

Operations Manual for the CP-1000 Legal Eyes RGB Clipper



UNI-System

--V4.2 Software 10/2/99--

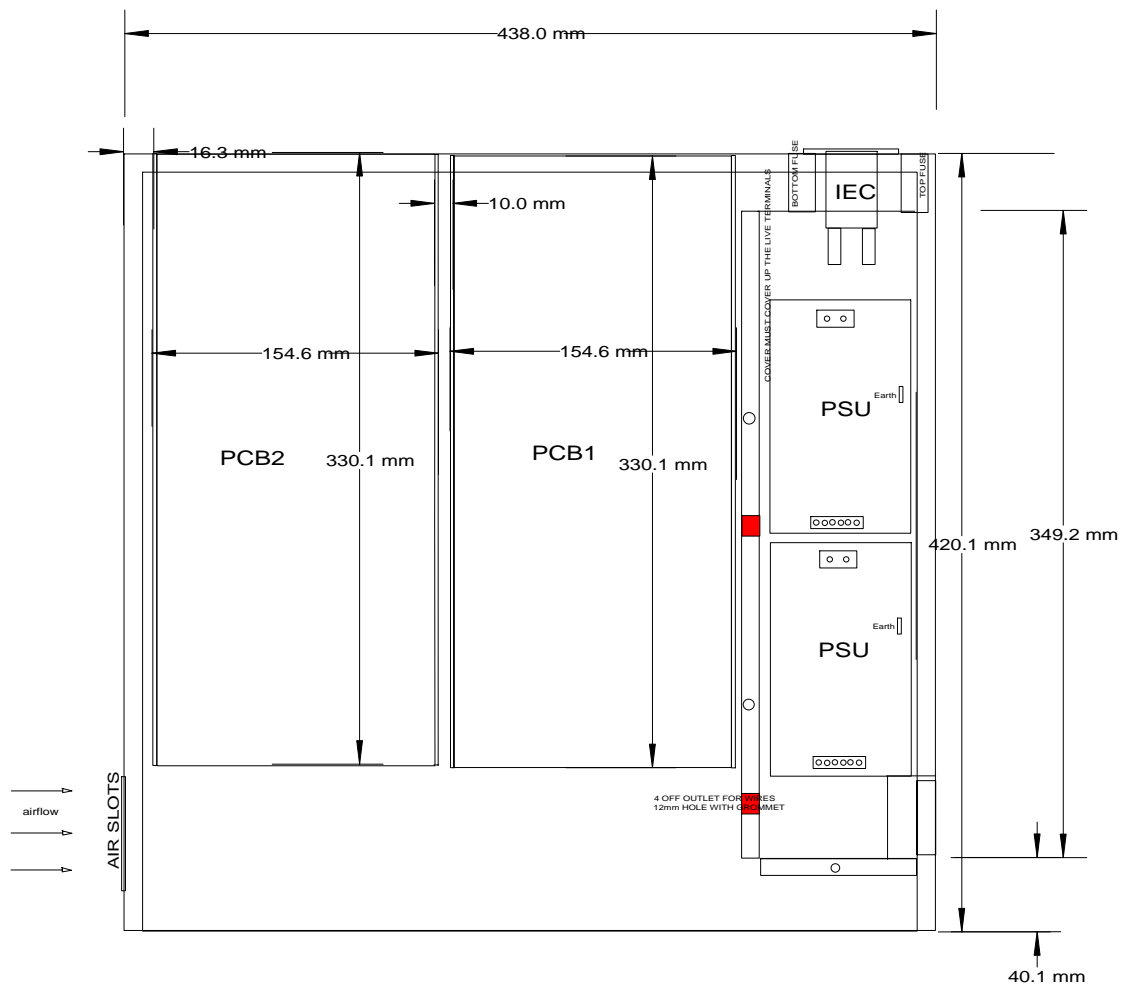


Table Of Contents

Page 3	Technical Specification
Page 4	Uni-Panel Set-up
Page 5	Uni-Panel- First Birthday Protocol Change User Slot Text
Page 6	CP-1000 Operation- Switch by Switch
Page 7	CP-1000 Operation- Full Menu Set
Page 8	Hard and Soft Clipping with the CP-1000
Page 9	Assembly of the CP-1000 PCB into a Uni-box. Installing the DA-1 Analogue output Option.
Page 10	Linking the DA-1 Options
Page 11	CP-1000 Connections
Page 12	Location Of User Links On the CP- 1000

Technical Specification

CP-1000



Physical Format	Host PCB Subsystem for fitting into an Eyeheight Uni-Box System.
Power Requirements	+5V at 1.5 Amp, supplied from the Uni-Box. -5V at 200mA, supplied from the Uni-Box.
General Features	<ul style="list-style-type: none"> ●4:2:2 YUV Colour Space Conversion to 4:4:4 RGB with Clipping Look Up Tables and re-conversion to 4:2:2 YUV ●Downstream Ring Suppression with Eyeheight Clobber-Ring Technology ●Downstream EDH Re-insertion ●Fail-safe Dual Contact Relay bypass from input to output 1 on power failure.
Local Control	Standard Eyeheight Uni-Panel (UP-1000)
Remote Control	Standard Eyeheight Uni-Panel situated up to 50M remotely using RS422 control with power from the Uni-Box.
Accessories	<ul style="list-style-type: none"> ●The CP-1000 PCB requires a spare slot in an Eyeheight Uni-Box (UB-1000) ●Control is by Eyeheight Uni-Panel (UP-1000). ●Optional monitoring RGBS/YUV outputs with plug-in PCMIA Card. (DA-1)
Input	270 Mbit Serial Digital with active loop through. Input R.L <-15dB, 75 Ohm
Outputs	'2 off Main Serial Digital

	outputs (BNC) (Output 1 is "Fail Safe"). 75 Ohm. '1 off Act. loop through (BNC). 75 Ohm. 'Optional monitoring quality RGBS, YUV Configurable outputs (4 off BNC). 75 Ohm, +/- 2% video level accuracy, Sync o/p 2V pk-pk
System Delay	The system delays the input signal by 140 system clock cycles, or approx. 5.2uS in Process and Bypass mode.
Other Connections	RS422 control 9W D type (fem)

CP-1000 Operation

The CP-1000 "Legal Eyes" RGB Clipper is generally controlled from an Eyeheight Uni-Panel either locally mounted on the front of a Uni-Box or remotely sited using the rear RS422 control system. Optionally the user may wish to control the system from a computer system simulating a Uni-Panel. The RS422 Protocol for the Uni-Panel is published in the Manual for the Uni-Panel/Box. Fig. 1 Shows the 10 Pre-set switches for the CP-1000 operation. If the CP-1000 unit is used in conjunction with a CG-1000 Serial Digital Safe Area Generator the lower set of legends (Labelled in Fig. 1 as "NoDev") will correspond to the CG-1000 unit, we will ignore this in the description of the CP-1000 RGB Clipper unit.

Clip > NoDev	100/0 % -- --	Hi- Clip -- --	Lo- Clip -- --	Mon i/p -- --	Mon op -- --	Strob e -- --	Blank -- --	---	---	ON --
SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8	SW 9	SW 10	
Selects between the Two possible Systems	Sets the clip level to 100% white and 0% Black	Enables the adjustme nt for the high clipping	Enables the adjustme nt for the low clipping	Analogue output will monitor the clipper input	Analogue output will monitor the clipper output	Analogue o/p will twitter between o/p and i/p	Edge os picture and film Blanking ratios	Not Used	Switches out the clipping and colour space converte rs	

Unit Fig. 1 Uni-Panel Pre-set Switches for Single CP-1000

UNI-Panel Set-up

Before describing the cage unit in detail, some general features of a Uni-panel should be noted pertaining to possible problems if control of a CP-1000 unit cannot be obtained.

The Uni-Panel has a number of set-up features that are important to know about. These set-up features are permanently stored in EE-prom such that once they are set up there should be little or no need to change them again.

Pressing certain keys on the Uni-Panel while the unit is being powered up activates the set up modes. If the Uni-Panel is locally situated on the front of a Uni-Box, then the whole Uni-box must be re-powered while the set-up keys are pressed in. If the Uni-panel is remotely sited, then it may be easier to re-power the panel only by disconnecting and reconnecting the 9W D type, while the set-up keys are being pressed.

In the following text the terminology "**slot 0**" refers to the PCB system on the Right Hand side looking from the **rear** of the Uni-Box.

The terminology "**slot 1**" refers to the PCB system on the Left-Hand side looking from the **rear** of the Uni-Box.

First Birthday:

Pressing switches 1 and 10 together when power-up happens will cause a 1st Birthday to occur. This will clear the EE-prom to 00h, **and consequently put the panel into 'Local' mode and lose all the CP-1000 start-up data and the user set device names.** Re-powering will however put the system into a sensible default mode.

After EE-Prom is cleared, the message 'EE-OK' will appear on the LCD display and the host systems must be restarted by a total power down.

Protocol Change:

Pressing switches 3 and 8 together when power-up happens will cause the panel protocol to toggle between 'Eyeheight 2 wire local talk' and RS422. If the panel is remotely sited 'RS422' is required. If the panel is on the front of a Uni-Box then 'Local' is required.

Slot Identification Text:

Pressing switches 5 and 6 together when power-up happens will cause a mode to be entered such that the "user slot text" can be changed and stored in EE-prom.

The Text is displayed when a user uses SW 1 to switch between slot 0/1. This announces that now you are controlling, for example 'Studio 1 Clipper' or 'P Box 1 Clipper'.

The default text after a first birthday is 'Dev 1' for slot 0 and 'Dev 2' for slot 1.

To change the text for slot 0, enter this mode by powering up with sw 5 and 6 pressed. You will now see the Slot 0 text (Dev 1). adjust character under the underscore by moving the 'adj.' digipot. To move the underscore use the 'menu' digipot.

When you have completed the slot 0 text, press sw 10 (Flashing led). this will then do the same for the slot 1 text. When this is complete press SW 10 and after a few seconds re-power the system.

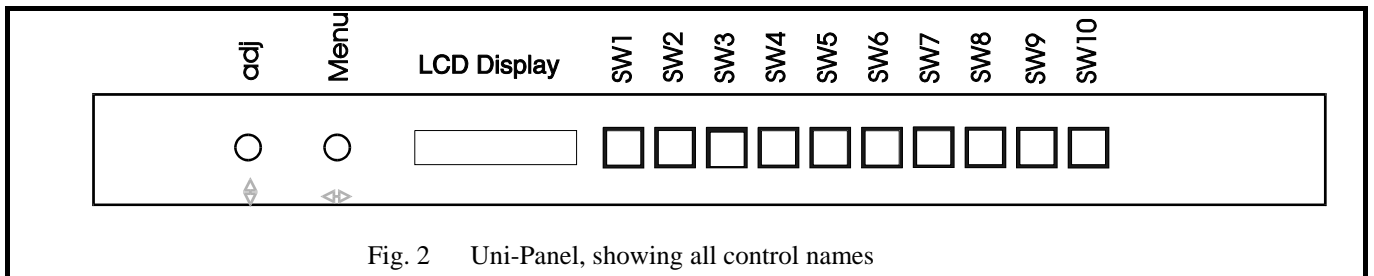


Fig. 2 Uni-Panel, showing all control names

Operation of the CP-1000 "Legal Eyes" RGB Clipper

The CP-1000 is controlled from the 10 front panel switches as follows:

SW 1 - Device Select	This button toggles between the Two possible systems being controlled by the Uni-Panel. In the case where there is only one CP-1000 system installed, this button does nothing. If a CG-1000 was installed in the second slot, control would toggle between the CG-1000 cage and the CP-1000 RGB Clipper.
SW 2 - 100/0%	This button pre-sets the clipping levels to 100% (Peak White) and 0%, (Black)
SW 3 - Hi-Clip	This enables the adjustment of the High Clipping level in the RGB domain using

	the "adj" knob
SW 4 - Lo-Clip	This enables the adjustment of the Low Clipping level in the RGB domain using the "adj" knob
SW 5 - Mon I/P	This Button forces the analogue output of the unit (Option DA-1) to monitor the input of the clipper.
SW 6 - Mon O/P	This Button forces the analogue output of the unit (Option DA-1) to monitor the processed (Clipped) output of the clipper.
SW 7 - Mon Strobe	This Button forces the analogue output of the unit (Option DA-1) to Constantly switch between the processed (Clipped) output of the clipper and the Input of the Clipper, hence highlighting the Clipped areas of the picture.
SW 8 - An Blank	This activates the analogue blanking (Narrow Blanking) on the left and right hand sides of the picture.
SW 9 - Not Used	Not Used
SW10- ON	This will cause the system to output the direct input of the Clipper when LED is off, hence bypassing the system completely. When the LED is on the Clipper is operational.

Full Menu Set

This set of set-ups is adjusted using the "Menu" and "adj" knobs while observing the LCD Display on the front of the Uni-Panel.

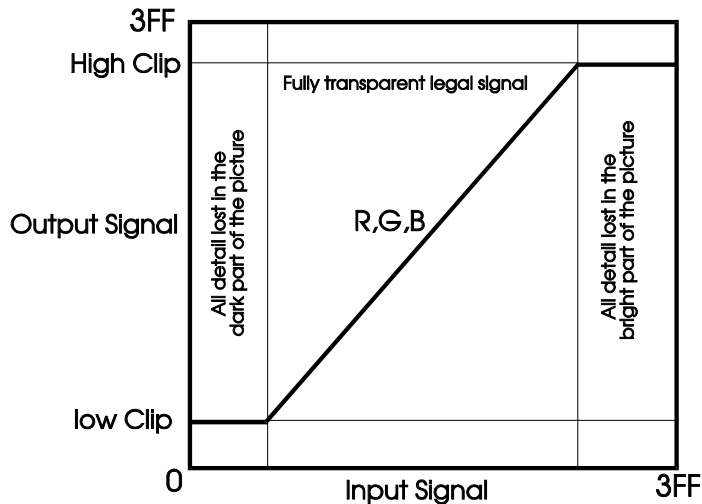
MENU (SELECT -"MENU" KNOB)	EFFECT (CHANGE-"ADJ" KNOB)
High clip=	This enables the adjustment of the High Clipping level in the RGB domain using the "adj" knob
High KNEE=	This enables the adjustment of the High Knee level in the RGB domain using the "adj" knob

low clip=	This enables the adjustment of the low Clipping level in the RGB domain using the "adj" knob. See Soft Clip Operation.
low KNEE=	This enables the adjustment of the low Knee level in the RGB domain using the "adj" knob. See Soft Clip Operation.
601 filter=	This causes all of the active picture to go through the colour space converters rather than just the clipped portions. The result of this is that the whole picture goes through the multi-pole FIR filtering inside the Gennum colour space converter circuits.
clobbering=	This switches on and off the Eyeheight Ring suppression system. This system will help reduce overshoots and undershoots on fast transitions which are near 100% and 0% video levels.
Anlg blank=	This switches on and off the analogue (narrow) blanking.
Mon op=	This switches between the options on the analogue monitoring output.
Strobe adj=	This switches "strobe adjustment" on and off. If strobe adjustment is on, then as clipping levels are adjusted the output of the unit will flicker between the Input of the unit and the (Clipped) output of the unit. This enables a user to see the effect of the clipping easily. as it is adjusted.
INSERT EDH=	Switches Output EDH On/Off

Soft and Hard Clipping Operation

The CP-1000 is capable of both Hard and soft clipping. Hard Clipping is when the Intermediate RGB is simply cut off at a certain level, usually 100% for the whites and 0% for the blacks. This is represented by the following graph. The advantage of this kind of clipping is that the parts of the input signal that are "legal", i.e. "Unclipped" remain completely unchanged by the clipper, However, the disadvantage is that all the detail in the clipped portions are lost.

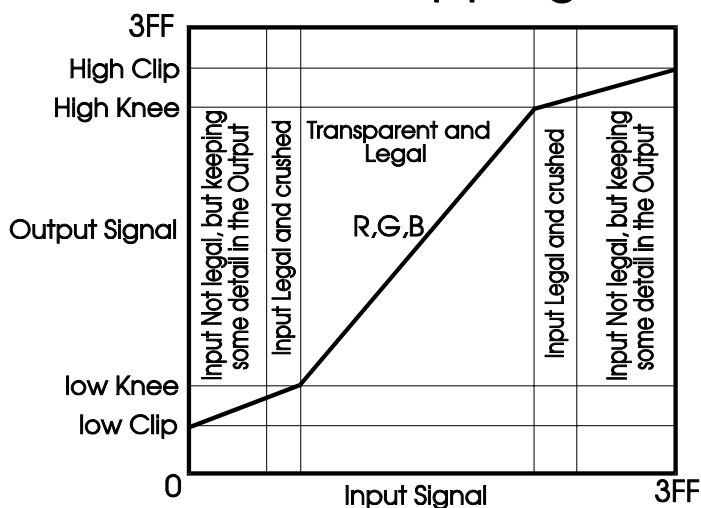
Hard Clipping



Graph Represents the Intermediate RGB Signal with range 0-3FF

Soft Clipping is when the Intermediate RGB has a "Knee" at which it reduces the slope of the transfer curve. The advantage of this is that it enables the blacks and whites to retain some picture detail rather than the hard clip situation, which cuts off the input signal completely. However, unlike the hard clip situation, portions of the legal input signal are modified by the transfer curve of the knee.

Soft Clipping



Graph Represents the Intermediate RGB Signal with range 0-3FF

Assembly of the CP-1000 PCB into a Uni-box.

Normally a system will be assembled and set-up at the factory, However a user may wish to move cards from one Uni-Box to another and change user settings from time to time.

The procedure for assembling a CP-1000 into a Uni-Box is as follows:

- 1)... Remove the mains from the Uni-Box.
- .
- 2)... Remove the blank rear cover, by unscrewing the six M2.5 screws at the rear slot. If there is already one PCB Subsystem in the rear of the unit there will only be one rear blank cover over Slot 1 and this will be on the LEFT looking from the rear of the unit. If for and reason there are NO PCB Subsystems in this Uni-Box, then the CP-1000 MUST be inserted into Slot 0, which is the Right Hand slot looking from the rear.
- 3)... Insert the CP-1000 PCB into the slot and affix the six M2.5 screws.
Take care not to snag the Coaxial cables as you do this, the connections are delicate.
- 4)... Re-apply the mains to the Uni-Box and the systems will start-up.
- .
- 5)... On start-up you should now get the message "Legal Eyes 2 Vxx"
either once or twice depending on whether there are one or two CP-1000 PCBs in this Uni-Box. On the first power-up

you should also observe the message "EE-upload" rather than the usual EE-download message on the LCD Display of the Uni-Panel.

- 6)... Refer to the "Slot Identification text" section of this manual under "Uni-Panel" set-up for instruction on how to personalise the name of the Clipper (e.g. "Paintbox Clipper")

Installing and using the DA-1 Analogue Output Option

The DA-1 analogue output option is available as a user-upgradable Option for the CP-1000 PCB. It is a PCMIA style monitoring Quality Digital to Analogue converter used to display the output (Or the Input) of the CP-1000 on a standard Analogue RGBS or YUV Monitor.

Installation of the DA-1

Remove the CP-1000 from the Uni-Box using the reverse procedure detailed above. Insert the PCMIA converter into the PCB in position SK 1.

Linking options for the DA-1

For RGBS output, locate LK4 on the CP-1000 PCB. Jumper across the pairs of pins labelled RED, GRN, BLU, SYNC **ONLY** DO NOT link any other pins on LK4.

For YUV output, locate LK4 on the CP-1000 PCB. Jumper across the pairs of pins labelled Y, U, V, SYNC **ONLY** DO NOT link any other pins on LK4.

Other Configuration for the DA-1

There is one more jumper that effect the DA-1 this is as follows:

LK 3 (SYNC)	ON-Disables the Sync on everything except the Sync Output BNC.
	OFF-Enables the sync on Y/Green and the Sync Output BNC.

CP-1000 RS422 Connection

This is the Pinout for the 9W D-type RS422 Connector

Pin 1	Ground 0V
Pin 2	Tx-
Pin 3	Rx+
Pin 4	Not Used
Pin 5	+12V dc Power (UP-1000)
Pin 6	Not Used
Pin 7	Tx+
Pin 8	Rx-
Pin 9	Ground 0V

CP-1000 Rear Panel Connec

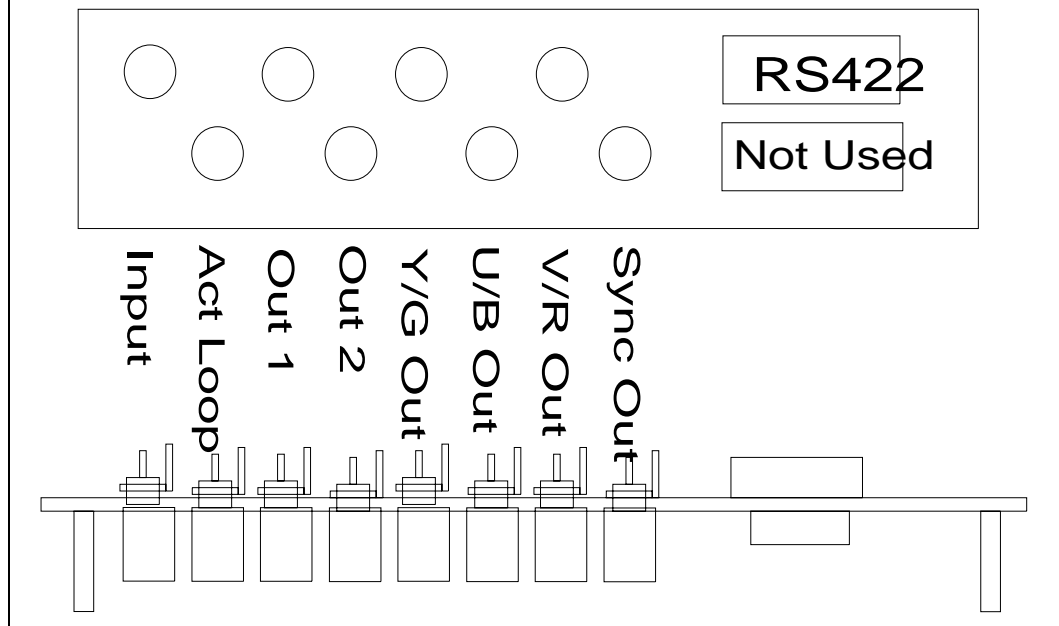


Fig 3
Connections

Rear Panel

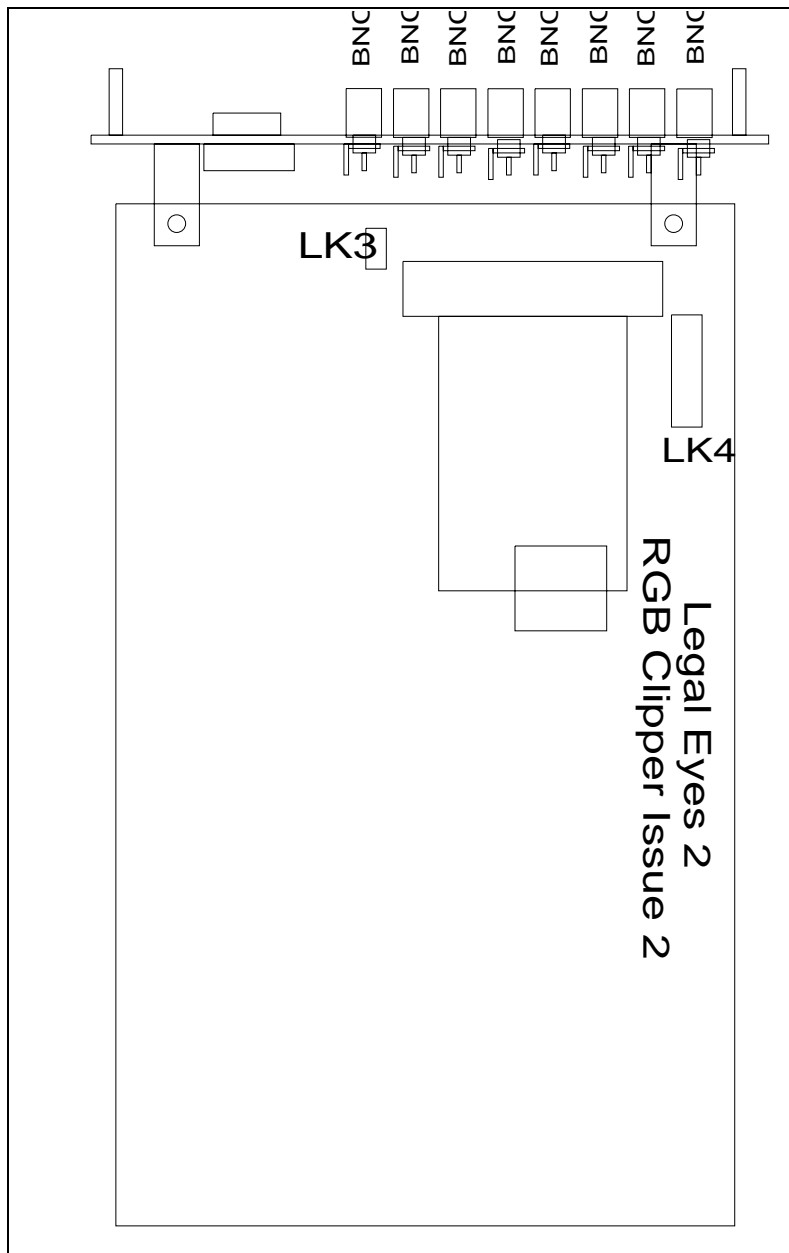


Fig. 4 Location of links on the CP-1000