nominal; -60dB max.*
Frequency Response: 250Hz-12kHz, centered for intelligibility
Line Impedance: 480Q
Gain Adjust: 56dB
Gain to Intercom Line: +37dB

HEADPHONE AMPLIFIER:
Load Impedance: 20-20000
Output Level: 100mV across 800Q
Distortion: <0.3% THD at 1kHz
Frequency Response: 15Hz-18kHz
Gain from Intercom Line: +37dB

SPEAKER AMPLIFIER:
Load Impedance: 8-50Q
Output Level: 240mV into 8Q
Distortion: <0.3% THD at 1kHz
Frequency Response: 15Hz-1kHz
Gain from Intercom Line: +41dB

AUXTILIAR (PROGRAM) AMPLIFIER:
Gain to Intercom Line: +45dB (mic); -5dB (line) switchable
Input Impedance: 600Q mic; 30Q line (both balanced)
Nominal Input Level: -56dBv; -50dBv (line, both balanced)
Frequency Response: 150Hz-18kHz
Gain to Headset/Speaker: +6dB

CONNECTORS:
Headset: Two 4-pin male XLR
Interconnect Lines: Four 3-pin male XLR, four 3-pin female XLR
Program Input: 3-pin female XLR
SI A Output: 3-pin male XLR

DC POWER REQUIREMENTS: 12-30VDC, 100mA max.

DIMENSIONS: 19" x 3.5" x 9" (483mm x 89mm x 229mm)
WEIGHT: 8.3 lbs (3.8kg)

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 #9774).
System Level: +15dBv nominal, 0dBv max.*

STATION OPERATION:
Channel Announce: Illuminated locking pushbutton monitor switches: (4) individually programmable for three-signal functions or simultaneous call signals; momentary function on off toggles switches (4) for talk function.
Channel Separation:
Minimum level output on rear panel switch.
Output: 1500ft (450m).
Gain: 0dBv nominal, 0dBv max.*

STATION SENSITIVITY:
Input: Mic: -60dBv
Line: -5dBv
Gain: 0dB
Minimum Output: 12VDC
Headset: 4VDC

STATION SIGNALS:
Visual Signal Send: Call button sends signal only on intercom select switch engaged.
Headset Tone: Minimum bridging: 1500Hz.

SPECS SUBJECT TO CHANGE WITHOUT NOTICE

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 channels. The talk functions 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 station shall have a mic signal to all channels simultaneously without combining the channels into a line-level output. 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 channel. A front panel control shall adjust this program level. The station shall have an auxiliary input which routes the station's mic signal to all four balanced, line-level output channels. 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 volume level output on the rear panel. The station shall have four illuminated talk masks for each channel, whether or not any channels are currently accessed. The station shall have a mic on/off switch on the front panel. The station's intercom frequency response shall be flat to ±1 dB from 20Hz to 18kHz. The station shall be capable of driving the line of any channel in a line level of ±10dBv. The station shall be capable of operating a headset with an impedance of 300 to 20000 and shall be capable of delivering an output level of 15dBv at 800Q. The distortion shall be no greater than 0.3%. The station shall have a switchable talk preset. The station's front panel shall have a switchable talk preset. The station shall be no greater than 19" x 3.5" x 9" (483mm x 89mm x 229mm). It shall weigh no more than 6.3 lbs. (2.9 kg). It shall have all necessary add-on and connecting accessories for compatible operation with Clear-Com products, and shall be called an RM-400A.
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.
SPECSIFICATIONS

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: 200-12kHz with contoured response to enhance voice intelligibility.
Mic Input: 1000
Mic Preamp Gain: 21dB
Max Input Before Clipping: -24dB

HEADPHONE AMPLIFIER
Frequency Response: 150-18kHz ±2dB
Load Impedance Range: 200-2000Ω
Output Level: +20dB, 26 volts p-p @600Ω
Headset Level: +12dB, 20% 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: -15dBv nominal, 1000Ω max.
Side Tone Adjustment: 25mA null to full on
Signalling Voltage: 11 volts DC on audio line
Call Light Sensitivity: 4 volts
Signal-to-Noise: 75dB
Equivalent Input Noise: -116dB
Station Bridging Impedance: >15 kΩ (100-1kHz)
Voltage Range: 12-32 volts, 28 volt nominal
Power Requirements: 10 mA quiescent, 15 mA talk, 55 mA signalling
Dimension: 4.6” (114mm) square, 1.75” (44mm) deep
Weight: 25 oz (916g)

Specifications subject to change without notice
*4 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 incorporate a combination Mic On/Off and "Call" switch on the front panel. An amber lamp for indicating call signals also shall be provided. The station shall include a four-pin male XLR type connector for use with a dynamic headset. It shall provide current-limited and short-circuit protected signals and power to be brought to the intercom station. The station's electronics shall consist of a mic preamplifier, headset amplifier, and signalling circuitry. 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 150Hz to 12kHz. The mic preamplifier shall accept a dynamic mic of nominal 2000Ω impedance at a -55dBv level. The headset amplifier's frequency response shall be 150Hz to 18kHz, ±0.2%. The microphone前置放大器和扬声器放大器的频率响应应当是150Hz至12kHz，±0.2%。扬声器放大器的频率响应应当是150Hz至18kHz，±0.2%。
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.

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

Actuated 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 resets 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-canceling electret microphone on an adjustable length goose neck 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 signaling circuits. Current limited and short circuit protected.

MICROPHONE PRE-AMP:
Input: 3000 nominal, dynamic type
Input Level: 1.5V RMS unbalanced, -16dBV max.

ARCH/ENG SPECS

The intercom unit shall be a rack mount 4-channel main station, with an integral 12 input x 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 present, and termination switches for each channel shall be accessible from the front panel, located behind a removable cover plate. When selecting any two or more channels the operator shall be able to communicate with them simultaneously without confusing 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 front panel switch. This signal shall be assignable to any intercom channel. The signal's level is input to the headsegear. The station shall accept a balanced auxiliary input 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 for existing illuminations 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-O and matrix locations 1-12. The electronics shall be field-serviceable and replaceable. The station shall accept a balanced auxiliary input signal of mic or line level. The signal shall be capable of driving the line of any channel to a maximum level of 0dBm at 2500-0A. The headseg ear amplifier shall have a frequency response of 150Hz-18kHz.

sb-412a block diagram
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.

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.

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.

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.
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
This 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 designed to meet the needs of users for many 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 goose neck microphone is available as a factory installed option. It is installed in the upper headsets. To help prevent acoustic feedback, in units with a goose neck microphone, an automatic dipper circuit lowers the speaker output approximately 6dB when any Talk toggle switches are activated.

SPEECIFICATIONS

**AMPLIFIER DESIGN:** IC amplifiers including solid state switching and generation circuitry. Current limited and short circuit protected.

**MICROPHONE PRE-AMP:**
- **Input:** DC nominal, dynamic type
- **Input Level:** -510dBm minimum, -36dBV maximum.
- **Frequency Response:** 25Hz-12kHz, centered for intelligibility.
- **Limiter Range:** 24dB
- **Gain Adj: +/- 0dB
- **Headphone Level:** +16dB

**HEADPHONE AMPLIFIER:**
- **Load Impedance:** 50-2000Ω
- **Output:** 1/2 watt into 8Ω
- **Distortion:** <3% THD at 1W peak.

**SPEAKER AMPLIFIER:**
- **Load Impedance:** 8Ω
- **Output Level:** 4 watts into 8Ω
- **Distortion:** <1% THD at 1W peak.
- **Frequency Response:** 200 Hz-15k Hz ±3dB
- **Gain from Line input:** +14dB

**ARCH/ENG SPECS**

**ARCHITECT/ENGINEER:**

1111 17th St • San Francisco, CA 94107 • 415/861-6666
DESCRIPTION
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 "SA" activates the output, giving the operator access to an external speaker/amp system.

SIGNALLING
Visual Signalling attracts the attention of operators who have removed their headsets or turned off their speakers. The CS-210 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

CS-210 TWO-CHANNEL MAIN STATION

FEATURES
- 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

Clear-Com Intercom Systems
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.

ARCH/ENG SPECS

Specifications subject to change without notice.

CS-210 BLOCK DIAGRAM

DIMENSIONS: Height x Width x Depth (front to back)
8.11" x 11.18" x 11.18" (206 x 289 x 289 mm)

WEIGHT: 8.5 lbs (3.8 kg)

ENVIRONMENTAL OPERATING TEMPERATURE RANGE: 32°F to 122°F (0°C to 50°C)

Specifications subject to change without notice. 0 dB refers to 0.775 volts rms.
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**

**POWER SUPPLY:**
- Output Voltage: 30 VDC
- Circuit Breaker Rating: 3.0 amp hold
- Output Current: 1 amp (total)
- Load Regulation: 500 mV or less at 2 amp
- Line Regulation: 0.1 volt from 105-125 VAC input voltage
- Ripple: 0.1% or less

**Program Amplifiers:**
- Transformation Balanced Differential Input
- Frequency Response: 10-18kHz (+/-2dB)
- Input Impedance: 47kΩ (balanced)
- Input Level: 12dB for maximum output
- Hum and ripple factor: less than 0.2mV RMS

**SYSTEM SPECIFICATIONS:**
- Impedance: 2000 ohm (switchable)
- Level: -10dB for maximum output
- Power Supply: 2000 watts maximum
- Power Supply: 2000 watts maximum
- Power Supply: 2000 watts maximum

**ENVIRONMENTAL:**
- Temperature range: 0-50°C (32-122°F)
- Relative Humidity: 20-80%

**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

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**ARCH/ENG SPECS**

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, short-circuit protection with an LED indicator, and over-voltage protection. It shall have a circuit breaker that resets the power supply to normal operation. The unit shall have 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 power supply shall be assigned to Channel A or B, depending on which input is used and the setting of the front panel combine switch. The power supply shall have six 5-pin XLR-type male connectors on the rear panel for Channel A and B outputs. The power supply shall have two 6-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 (+/-2dB), and an input impedance of 47kΩ (balanced or unbalanced) with a level of 2dB for maximum output. The power supply shall terminate the intercom system with an impedance of 2000 ohms 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, 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.

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**PS-452 BLOCK DIAGRAM**

![Diagram of PS-452 block diagram]
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 on-line 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 PREAMP/AMPLIFIER**

- Frequency Response: 20Hz-12kHz with contoured response to enhance speech intelligibility
- Mic Input: 2000
- Mic Preamp Gain: 37dB

**HEADSET/SPEAKER AMPLIFIER**

- Frequency Response: 200Hz-20kHz (220kHz 3-dB down)
- Output Level: +10dB SPL with standard Clear-Com dynamic headsets/handsets
- Headset Level: +10dB SPL with standard Clear-Com dynamic headsets/handsets
- Speaker Level: +10dB SPL at 1 foot
- Speaker Type: 16Ω 3" x 1.5" oval
- Speaker Level: +98dB SPL at 3 feet
- Output Level: +2dB SPL with standard Clear-Com dynamic headsets/handsets
- Headset Amp Gain: 37dB

**GENERAL SPECS**

- Line Level: 500mV max. -15dBm nominal
- Lion Level: 500mV null to full on
- Signal Voltage: 1V DC on audio line
- Call Light Sensitivity: 4 volts
- Signal-to-Noise: 65dB
- Equivalent Input Noise: <118dB
- Station Bridging Impedance: >15kΩ (200Hz-10kHz)
- Voltage Range: 12.5-33 volts, 28V nominal
- Power Required: 25mA dynamic, 6mA talk, 4mA signalling, 20mA short circuit, 4.8mA (5" deep)
- 480mA x 440mA x 165mm

**CONNECTORS**

- Dynamic: Headset: Use (1) male 4-pin XLR
- Carbon: Headset: 1/4" phone jack (ring/grip/sleeve)
- Line: Two (2) male, two (2) female, 3-pin XLR balanced line-level program signal that is fed to the speaker and headset. The headset and speaker shall provide 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 in one or two dynamic mics, each of nominal 300-2000 impedance at a -55dBv level. The signal-to-noise ratio shall be a minimum of 65dB. The station's electronics shall have all the necessary controls and connectors to interface to a standard Clear-Com System. It 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 a balanced line-level program signal that is fed to the speaker and headset. The headset and speaker shall provide separate controls for adjustment of overall intercom volume. The program volume shall adjust program level in both the headset and speaker simultaneously.

**ARCH/ENG SPECS**

The station shall be a 2-channel speaker station designed to mount in a 1.75" rack space. The station shall contain an adjustable sidetone circuit and visual signal circuitry for each channel. The station shall be capable of bridging impedance greater than 15kΩ. It 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 10 dB to reduce the possibility of feedback. The station shall be called a Clear-Com RM-120A, CAM.
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 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 "V" 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 preamplifier, headset/speaker power amplifier and signaling circuitry. Current limited with short circuit and reverse polarity protection.

**MIC PREAMPLIFIER**
- Frequency Response: 250-18kHz with contoured response to enhance voice intelligibility.
- Mic Input: 200kΩ
- Mic Frequency Gain: 31dB
- Max Input Before Clipping: 2mV

**HEADPHONE AMPLIFIER**
- Frequency Response: 100-18kHz ±3dB
- Loud Impedance Range: 8-2kΩ
- Output Level: +10dBm, 20p-p at 1kHz
- Headset Level: +110dB SPL, with standard Clear-Com headsets.
- Speaker Type: 3" square, 16Ω
- Speaker level: >98dB SPL at 3 feet

Specifications subject to change without notice

**SPEAKER**
- 3" square, 16Ω

**SPEECH PROCESSING CIRCUIT**
- Signal-to-Noise: 75dBv
- Signalling Voltage: 11 volts DC on audio line
- Sidetone Adjustment: 35dB null 10 full on
- Discontinuity: 4 volts average talk, 60 mA signalling, 200 mA short circuit

**CONNECTORS**
- Headset: 4-pin male XLR type
- Line: 5 screw terminal block

**GENERAL**
- Line Level: -15dBv rms, -6dBv max
- Sidetone Adjustment: 30dB ±20 to full on
- Signalling Voltage: 200mV DC on audio line
- Input Impedance: 20kΩ
- Signal-to-Noise: 75dBv
- Equivalent Input Noise: -118dBv
- Station Bridging Impedance: 1550 (200-18kHz)
- Power Requirements: 20 mA quiescent, 60 mA maximum
- Voltage Range: 12-32 volts, 28 volts nominal
- Dimensions: 8.6" x 6.5" x 3.25" deep
- Weight: 1.8 lbs (0.73kg)

**MIC PREAMP**
- Mic Preamp Gain: 37dB
- Voltage Range: 12-32 volts, 28 volts nominal.
- Input: 200Ω

**HEADPHONE AMP**
- Headphone Amp Gain: 37dB
- Voltage Range: 12-32 volts, 28 volts nominal.
- Load Impedance Range: 8Ω-2kΩ

**INTERCOM STATION**
- Amplifier and Signalling circuitry. Current limited and short-circuit-proof and shall have reverse polarity protection. It shall be field serviceable and replaceable.

**MIC PREAMPLIFIER**
- Mic preamplifier shall have an overall response of 200Hz-18kHz, contoured to enhance voice intelligibility. The mic preamplifier shall accept a standard carbon header or a dynamic headset with a nominal 2000 ohm impedance, 6dBv mic and earphones from 8Ω to 2000Ω. The headset/speaker power amplifier shall have a response of 1000Hz to 18kHz, ±3dB. It shall deliver a level of +10dBm SPL, with 0.5% distortion. The power amplifier shall be capable of delivering 2 watts into 8Ω. The speaker shall be a two-channel intercom speaker station. The intercom shall have an adjustable sidetone circuit which will allow up to 35dB null of sidetone. The mic preamplifier shall have an overall response of 200Hz-18kHz, contoured to enhance voice intelligibility. The mic preamplifier shall accept a standard carbon header or a dynamic headset with a nominal 2000 ohm impedance, 6dBv mic and earphones from 8Ω to 2000Ω. The headset/speaker power amplifier shall have a response of 1000Hz to 18kHz, ±3dB. It shall deliver a level of +10dBm SPL, with 0.5% distortion. The power amplifier shall be capable of delivering 2 watts into 8Ω. The speaker shall be a two-channel intercom speaker station.

**INTERCOM**
- The intercom station shall be a custom-mounting, 3/4" aluminum panel painted charcoal-brown. It shall have the same specifications and functions as above. The intercom shall be housed in a portable, slotted-front enclosure constructed of 0.050 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 KB-111A.

**fov Power Supply**
- RF EMI rejection shall be greater than 60dB referenced to the audio line. It shall operate from a power source of ±30 volts DC and shall draw no more than 25 mA. The dimensions of the enclosure shall not exceed 8.6" x 6.5" x 3.25" deep (218mm x 168mm x 83mm). The weight shall not exceed 1.6 lbs. (0.73kg). 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 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 panel. The intercom shall be able to mount inside a 4" x 8" x 3 1/2" screw cover electrical box. 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 panel. The intercom shall be able to mount inside a 4" x 8" x 3 1/2" screw cover electrical box. 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 panel. The intercom shall be able to mount inside a 4" x 8" x 3 1/2" screw cover electrical box.

**kb-111a BLOCK DIAGRAM**

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1111 17th St • San Francisco, CA 94107 • 415861-6666
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: ±1 V at 0.5A, ±2V at 1A
- Line Regulation: ±1 V from 105-125 VAC line voltage
- Ripple: <1 mV

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: 2000
- 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.
- Maximum power consumption shall be 60 watts.

ENVIRONMENTAL:
- Operating temperature range: 0-50°C (32-122°F)
- Dimensions: 6 11/16" W x 9 7/8" D x 2 5/8" H (170mm W x 240mm D x 67mm H)
- Weight: 3.6 lbs (1.67kg)

Specifications subject to change without notice.

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 2000 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 6.75" (171mm), a depth (front to back) of 5.44" (138mm), and a height (excluding feet) of 2.94" (74mm). It shall weigh no more than 3.4 lbs (1.55kg). It shall have all necessary controls and connectors for compatible operation with Clear-Com products and shall be called a Clear-Com PS-20.
**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**: BOO Q
- **Receive Level**: Adjustable, -15 to +20 dBv
- **Receive Impedance**: 10-15k
- **Frequency Response**: 200-15k Hz, 6dB down
- **Minimum Sidetone Null**: 3Ck:l.B
- **Distortion**: 0.5% THO
- **Power Requirements**: +12 to 32 volts DC @ 38mA (all 4 interfaces)
- **Connectors**: (4) J-pin XLR female, Clear-Com line (4) 4-pin XLR male, 3-4 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. Each shall have a separate transmit and receive interface with individual transmit level adjustments. The module shall connect to a standard Clear-Com system through 2 individual 3-pin, XLR female connectors. The transmit and receive pairs 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 600Q. 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 milliamps. The dimensions shall be 19' x 1.75' x 6.8' (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**

- **INTERFACE 1**
- **INTERFACE 2**
- **INTERFACE 3**
- **INTERFACE 4**

**IF4-4 INTERFACE**

- **COMMON**
- **CLEAR-COM CHANNEL 1**
  - **PL. OUTPUT**
- **CLEAR-COM CHANNEL 2**
- **CLEAR-COM CHANNEL 3**
- **CLEAR-COM CHANNEL 4**

1111 17th St • San Francisco, CA 94107 • 415/861-6666
AC-10K/AC-10H
ADAPT-A-COM

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 online 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.

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
SPECIFICATIONS

Frequency Response: 150Hz-10kHz, ±3dB

Load to Clear-Com: High Impedance (bridging)

Interface Impedance: In normal 2-WIRE mode, external unit "sees" 600Ω across AC-10. In LOW-Z 2-WIRE mode, external unit "sees" 4Ω. In 3/4-WIRE mode, transmit output impedance is 600Ω, and receive input impedance is 5000 (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 handset for balancing purposes)

Transmit 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)

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: 15"H x 4¾"W x 6¾"D; 2lbs (4.5 x 19.1 x 15.2cm; 0.91kg)

Specifications subject to change without notice

0 dBv is referenced to 0.775 volts rms.

AC-10K/H BLOCK DIAGRAMS

2 WIRE SYSTEMS

3 WIRE CARBON SYSTEMS

4 WIRE TELEPHONE/CAMERA SYSTEMS

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