MS-440*

FEATURES

- **Four Independent Intercom Channels** for ultimate flexibility

- **Microprocessor-Controlled Logic** assures maximum communications power

- **Universal Voltage Power Supply** for 90 - 240 VAC operation, with short-circuit protection on each channel

- **Linking Control** instantly links channels together in "super party line"

- **Separate Talk and Listen Buttons** for each channel

- **Individual Listen Volume Controls** for each channel

- **"All-Talk" Function** permits instant communications to all four channels

- **Four Separate Program Inputs** are electronically balanced

- **Three Interruptible IFB Channels** make talent cueing easy

- **"Announce" Button with Relay** for external paging

- **Visual "Call Signaling"** alerts users when others want to speak to them

- **Wide-Range High-Output Speaker** for optimum clarity in all acoustic environments

- **"Hot-Mic" Output** allows easy connection to external IFBs

- **Adjustable Mic Proximity Compensation** reduces acoustic feedback

- **Superior "Contoured" Audio** insures excellent voice intelligibility under all noise conditions, including high-noise environments

RM-440*

SB-440*

GENERAL DESCRIPTION

The 440 series is Clear-Com's most advanced party-line intercom system. Each station is a four-channel intercom with superior audio and versatile channel access to provide unmatched communication flexibility. All front-panel controls are intuitive and easy to operate. The station's front-panel buttons are programmable and can be customized for a wide variety of applications that will meet the demands of any stage, studio, or field producer. Separate volume controls for every channel ensure the perfect audio mix in the headset or on the integral speaker.

The SB-440 includes a versatile switching matrix which allows up to ten different groups of stations to be assigned to any one of the four channels. A convenient "link" feature ties all four channels into one giant party line for rehearsal or staff check. The stations have adjustable mounting ears that can be removed for desktop operation. The regulated power supply in the MS-440 and SB-440 provides power for the entire intercom system. These stations have front-panel short-circuit indicators to show if a short has occured on any of the four intercom lines. Other features include separate audio sources for all intercom channels and three built-in IFB program interrupts for talent cuing.
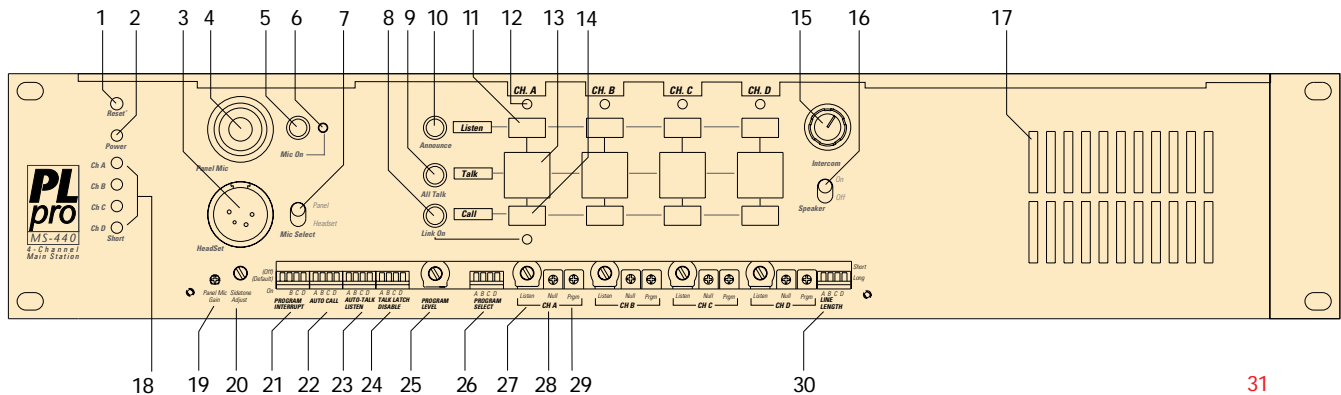
PLpro ®

PROFESSIONAL INTERCOM PRODUCTS

MS-440 Front Panel

1. RESET SWITCH
Instantly restores operation in the event of a DC power short.

2. POWER INDICATOR
Illuminates to indicate when power is on.

3. HEADSET CONNECTOR
XLR 4-pin male

4. PANEL MIC CONNECTOR
Allows easy attachment of proprietary 9" or 18" gooseneck microphone.

5. MIC ON SWITCH
Activates the gooseneck or headset mic.

6. MIC ON INDICATOR
LED Illuminates when the microphone is active.

7. MIC SELECT SWITCH
Selects between the panel-mounted gooseneck mic and the headset mic.

8. LINK BUTTON
Instantly links channels B, C, and/or D to Channel A, creating a "Super Party-Line".

9. ALL TALK BUTTON
Sends the station's mic signal to all four channels, regardless of whether those channels are currently assigned.

10. ANNOUNCE BUTTON
Directs the station's mic signal to a dedicated rear-panel "Announce" output, while simultaneously activating an associated relay.

11. LISTEN BUTTON
Turns on the LISTEN circuit on the corresponding intercom channel, allowing the user to hear activity on that channel.

12. LISTEN LED INDICATOR
Illuminates when the channel's LISTEN circuit is on.

13. TALK BUTTON WITH BUILT-IN CALL LIGHT
These illuminated dual-action buttons light up to indicate the on-off status of each channel's TALK circuit. Translucent labels can be installed behind the key caps for easy identification.
 These buttons also function as attention-getting "Call" lights. When the "Call" button is pressed at another station, this button flashes to attract your attention.

14. CALL BUTTON
Activates all station and belt-pack call lights on the respective intercom channel.

15. VOLUME CONTROL
Adjusts the listening level for both speaker and headset.

16. SPEAKER ON/OFF SWITCH
Selects or deselects the built-in speaker.

17. LOUDSPEAKER
High-quality loudspeaker is driven by a four-watt pro-audio amplifier.

18. SHORT INDICATORS
These indicators will illuminate when there is a short detected on one or more of the intercom lines. Power will continue to be supplied to the other intercom channels.

19. PANEL MIC GAIN
Adjusts the sensitivity of the gooseneck panel mic.
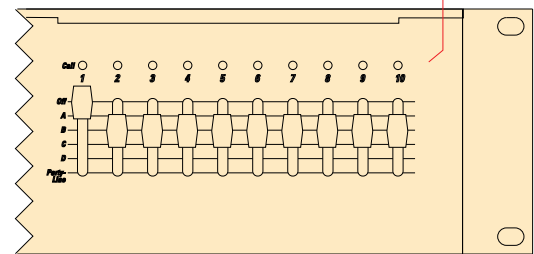
20. SIDETONE ADJUST
Controls the level of your voice as it is heard in your own headset and speaker.

21. PROGRAM INTERRUPT SELECT (IFB)
Selects which intercom channels that the program interrupt will operate on. The audio program source will be interrupted when the TALK button is pushed.

22. AUTO CALL SELECT
Sends a call signal automatically when the TALK button is depressed.

21. AND 22. ARE BOTH ON.
Allows program interrupt (IFB) from any RM-440 station in the system.

23. AUTO-TALK/LISTEN SELECT
Allows the TALK and LISTEN circuit to be automatically activated when the TALK button is depressed.

24. LATCH DISABLE SELECT
TALK button is momentary function only.

25. PROGRAM LEVEL
Adjusts the level of the Audio Program feed to the station speaker.

26. PROGRAM SELECT
Determines which intercom channels the audio program feed will be sent to.

27. LISTEN LEVEL CONTROL
Adjusts the listen level for each intercom channel.

28. NULL CONTROL
Used in conjunction with line/link switch (#30) to minimize intercom channel crosstalk in station.

29. PROGRAM ADJUST
Controls the level of program audio sent out to each individual channel
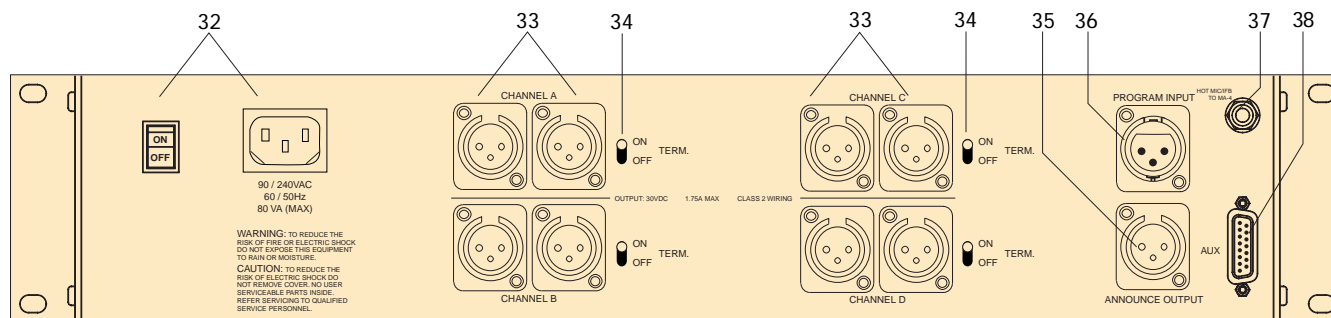
30. LINE LENGTH SELECT DIP SWITCH
Compensates for electrical capacitance on each individual intercom channel to optimize null adjust.

31. MATRIX ASSIGNMENT SWITCH (SB-440 ONLY)
Allows you to assign an intercom station to any one of the four channels. It also allows the station to be assigned to an off or party-line position.

MS-440 Rear Panel

32. POWER CONNECTOR AND SWITCH
EIA power connector for 90 - 240 VAC operation

33. INTERCOM CONNECTORS
(See specifications)

34. CHANNEL TERMINA-TION SWITCHES
Provides individual termination for each intercom channel.

35 ANNOUNCE OUTPUT (XLR-M 3-PIN)
Line-level transformer-isolated audio output.

36. PROGRAM INPUT #I (XLR-F 3-PIN)
Electronically balanced line-level audio input that is sent to the station or selectively to the intercom channels.

37. HOT MIC/IFB OUTPUT
Provides line-level audio output from the mic at all times mic is on. Provides a feed to Clear-Com's external IFB system.

38. AUX CONNECTOR (DB-25F)
Provides various inputs and outputs to the station:
• Four separate Program Inputs that can be sent to the individual intercom channels.
• Announce relay contacts.
• Footswitch input that provides momentary activation of the MIC.

SUPERIOR "CONTOURED" AUDIO

Compatible with all Clear-Com party-line intercoms, the MS-440 series accepts a wide range of dynamic headsets, with a choice of headset connectors. Optional plug-in noise-cancelling gooseneck microphones are available in 9" and 18" lengths. An adjustable mic gain control and sophisticated proximity-compensation circuitry keep voice levels constant and adjust frequency response over a wide range of mouth-to-microphone distances. A variable speaker-dipping circuit provides additional acoustic muting to help eliminate feedback. The station contains a sidetone control that allows the operator to vary the level of his/her own voice as heard in their headset.

REDUNDANT "FAILSAFE" POWER SUPPLY

The 2-amp universal switching power supply is a 30-volt regulated supply with multiple short-circuit protection. This "smart supply" can sense the difference between a long-term short circuit and an instantaneous overload, which means the intercom will continue to operate even when a station is plugged in, momentarily exceeding the capacity of the power supply. If a shutdown does occur from a shorted intercom cable, the power supply will recover under full load when the short is removed. It is not necessary to unplug the stations to bring the power supply back up. The power supply provides individual power distribution to the separate intercom channels. If a short should occur on one channel, that channel will cease to work. The other channels will continue to function with the full capacity of the power supply.

"EASY ACCESS" SUB-PANEL

A removable front panel gives the operator easy access to the station's configuration switches and trim pots. Clearly labeled and simple to adjust, these controls allow the station to be instantly configured for virtually any communications application. When configuration is complete, the front panel reattaches, revealing only those controls useful for normal operation.

MULTIPLE PROGRAM AUDIO SOURCES

The station accepts five separate program audio sources: four line-level balanced inputs and one assignable line level input. The assignable program input accepts a balanced signal and is designed for monitoring external audio in the headset or speaker. The four balanced program inputs can be used to create individual program feeds on the intercom channels. Three of these channels can be used for program interrupt. The program audio is automatically interrupted when the station's "Talk" button is pushed, allowing talent on the set to receive their cues from production personnel.

SPECIFICATIONS

CONTROL SYSTEM
CMOS Digital logic and signal switching

OVERALL STATION AUDIO
Bandwidth: 150 Hz -15 kHz
Signal to Noise: >75 dB
Channel Separation: > 50 dB
Line Impedance: Terminating (200 Ω)

MIC PREAMP
Input Level: -55 dBv nominal, -10 dBv max.*
Impedance: 200 Ω nominal
Frequency Response: 150 Hz -15 kHz
    (contoured for max. intelligibility)
Limiter Range: 25 dB
Gain Adjust: 5 dB

HEADPHONE AMPLIFIER
Load Impedance: 50 - 2,000 Ω
Output Level: > +20 dBv across 600 Ω
Distortion: <0.2% THD at 1 kHz
Frequency Response: 150 Hz - 18 kHz ±2 dB

SPEAKER AMPLIFIER (SB-440)
Load Impedance: 8-50 Ω
Output Level: 4 watts into 8 Ω
Distortion: <0.5% THD at 1 kHz

PROGRAM INPUTS
Type: Line level electronically balanced
Nominal Imput Level: -10 dBv

STUDIO ANNOUNCE
Type: Transformer balanced output
Level: 0 dB
Relay: SPDT
Contact Rating: 24 Volts DC @ 1 amp

ELECTRET MICROPHONE (Optional)
Connection: Proprietary plug-in locking
    connector
Pattern: Cardioid
Length: 9" or 18" gooseneck
Frequency Response: 100 Hz - 20 kHz

TALK REMOTE CONTROL
Two logic inputs

POWER SUPPLY (MS/SB-440)
Type: Switching, with reset circuitry for each channel
Output Voltage: 30 VDC regulated
Output Current: 2.0 A max.; 1.75 A max. on
    any channel; with electronic current limiter,
    circuit breaker protected
Hum and Noise: <-80 dBv

SYSTEM CAPACITY
60 beltpacks or 20 speaker stations

AC POWER REQUIREMENTS (MS/SB-440)
90 - 240 VAC, 50 - 60 Hz

DIMENSIONS
3.5" H x 17" W x 6.75" D (89 x 432 x 171 mm)
    (19" W with included rack ears)
Depth does not include rear panel connectors.
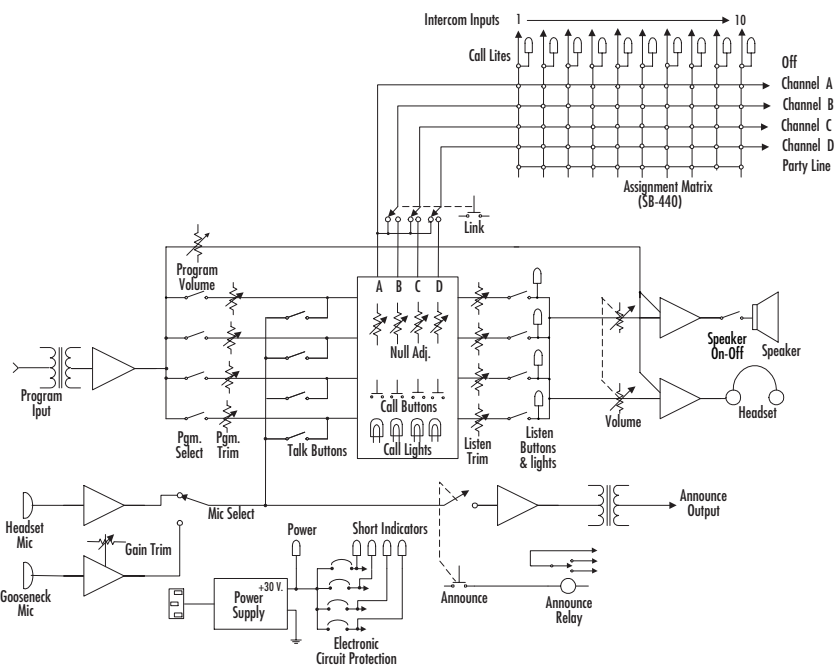
WEIGHT
MS/SB-440: 9.7lbs. (4.4kg)
RM: 5.9lbs. (2.7kg)

SB-440 MAIN STATION

This station is similar to the MS-440 main station except the speaker is replaced by a 10 x 4 assignment matrix panel. The input to this matrix is provided by ten XLR connectors on the rear panel along with an external speaker jack. The assignment matrix panel allows you to choose any intercom station or group of stations connected to the ten inputs of the matrix and assign them to any one of the four intercom channels. The remote stations can also be assigned to an off position where they are disconnected from the main station. A station in the off position can get the attention of the operator by sending a call signal which will be indicated by the call light above the assignment switch. Stations can also be assigned to a separate party-line position. In this position stations can talk to each other but are disconnected from the main station.

RM-440 REMOTE STATION

When purchased in the RM-440 remote configuration, this station is powered directly from the intercom line and requires no external AC power, allowing it to be placed anywhere regardless of available electrical mains. The RM-440 has all of the same functions as the MS-440, except that it has no power supply, circuit breaker, or linking function.

BLOCK DIAGRAM

CONNECTORS
Headset: 4-pin male XLR
Intercom Lines:
    MS-440 - Eight 3-pin male XLR
    SB-440 - Fourteen 3-pin male XLR
    RM-440 - Four 3-pin male XLR
                Four 3-pin female XLR

Program Input: 3-pin female XLR
Announce Output: 3-pin male XLR
External IFB: 1/4" phono jack
Aux: 15-pin DB connector
External Speaker: 1/4" phono jack

* 0 dBv is referenced to 0.775 volts rms.
All specifications are subject to change without notice.

Clear-Com®
Intercom Systems