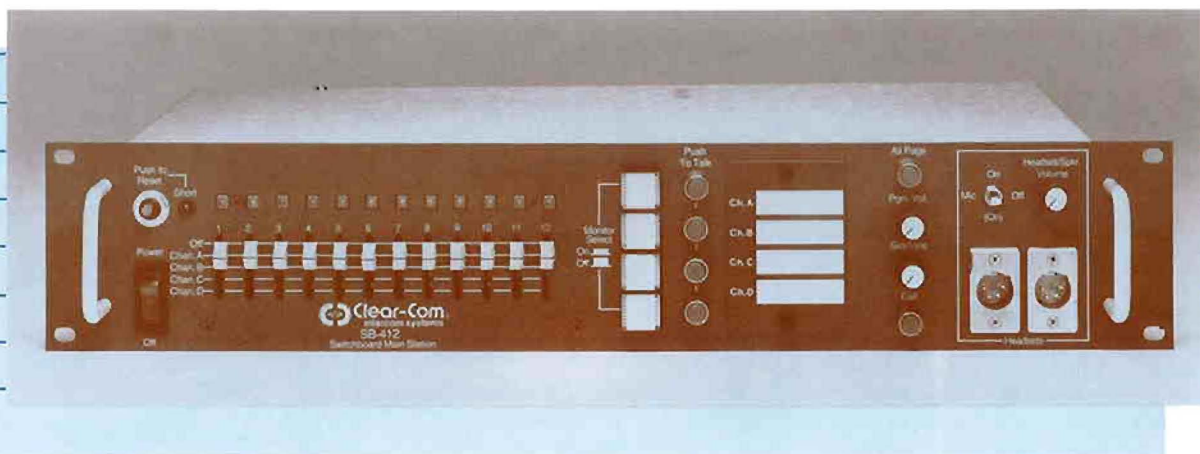


M A I N S T A T I O N



SB-412 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
- 4 x 12 switchboard matrix
- Switchboard inputs assignable to any channel or private line
- Functions include Visual Signalling and "All Page"
- Balanced program input, 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, length-adjustable (1'-12")



DESCRIPTION

The SB-412 is an extremely versatile broadcast standard main switchboard station with a regulated power supply and a programmable monitoring system. It features Clear-Com's excellent speech intelligibility in high- and low-noise environments.

The SB-412 contains a mic preamp with a limiter and a four-watt power amp, so it can drive two dynamic headsets and an external speaker. The station drives a standard Clear-Com headset to levels greater than 110 dB SPL.

MONITORING SYSTEM

The SB-412 supports four channels containing as many as 100 remote headset stations or 20 speaker stations. The operator monitors the intercom activity on the channels with locking "Monitor Select" buttons. These buttons light dimly when engaged. One, two, three, or all four channels can be monitored simultaneously without tying the channels together.

The SB-412 operator pre-sets the monitor functions for each channel. For instance, Channel A may be programmed for talk-only, Channel B for listen-only, and Channels C and D for talk and listen. Four "Channel Override" buttons momentarily cancel the pre-sets when the operator needs two-way communicating, and the "All Page" button lets the operator talk to four channels at once.

SWITCHBOARD MATRIX

The SB-412 contains a switchboard matrix that provides intercom output connectors for 12

remote stations or groups. Each output is switch-assignable to any of four channels or the "Off" position. All stations connected to an input may communicate amongst themselves but are disconnected from the switchboard and all other groups of stations on the matrix. The matrix is ideal for re-patching remote stations in various combinations.

SIGNALLING

Visual Signalling attracts the attention of operators who've removed their headsets or turned off their speakers. The SB-412 Call button signals the stations on channels that have been previously chosen with the Monitor Select buttons. When a remote station sends a Call signal, the Monitor Select button 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.)

When a remote station on one of the 12 switchboard outputs activates a Call signal, the LED above its associated slide-switch will light (even if that output is assigned to "Off" position).

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 SB-412 provides one sidetone adjustment for each channel, and one for overall sidetone in the headset.

continued

PROGRAM INPUT

The SB-412 accepts a balanced, line-level program input which is heard in the headset/speaker and can be mixed with the intercom audio on any or all channels. Program volume (as well as sidetone level) is individually set for each channel with trimpots located beneath the top cover of the unit.

POWER SUPPLY PROTECTION

The SB-412 provides a red lamp 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 28 volts at two amperes from a 115V or 230V AC mains supply. The SB-412 provides the necessary audio termination for the intercom system.

EASY INTERCONNECTION

The SB-412 connects to the remote stations with standard two-conductor mic cable. The station's rear panel provides four 3-pin, XLR connectors for the output of each channel, plus 12 similar connectors for the outputs from the switchboard matrix.

GOOSENECK MIC OPTION

The SB-412 is available with a permanently-attached, noise-cancelling electret mic on a gooseneck with adjustable length (up to 12"). The mic is installed in the top headset connector. When the mic 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:
IC amplifiers including solid state switching and signalling circuits. Current limited and short circuit protected.

MICROPHONE PRE-AMP:
Microphone Input: 200 Ω nominal dynamic type
Maximum Input Before Limiting: -50dBV*
Mic Pre-Amp Frequency Response: 250Hz-12kHz
contoured to enhance voice intelligibility
Headset Mic Input Level: -15dBV max*

HEADPHONE AMPLIFIER:
Output Impedance Range: 8-2k Ω
Output Level: 4 watts into 8 Ω
Distortion: 0.5% THD @ 1kHz
Amplifier Gain: 35dB
Frequency Response: 150-18kHz (\pm)2dB

PROGRAM AMPLIFIER:
Frequency Response: 150-18,000Hz
Input: 47k Ω single-ended 100k Ω balanced
Input Level: -15dBV nominal; +10dBV max*

POWER SUPPLY:
Output Voltage: 30 volts circuit breaker protected, regulated
Output Current: 2 amps maximum

CHANNEL SEPARATION: -50dB

SIGNAL TO NOISE: -55dB

SIDE TONE: Adjustable from 25dB null to full on

OPERATING CONDITIONS:
Channel Monitoring: Programmable talk & listen functions for each channel A, B, C, D with illuminated push on/push off switches
Channel Override: Bypasses programmed select switches

All Page: Talk to all positions of matrix including OFF

Call: Follows channel select buttons

Capacity: Will support up to 100 Remote Headset Stations or 20 Remote Speaker Stations.

System Termination: 200 Ω AC Impedance, switchable on or off

System Level: -15dBV nominal; 0dBV before clipping*

SWITCH MATRIX:
Capacity: 12 in x 5 positions (OFF, A, B, C and D). Off position is terminated in 200 Ω .

SIGNALLING:
Call Light Sensitivity: 4vdc
Signalling Voltage: 11vdc

CONNECTORS:
Headset Input Connector: 2 4-pin male XLR connectors

Output Connectors: 16 (12 for remote station input, 4 for channel busses)

Auxiliary Input: 3-pin female XLR

External Speaker Jack: Disconnects internal speaker; 1/4" phone jack

POWER REQUIREMENTS: 115 or 230 volts 50-60 Hz. 60 VA maximum

DIMENSIONS: 19" L x 3.5" H x 9" D
483mm x 89mm x 229mm

ENVIRONMENTAL TEMPERATURE RANGE: 0-50 $^{\circ}$ C (32-122 $^{\circ}$ F)

Specifications subject to change without notice

*0 dBV is referenced to 0.775 volts rms.

ARCH/ENG SPECS

The main station shall be a 4-channel rack-mount intercom station with a 12 x 5-position assignment matrix. It shall contain a 30 volt regulated power supply capable of delivering 2 amps, circuit-breaker protected against external shorts, and shall have a front panel-mounted red LED to indicate a shorted condition. It shall have provisions for connecting two headsets to the station and provide a front panel mic on/off switch for one headset. The station shall have four illuminating Monitor Select switches for monitoring 1 to 4 channels. The talk and listen functions of the monitoring system shall be pre-settable. When monitoring 2 or more channels, the operator shall be able to simultaneously communicate with each without combining the channels into a common or partyline

system. The matrix section shall accept 12 inputs or 12 groups of inputs, and each one shall be associated with a front panel slideswitch used for variable assignment of the input to channels A, B, C, D, or "Off" in the "OFF" position, each input group shall have normal communications within that group, but shall be separated from every other input group. The station shall have a connector for accepting a balanced line-level auxiliary input (Program) which shall be assignable to any channel and heard in the station's headset. It shall have one front panel control for adjusting the program level and another front panel control for adjusting the station's headset/speaker intercom level. Talk, listen, program assignment switches, and listen level trim controls for each channel shall be accessible from the front panel. These controls shall be located behind a removable cover plate. The station shall supply the terminating network for each channel. It shall provide a jack for connecting an external speaker, and the headset volume control shall also adjust the speaker level. The station shall have a front panel sidetone adjustment and sidetone null controls for each channel, adjustable from 25dB null to full on. The remote stations shall have the ability to visually signal the main station by illuminating the appropriate Monitor Select switch and/or by illuminating the appropriate amber LED located above the matrix regardless of matrix/monitor switch positions. The main station shall provide a front panel pushbutton to activate the visual signal circuit. The station shall provide a Channel Override pushbutton for each channel for momentary full talk/listen capability, and it shall provide an All Page pushbutton for making an announcement to all stations including those in the matrix Off position. The station's rear panel shall contain 4 XLR-type, 3-pin connectors for bussing each channel A-D and shall also contain 12 XLR-type, 3-pin connectors for inputs to the matrix. The electronics shall be solid-state, IC plug-in printed circuit amplifier modules. The station shall be field-serviceable and replaceable. It shall accept a 200 Ω dynamic microphone with a nominal level of -55dBV. The station's frequency response shall be 250Hz to 12kHz. It shall be capable of driving the line of any channel to a maximum level of 0dBV. The headphone amplifier shall be able to operate a headset with an impedance of 300-2000 Ω , and shall be capable of delivering an output level of +20dBm at 600 Ω . The distortion shall be less than 0.5% THD at 1kHz. The station's mic preamp shall automatically shut off when the headset is disconnected from the station. The station shall have the capacity to power 100 remote headset stations or 20 remote speaker stations. The auxiliary program input shall have a frequency response of 150-18kHz (\pm 2dB). The power supply shall operate from 105-125 VAC or 210-260 VAC, 50-60Hz with maximum power consumption of 80 watts. The station's dimensions shall be 19" W x 3.5" H x 9" D. It shall be called a Clear-Com SB-412.

SB-412 BLOCK DIAGRAM

