ELAN AUDIO

2 STEEL COURT SOUTH GUILDFORD WA 6055
PHONE (08) 9277 3500 FAX (08) 9478 2266
email poulkirk@elan.com.au
web www.elan.com.au

Promotional Material

CPF-01

Composite Stereo Program Fail Detector

The CPF-01 is a practical “Mini Program Input Equipment” System for use on Composite Stereo FM Transmitter Sites where the more elaborate and expensive Elan Audio PIE-02 Program Input and Monitoring System cannot be justified for economic reasons

The attached Block Diagrams, CPF-01 BLOCK show the principle schematic of the CPF-01, the CPF-01 Application Schematic show a small number of many possible applications for the CPF-01

Description

The CPF-01 is a Rack Mounting unit occupying 1 RU of Rack Space

All connections required for installation are located on the rear panel and are as follows

Main Input:	Unbalanced Composite Stereo BNC
Standby Input:	Unbalanced Composite Stereo BNC
And:	Balanced + 4 dBu Mono XLR Female
And:	Unbalanced 300 mV Stereo 2 x RCA Phono
Emergency:	Unbalanced Composite Stereo or Unbalanced Pre-Emphasized Mono BNC
Output x 2:	Unbalanced Composite Stereo or Unbalanced Pre-Emphasized Mono BNC
Monitor:	Balanced + 4 dBu Left and Right 2 x XLR Male
Remote:	Remote Control In and Out DB-25 Female (Use if Remote Control System Installed)
Emerg Run:	Emergency Start Relay Contacts 2 Pin Removable Screw Terminal
Power In:	210 to 250V AC 50 to 60 Hz, Fused IEC Mains Inlet

The CPF-01 is provided with three principal Inputs, Main, Standby and Emergency, one of which will feed programme audio to two Outputs through Relays which are controlled by a Microprocessor programmed to perform the necessary programme changeover decisions

Main Input is via a BNC Socket and will take Composite Stereo Signal through one Relay directly to the two parallel wired Outputs when the CPF-01 is in Auto Mode and Composite Stereo Signal is present

Standby Input is “Universal” and will accept Composite Stereo via a BNC Socket, Balanced + 4 dBu Mono via a Female XLR Connector, or Unbalanced 300 mV Stereo via RCA Phono Connectors

From the factory, a moveable Standby Source Link is set to make the BNC Socket the active Input

The Balanced Mono XLR and Unbalanced Stereo RCA Phono Inputs are activated by moving the Standby Source Link from the BNC position to the EXT position

Balanced Mono and Unbalanced Stereo is conditioned to become Pre-Emphasized Mono by the input circuitry, fed through a Multi-turn Gain Control potentiometer and Buffer Amplifier and on to the EXT position link

Emergency Input is via a BNC Socket and will accept Composite Stereo, or Pre-Emphasized Mono from the Elan Audio REP-01 or RAD-01 MP3 Emergency Players or similar audio sources

Operation

The CPF-01 will operate as an Automatic Programme Fail Sensing and Changeover System, or a manual Programme Changeover System controlled locally by switches located on the front panel, or remotely via an external Remote Control System such as the Elan Audio RCU-01 by momentary contact closures to ground on the DB-25 connector on the rear panel

Automatic Operation: Is activated by pressing the AUTO switch

Condition Normal: Signal is present on Main Input and will pass directly to the Outputs via Relay 1

Please note: Relay 1 is not energized in this condition, and will continue to pass signal to the outputs providing a measure of "Fail Safe" protection in the unlikely event that the CPF-01 itself suffers failure

Main Input Signal Fails: The CPF-01 will change to Standby Input after set Time Delay by closing Relay 1 and also close Relay 4 which may be used to initiate an ISDN or Tieline POTS Dial-Up, see further notes later in this on Fail Levels, Fail and Fail Recovery Delay settings

If signal is not present on the Standby Input: the CPF-01 will switch to the Emergency Input, Relays 1 and 2 closed and also close the Emergency Run Relay, Relay 3 to start the Emergency Player

Signal appear on Standby Input: after successful Dial-Up, Relay 1 will release, Relay 2 will stay closed to feed signal to output from the Standby Input the Emergency Run Relay will release to stop Emergency Player

Signal on Main Input returns: Relay 2 will release to feed Main Input to Outputs, Relay 4 will release to drop the ISDN or POTS Line restoring the system to normal condition

Monitoring

The CPF-01 is provided with basic Monitoring Facilities accessing Main, Standby and Emergency Inputs and the Output, switch selectable from the Front Panel

Each Monitor point is fed from a Stereo Decoder providing discrete Left and Right + 4 dBu Balanced Outputs on XLR Connectors, and a Stereo Headphone Feed

Stereo Decoders

The CPF-01 is provided with 4 Stereo Decoders servicing Main, Standby and Emergency Inputs and the Output for Monitoring

The Decoders for the Main and Standby Inputs also provide the discrete Left and Right Audio and Pilot Tone sensing required for the Program Fail Sensing circuitry

The Decoders require relatively accurate signal levels and are provided with input level control "Links" to optimise their performance with the two common Composite Stereo Levels used in Australia

Link In	Common European Level	0 dBu = 100 % Modulation at 400 Hz
Link Out	Common USA Level	3.5V PP or + 4 dBu = 100 % Modulation at 400 Hz

The CPF-01 is factory set for the USA 3.5 V PP level

Control System and Settings

All Control Functions are managed by a PIC 18F-8720 Microprocessor

Program Audio Level Fail Sensing

Left and Right Outputs from the Main and Standby Decoders are each fed through three amplifier stages. Stage 1 is a High Pass Filter, -3 dB at about 3 KHz with a 6 dB per octave roll off above this frequency to prevent the Pilot Tone from influencing the Program Fail Sensing

Stage 2 controls sensitivity, adjustable by moveable links in 5, 6 dB steps. 0 dB, - 6 dB, - 12 dB, - 18 dB and – 24 dB

0 dB corresponds to a level 12 dB below 100 % Modulation

Stage 3 is a Voltage Shifter and Buffer Stage driving directly into A/D Converters in the Microprocessor

The CPF-01 is factory set at the – 18 dB Fail Level

Stereo Channel Fail Sensing

The CPF-01 is factory set so that both Left and Right channels must fail before the CPF-01 will react

DIP Switch C will activate Stereo Channel Fail Sensing on the Main Input
DIP Switch D will activate Stereo Channel Fail Sensing on the Standby Input

Pilot Tone Fail Sensing

The CPF-01 is factory set to ignore whether Pilot Tone is present or not

DIP Switch A will activate Pilot Tone Failure Sensing on Main Input
DIP Switch B will activate Pilot Tone Failure Sensing on Standby Input

The CPF-01 is factory set to react in about 1 second after Pilot Tone Failure if activated

A Link on Option 1 Link Pins will make Main Input Pilot Tone Delay the same as Audio Level Failure
A Link on Option 2 Link Pins will make Standby Input Pilot Tone Delay the same as Audio Level Failure

Failure Time Delay Settings

The CPF-01 is factory set for a 30 Second Delay between Program Failure and Action

Time from Program Failure to Action is set on the 8 position Fail Time DIP Switch in 1 Second Steps, up to a maximum of 255 Seconds

Recovery Delay Settings

The CPF-01 is factory set for a 4 Second Delay between Return of Programme and recovery to normal operation

Delay Time may be set in 4 Second Steps from 4 Seconds to 60 Seconds

Instant Recovery on Return of Main Programme may be undesirable, particularly when using long, sometimes marginal STL Paths subject to Rain Fade where the program recovers briefly, then drops out again often several times. A Recovery Delay, of up to 60 Seconds may be desirable in some circumstances

Unused Facilities

Relay 2 Reserved for Future Applications

Option Link 3 Reserved for Future Applications
Option Link 4 Reserved for Future Applications
Option Link 5 Reserved for Future Applications

Front Panel Control Switches

Input to Output Select

Main	Forces Main Input to Output and Disables Auto Function
Standby	Forces Standby Input to Output and Disables Auto Function
Emergency	Forces Standby Input to Output and Disables Auto Function
Auto	Switches the CPF-01 to Automatic Operation

Monitor Select

Main	Switches Main Input to Monitor Output
Standby	Switches Standby Input to Monitor Output
Emergency	Switches Emergency Input to Monitor Output
Output	Switches Programme Output to Monitor Output

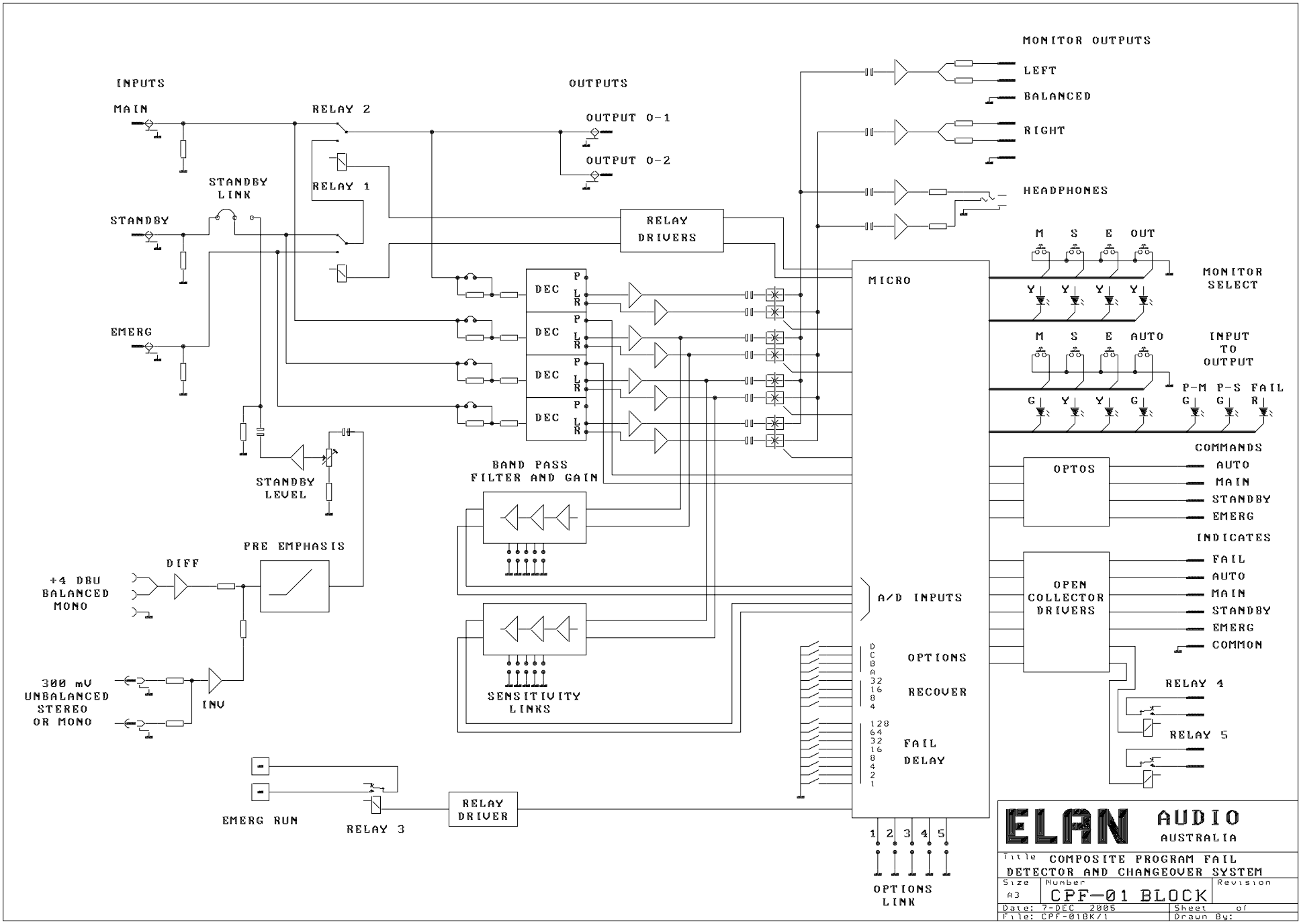
Front Panel Indicators from Left to Right

Program Input to Output Select

Main	Green	Indicates Input switched to Output Steady if on Auto and signal present on input Flashing if forced to Output
Pilot	Green	Steady if Pilot Tone is present
Standby	Yellow	Indicates Input switched to Output Flashing if on Auto and signal present on input Flashing if Forced to Output Relay 1 Closes for Dial-Up Function
Pilot	Green	Steady if Pilot Tone is present
Emergency	Yellow	Indicates Input switched to Output Flashing if on Auto Flashing if Forced to Output Emergency Run Relay Closes
Auto	Green	Steady if Main is Input and active Flashing other inputs to output Off if any input is forced to output
Status	Red	Off if on Auto and Main is active Input Flashing if any other Input than Main is switched to Output Flashing if Forced

Monitor Select

Main	Yellow	Indicates Main Input to Monitor Out
Standby	Yellow	Indicates Standby Input to Monitor Out
Emergency	Yellow	Indicates Emergency Input to Monitor Out
Output	Yellow	Indicates Program Output to Monitor Out



ELAN AUDIO AUSTRALIA

Title: COMPOSITE PROGRAM FAIL DETECTOR AND CHANGEOVER SYSTEM

Size: A3 | Number: CPF-01 BLOCK | Revision:

Date: 7-DEC 2005 | Sheet of

File: CPF-01BK/1 | Drawn By:

STUDIO COMPLEX

TX SITE

·SENT STATION

OFF AIR
PICK UP FROM
PARENT STATION

SCHARIO-9

OFF AIR
EX

SEE-01
OR
ENE-01

SEE-01
OR
END-01

OFF-01

TX-1

CPF-01 APPLICATION EXAMPLES

POSSIBLY SEVERAL OTHER SCHEMES EXISTS
FOR USING THE CPF-01 COMPOSITE PROGRAM
FAIL DETECTION AND CHANGEOVER SYSTEM

USE OF A REMOTE CONTROL SYSTEM SUCH AS
THE ELAN AUDIO RCU-01 IS OPTIONAL