BCD AUDIO

Broadcast Audio
Custom Manufacture
Design and Consultancy

AUTOMATIC PROGRAMME CHANGEOVER UNIT

The BCD Audio Automatic programme changeover unit is intended to be used at a transmitter site, and can be used to automatically select between two identical stereo programme paths, and in emergency switch over to a reserve path. Either Analogue or AES-3 signals may be used. The unit can be remotely controlled and monitored.

Front of panel

The front panel includes two recessed toggle switches which can be used to locally force the unit to either Path A or B, Main or reserve. The centre position is the normal setting, where the unit automatically selects the programme signal path. LEDs indicate programme signal path, signal detection , Alarm and Fail status. A sounder cancel/off switch is fitted allowing either complete or brief suppression of the warning sounder.
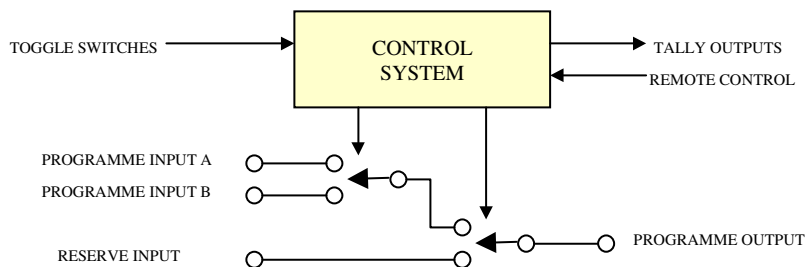

Rear of panel

The rear panel uses XLR connectors for the Audio signals. The unit uses relays in the programme path, ensuring a direct, copper circuit between input and output. The relays are magnetically latched, ensuring programme continuity on power failure, a switch selecting between 'Path A' or 'Last Known Good Path' on power failure.

A 15way D connector is used for external remote control. The unit may be switched to either PathA or PathB, Main or Reserve remotely. Isolated relay contacts are available for remote tally indication. These are used to indicate the signal path, Auto, Alarm and Fail status.

A 9way D is used for RS232, and is used to configure the unit on installation.
AC power at 50/60Hz is used to power the unit.
The unit may also be powered from an external source of 12V-24V DC.
The unit may be configured for BOTH Analogue AND AES-3 signals.

Simplified Block diagram

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More data overleaf

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Operation of switches

The toggle switches have three positions, and should normally be left in the centre position, when the green 'AUTO' LED will be on. The LEDs indicate the programme source, of either input A or input B. The programme source may be forced to either input A or input B by moving the toggle switch to the left or right.

Signal Detect LEDs

The six green LEDs indicate that signal is present at the unit. The signal threshold is adjustable , in the range –40dB to 0dB.

On programme failure the LEDs will extinguish, and the unit can change the input selection automatically to either (a) continue to broadcast the correct programme from the other path, or (b) on total failure switch over to the reserve feed.

The time taken to react to signal failure is programmable, over the range 0-99 seconds.

Some installations may not require all of these programme feeds to be connected, whereby some of LEDs will remain off. The units can be configured to operate normally in these installations.

The AES-3 version uses tri-colour LEDs to indicate AES-3 lock and error status.

Power Indicator LEDs

Separate LEDs show the status of the Mains AC and reserve DC power. The setup configuration allows the Power fail to be signalled remotely.

Power Fail state

A rear panel switch allows the unit to maintain either the last used setting or input A under no-power conditions. The state of this switch is reported in the Configuration software.

Alarm and Fail LEDs

The red ALARM LED is normally off, and illuminates if any of the programme inputs fail. The red FAIL LED is normally off, and illuminates if all of the programme and reserve inputs fail. These indications also drive external relays for external purposes.

Indication and control connector

This 15way male D connector is used for remote control and indication purposes.s
- Input A, B, Main and Reserve remote control
- Input A, B, main and Reserve relay tally
- Auto, Alarm and Fail relay tally

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Configuration

The unit is completely software configurable , enabling the user to tailor the operation of the unit to their exact needs. A terminal running at 9600 baud is connected to the RS232 port, and is used to configure the unit. The following facilities are programmable:

- Power-up disabled time 0-99 seconds
- Power fail of AC or DC source
- Failure time from Path A to B 0-99 seconds
- Failure time from path B to A 0-99 seconds
- Restore time for Path A 0-99 seconds
- Failure time from Main to Reserve 0-99 seconds
- Failure time from Reserve to Main 0-99 seconds
- Resume time for the Main path 0-99 seconds
- Signal detect threshold 0-99dB (use –10 to –40dB)
- Time before Warning/Fail is asserted 0-99 seconds
- All signal detects are individually selectable
- Analogue or AES signal mode

Switching priority

Path A & B can have equal priority, and the switching will occur only on failure of the active channel. This is the mode if the restore time is set to zero. If the restore time is set to non-zero, path A will be restored after this time, if the signals are present, overriding B, which is now a secondary input.

The unit can switch to a reserve stereo input. The failure time main/reserve selects the time the signal has to be failed before this happens. Similarly, the time reserve/main selects the time the reserve signal has to fail for before switching back to the main path.

If the 'restore' time is set to zero, the unit will only switch back if the reserve input subsequently fails.

If the restore time is set at non-zero, the main path will be restored after this time, if the signal is now OK.

Analogue or AES-3 Versions

The APCU may be ordered with Analogue or AES-3 daughter boards. Optionally both may be fitted and the configuration enables the correct board.

The AES-3 version includes a monitoring DtoA.

The AES-3 version uses solid-state switching, reverting to a copper-path under no-power conditions.

Power requirements

AC power, in the range 90V to 250V AC 50/60Hz
AC power is supplies via a filtered IEC inlet.
DC power, in the range 12V to 24V at 250mA max.
DC power is supplied via a 2.5mm barrel socket.

Overall dimensions and finish

1U rack mounting unit, depth 140mm.
Weight 500g.
Overall finish is black with white silk-screening.