
ELAN AUDIO

Falcon-10
On Air Mixer
Product Description



FALC10D01

ELAN Audio

2 STEEL COURT
SOUTH GUILDFORD WA 6055

PHONE (08) 9277 3500
FAX (08) 9478 2266

www.elan.com.au
sales@elan.com.au

Falcon-10

Entry Level Broadcast On Air Mixer.

Technical Description.

The FALCON -10 is a Professional Broadcast Audio Mixing Console, designed to be a practical and affordable Audio Mixer for 'On-Air' and News Presentation, as well as use in General Audio Production. It is a high quality, well finished, smart and attractive looking unit, designed for mounting on top of the Operators or Announcers desk.

The FALCON -10 is provided with all the features normally expected on a Professional Broadcast Mixer, such as 'On-Air', Delay and Delay Dump switching, 5 way High Level Input selector switch, Microphone activated Loudspeaker Muting, Optional Remote Machine Control facilities, Telephone Mix - output, Cue System with Metering and Cue Loudspeaker, Split Headphone Cue, Talkback facilities and many more.

General components are Professional or High Quality Commercial grade with German made 'Marquardt' switches used for panel controls including channel On-Off and Cue switching, Japanese Faders made by 'Alps' and British made 'Sifam' VU Meters.

All Inputs are balanced and have sufficient gain to operate from unbalanced Hi-Fi source equipment.

All line outputs are balanced with special moveable links provided on the Monitor Line Outputs to allow the use of unbalanced domestic Hi-Fi type Monitor Amplifiers or a pair of good quality Self-Powered PC Speakers.

All connections in and out from the FALCON -10 are via sturdy easily accessed screw terminals. The FALCON -10 is hinged at the rear, giving easy access to internal adjustments and component parts. Installation is simple, with concealed cable access through holes in the bottom panel.

The FALCON -10 Mixer is constructed using only two main Printed Circuit Boards, which are both readily accessible and can be removed and re-installed using basic tools with all connections between the Printed Circuit Boards via Plugs and Sockets. In addition, a small number of minor PC Boards are also fitted and used to support switches and the optional remote control facility offered with the Falcon -10 mixer.

All Integrated Circuits are installed in high quality Machined-Pin IC Sockets with Programmed Microprocessors used in the Control Circuitry.

The attached Overall Block Diagram, shows the signal flow through the mixer and the general circuit arrangement.

The individual Printed Circuit Boards in the "FALCON-10" are described briefly in the following text.

INPUT and OUTPUT BOARD, Type FLCN-IO.

This board is provided with the 10 sets of input circuitry of the "FALCON -10" Mixer.

High Level inputs 1 to 8 are identical having Balanced Stereo inputs.

High Level input 8 is intended for use as the Telephone Input with the Telephone Mix - derived from it. High Level input 8 is wired as a Stereophonic input, and may be used as a general High Level Stereo Input if a Telephone System is not connected.

The Microphone inputs, "Guest" input 9 and "Announcer" input 10 are balanced and transformerless based on the SSM-2017 Low Noise Microphone Pre-Amplifier IC. Provision is made for + 15V DC Phantom Powering of Condenser Microphones.

Moveable links provides 3 stages of gain control for the Microphone inputs for nominal input levels of -70 dBV, -60 dBV, and -50 dBV.

The -70 dBV setting, High Gain is suitable for low output Microphones such as Ribbon types or for distant Microphone pick up, the -60 dBV setting is suitable for normal Dynamic Microphones and the -50 dBV setting suitable for High Output Microphones such as Electret types.

Connections between the FLCN-IO Board and the FLCN-MX Mixer Board are via IDC Ribbon cables and Headers.

Mixing Board, Type FLCN-MX.

All Programme Mixing, Switching and Gain Summing takes place on this Board.

Audio signals from the input board are fed directly to the Faders with Programme and Cue switching taking place in SSM-2402 and SSM-2404 Click-Free switching ICs.

The seven High Level channels all have identical mixing circuits, with the Telephone channel and the two Microphone input channels differing slightly, please see the overall block diagram for principle details.

Channel On-Off and Cue control logic is done by Microchip PIC Microprocessors controlling Channel Audio switching, Channel status LEDs, Machine Control and Loudspeaker Muting.

The following Audio outputs, Microphone Cleanfeed, Telephone Feed, Cue Bus, Programme Left and Programme Right, all operate on a nominal output level from the Mixing Board of 0 dBu, and appear on a Ribbon connector which feeds the Audio Signal back to the output section of the main IO Board, FLCN-IO.

Output Section on the FLCN-IO Board.

Audio outputs from the FLCN-MX Board, feeds the various Line Amplifier circuit on the FLCN-IO Board.

These circuits are substantially identical, each consisting of an Operational-Amplifier connected as a gain buffer and provided with a Pre-set potentiometer to control the output level of the SSM-2142 Balanced Output Line Amplifier allowing the setting of output levels anywhere between -2 dBu and +10 dBu.

Line input and Output levels are factory aligned to the Australian Standard Broadcast operating level of +4 dBu.

Program and Cue Output levels are indicated by high quality "Sifam" VU Meters.

Additional Program Output information is provided by LED Overload Warning indicators set to flash 10 dB above alignment level and LED Phase Reversal Warning indicators will flash to indicate unintended phase reversal of stereophonic program material.

A Balanced Talkback input feeds through a Talkback Level control to the Cue Loudspeaker.

5 Relay controlled Talkback outputs operated by switches on front panel are provided with talkback audio derived from the Announcers Microphone.

Monitoring is in Stereo, and selectable between the Off-Air monitor input, Extension monitor input and Mixer output with levels controlled by the Monitor Fader. On Power-Up, monitoring automatically defaults to the Off-Air monitor input.

The Loudspeaker Monitor Line Output, and Cue Loudspeaker automatically mutes whenever a Microphone is switched to Program or Cue.

The Announcers Headphones receives the same audio as that selected for the general loudspeaker monitor system with the level controlled by a rotary potentiometer, and arranged for Split-Cue operation with one side of the headphone switching to the Cue Channel when an input channel is switched to Cue.

Split Cue Headphone, Cue Loudspeaker and Talkback Levels are all controlled by separate rotary controls.

The Guest Headphones are in Mono, and fed audio derived from the mixer program output with the level controlled by a Trimpot on the main FLCN-IO board.

Remote Control Board, Type FLCN-RC.

This Board is supplied as an optional extra and contains the Machine Start-Stop remote control circuitry and Relays for High Level Inputs 3 to 8.

Power Supply.

Power supply for the Falcon –10 is the PSU-01 constructed in a small metal case, and external to the mixer for safety, connect via Screw Terminals on the FLCN-IO Board through a cable supplied with the mixer.

Power from the supply is Regulated to + 15V DC, - 15V DC for the Audio Electronics, and + 12V DC for Control circuits and Relays with everything inside the Falcon –10 Mixer absolutely safe to touch.

Technical Specifications.

Line Inputs	Differential Balanced Z in appx 50 K Ohms.
Mic Inputs	Differential Balanced Z in Greater than 1K Ohm
Line Outputs	Differential Balanced Z out appx 50 Ohms
Line Input Level	Adjustable from 300 mV to + 10 dBu
Output and Level Display Alignment Level	Adjustable 0 dBu, +4 dBu and +8 dBu
Output Crash Level	+ 24 dBm into 600 Ohms or greater

High Level Channel in, Program Line out.

Mixer gain Unity, Input level +16 dBu, Output Level +16 dBm, Load 600 Ohms.

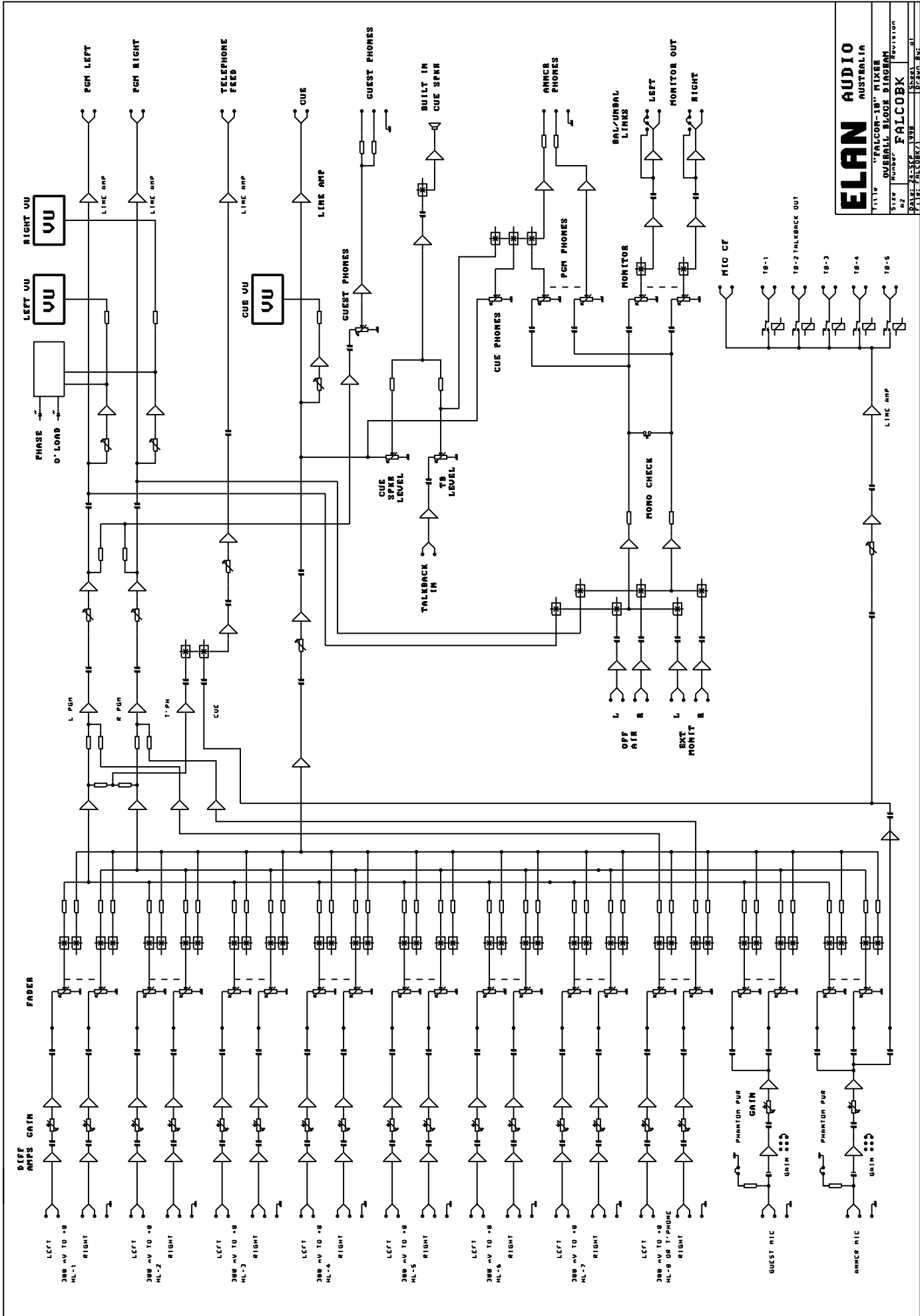
		Specification.	Actual measurements
Frequency Response	+0 -0.2 dB	20Hz to 20 KHz	(-1 dB 9 Hz to 80 KHz)
Harmonic Distortion	100 Hz	0.02%	(0.015%)
	1000 Hz	0.02%	(0.015%)
	10 KHz	0.04%	(0.03%)
S/N Ratio	20 Hz to 20 KHz	88 dB	(93 dB)
Crosstalk		65 dB or better	(86 dB at 1 KHz)

Microphone Channel in, Program Line out.

Mixer Gain 68 dB, Input Level -52 dBV, output level +16 dBm, Load 600 Ohms.

		Specification.	Actual measurements
Frequency Response	+0 -0.2 dB	20Hz to 20 KHz	(-1 dB 11 Hz to 100KHz)
Harmonic Distortion	100 Hz	0.05%	(0.045%)
	1000 Hz	0.025%	(0.02%)
	10 KHz	0.06%	(0.05%)
S/N Ratio	20 Hz to 20 KHz	74 dB	(76 dB)

EIN varies with Microphone Pre-Amp setting, normally expect
 -120 dBV in Low Gain setting,
 -126 dBV in Mid Gain setting,
 -129 dBV in High Gain setting.



ELAN AUDIO AUSTRALIA
 TITLE "FALCON-18" MIXER
 OVERALL BLOCK DIAGRAM
 STATE NUMBER 42
 NAME FALCOBK
 DATE 24/SEP/1998
 DRAWN BY FALCOBK
 CHECKED BY

ELAN Audio

ON-AIR
ON-DELAY
DUMP

VU CUE

VU RIGHT

VU LEFT

HL SEL 1 2 3 4 5

OVERLOAD PHASE

"FALCON" Professional Audio Mixer

HL-1 HL-2 HL-3 HL-4 HL-5 HL-6 HL-7 HL-8

MONITOR MONO CHECK MUTE

ANNCR MIC GUEST MIC CUE OFF ON

CUE OFF ON

CUE OFF ON

CUE OFF ON

CUE OFF ON

CUE OFF ON

CUE OFF ON

CUE OFF ON

CUE OFF ON

CUE OFF ON

OFF AIR EXT PGM

MONITOR SELECT

CUE PHONES PGM PHONES CUE SPEAKER

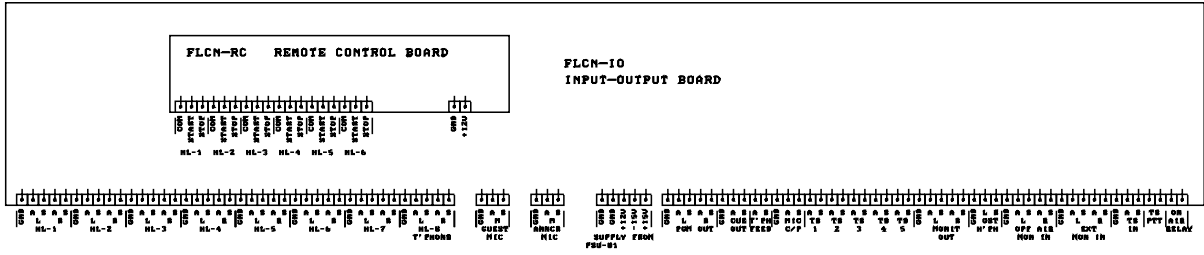
TB-1 TB-2 TB-3 TB-4 TB-5 TB-6 TALKBACK

TALKBACK

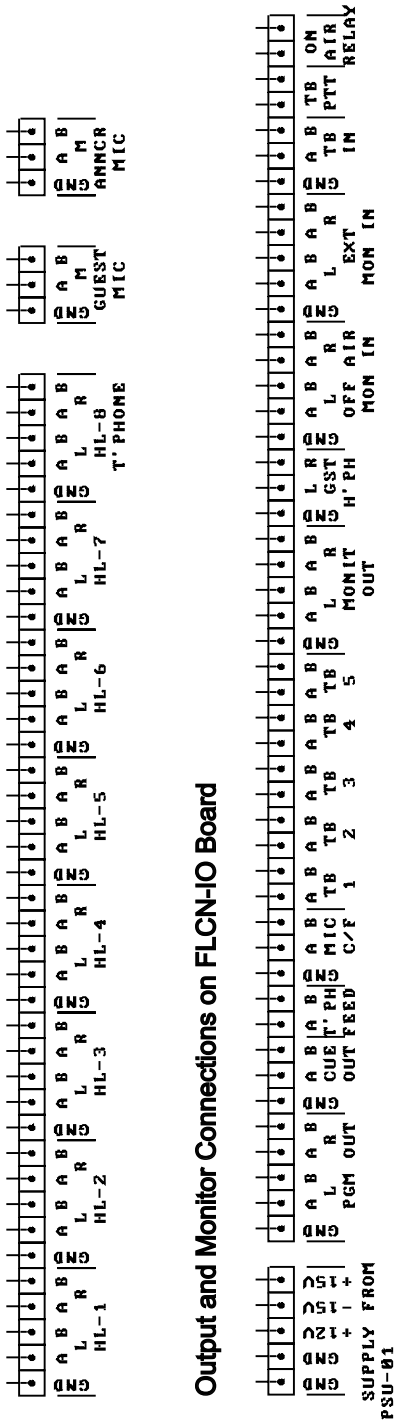
ELAN "Falcon-10" On Air Mixer

Physical Dimensions
W 640mm D 360mm H 145mm

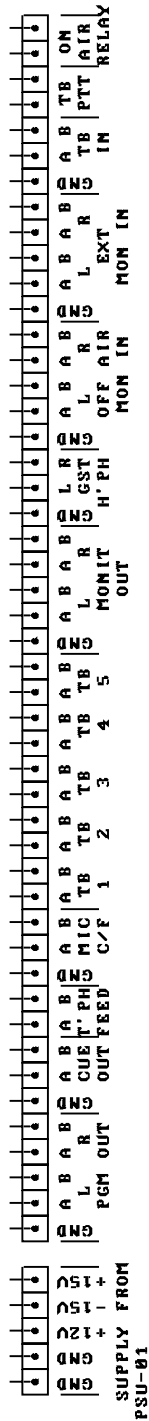
"Falcon-10" Input and Output Connections



Input Connections on FLCN-10 Board

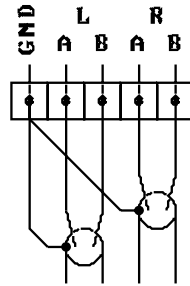
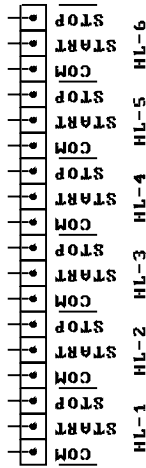


Output and Monitor Connections on FLCN-10 Board

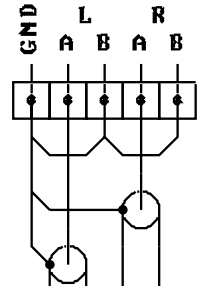


Use GND and A leg for Unbalanced Monitor Output

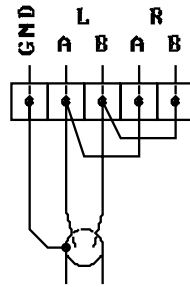
Remote Control Connections on FLCN-RC Board



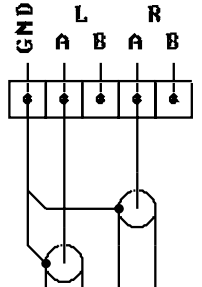
Stereo Balanced Line In and Out



Stereo Unbalanced Line In

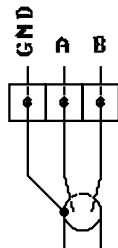


Mono Balanced Line In



Unbalanced Monitor Out

Guest Headphone Out



Microphone In

