

# Film-Tech

The information contained in this Adobe Acrobat pdf file is provided at your own risk and good judgment.

These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

If you are not a qualified technician, please make no adjustments to anything you may read about in these Adobe manual downloads

[www.film-tech.com](http://www.film-tech.com)



**CA21 Cinema Automation  
Configuration  
for Wall Mount Box  
for Christie Inc**

With CP45 and serial CP500

15<sup>th</sup> Dec 1998

**Wall Mounting Christie Firmware  
For Pennywise™ CA21 Cinema Automation**

**Front Panel Operations**

Auto Start  
Auto Stop  
Motor On  
Motor Off  
Dowser Open  
Dowser Close  
Flat  
Scope  
Mono/Other  
Stereo  
SR  
Digital  
Non Sync 1  
Non Sync 2 (used for 1.66)  
House Up  
House Preset  
House Down  
Slide On (Timed)  
Slide Off  
Delay  
Volume Change

*Pennywise is a registered Trade Mark of Pennywise Peripherals Pty Ltd,  
518 Camberwell Rd, Vic, 3124, Australia.*

**Relay Allocation**

1	Motor (on/off)	25	Slide Projector (on/off)
2	Xenon (on/off)	26	Fader Local/Remote
3	Dowser Open	27	Motor On Pulsed*
4	Dowser Close	28	Motor Off Pulsed*
5	House Up	29	Lense 1.66
6	House Preset 1	30	Masking 1.66
7	House Preset 2	31	Slide Lamp (on/off)
8	House Down	32	Next Slide
9	Stage Up	33	Cycle Slides
10	Stage Down	34	spare
11	Curtain Open	35	Trailers (house is preset)
12	Curtain Close	36	Feature (house is down)
13	Mono	37	Motor on
14	Stereo	38	spare
15	SR	39	spare
16	Digital	40	Fault (film break or xenon)
17	Non Sync 1	41	
18	Non Sync 2	42	
19	Mute (on/off)	43	
20	Exciter On (on/off)	44	
21	Lens Flat	45	
22	Lens Scope	46	
23	Masking Flat	47	Interlocked motor on
24	Masking Scope	48	Interlocked motor off

All relays are supplied with a single NO contact. If a NC contact is required a link can be changed on the back of the IO Board.

Relays are rated at 5A. They should only be used to switch low voltages (24V). To switch higher voltages use intermediate relays.

All pulsed relays operate for 0.5 secs unless stated otherwise.

\*Two additional pulsed relays have been provided to control the projector motor to make it easier for manual buttons to be included. Projector off will have to be linked to have a normally closed contact.

### Input Use

- 1 Film Cue
- 2 Slide Cue
- 3-5 Used for CP-500 status.
- 6 Fire (emergency shut down)
- 7 Film Break
- 8 Xenon Fail (input on means lamp ok)
- 9 Fader remote (comes from sound processor)
- 10 Lense Wide Screen
- 11 Lense Cinema Scope
- 12 Lense 1.66
- 13 Motor On (comes from motor relay)
- 14
- 15
- 16 Interlocked operation (motor on)
- 17 Interlocked operation (motor off)
- 18
- 19
- 20
- 21
- 22
- 23
- 24

### Notes on Inputs

- Film Cue This is fed into input 1. When the CA21 is running a session a film cue causes the next step in the program to be executed.
- Slide Cue This cue normally comes from the carousel on the slide projector and indicates the last slide is being shown. When a slide cue is received and the slide projector is on, the cue behaves like a film cue and causes the next step of the program to be executed. Otherwise the slide cue is ignored.
- Fire This input when activated executes the emergency sequence.
- Film Break This input is activated to indicate the film has broken or ended.
- Xenon Fail This input is activated when the xenon is off and deactivated to indicate the xenon is on. It is commonly driven from a light dependent resistor.

**Motor On** This input is fed from the motor relay coil (<24V). It provides feedback to the CA21 so that motor control of interlocked projectors will work even if a projector motor is operated from the projector consol (ie external to the CA21). Leaving the input unconnected will ignore this feature. (If using this input it should be on when the motor is on.)

**Lense** The three inputs Lense Wide Screen, Lense Cinema Scope, Lense 1.66 are connected to the micro switches on a Cinemeccanica projector. Together they indicate the current position of the lense turret. They must be wired up to the CA21 to generate the input levels detailed below.

The number of lenses is selected by setup option PJ.

### Two Lense Turret

Turret Position	Wide Screen	Cinema Scope
Wide Screen Input	Active (24V)	Inactive (0V)
Cinema Scope Input	Inactive (0V)	Active (24V)

### Three Lense Turret

Turret Position	Wide Screen	Cinema Scope	1.66
Wide Screen Input	Inactive (0V)	Active (24V)	Active (24V)
Cinema Scope Input	Active (24V)	Inactive (0V)	Active (24V)
1.66 Input	Active (24V)	Active (24V)	Inactive (0V)

With the three lense turret control, the appropriate turret relay is held closed until the three inputs indicate the new position has been reached. The turret relay remains closed for a further time equal to AtP=. The picture is turned on again after a delay of Add=.

## Setup Options (PIN 3124)

- CP Clear all programs.
- Ed Edit disable - when set to 1 editing of programs will be disabled.
- Cn Cinema number for use with status panels - the range is 0 to 40. With a value of 0 no status panel will be driven.
- CA Set this option to 1 to use the CA21 with CA-Link Central Control. Also set this option to 1 to run CS30 Status Panels at 38.4k baud in conjunction with CA-Link. Set this option to 0 to run with older CS30 Status Panels at 9600 baud. (CS30 Status Panels with software prior to version 2.50 can only run at 9600 baud.) Note that when CA=1, and the CA21 is in idle mode, the F2 key is used to request the next session from CA-link and the F3 key is used to enter a safe mode where commands from CA-Link are ignored.
- AG Auto Go - if this option is set to one, pressing GO, without first setting a starting time on the clock, will start the session immediately. It is not necessary to press GO then CUE. If the option is zero, pressing GO will enter run but will not start the session until CUE is pressed. Auto Go also affects the operation of the Remote Start and Remote Stop inputs. (See the next Section.) Note that when CA21s are interlocked and AAuto Go is enabled (set to one), and GO is pressed, all other CA21s in the interlock group will enter Ago mode.
- FS Fader Slew Rate (0 to 4). 0 is the fastest rate, 4 is the slowest.
- SL This option defines the slide projector being used. 0 - operation with relays but with no separate lamp control (Ektapro 3000), 1 - operation with relays but with separate lamp control, 2 - Ektapro 5000 using a serial port, 3 - Simda using a serial port. 4 - Hokushin controlled by relays,
- Pt The projection time of each timed slide. The range is 1 sec to 20 secs.
- Sd Slide lamp delay - the delay after the slide command is given until the slide lamp is turned on. The delay is from 0 to 20 secs in 1 sec steps.
- CC Curtain Close Delay - the delay in Stop Slide from closing the curtains until the slide lamp is turned off and the delay in Auto Stop from closing the curtains until the stage lights are turned up. The delay is from 0 to 20 secs in 1 sec steps.
- PJ Type of movie projector. 0 is Christie, 1 is Cinemeccanica with a two lense turret, 2 is Cinemeccanica with a three lense turret.
- Ld Lens Delay - the delay from when the dowser is closed until the lens is changed.

- tP Turret Pulse Length - length of the turret relay pulse from 0.1 to 1.0 secs. With the Cinemeccanica three lense turret, tP is the additional time the turret pulse remains closed after the inputs indicate the correct turret position has been reached.
- dd Dowser Delay - the delay from the start of the relay pulse to rotate the turret until the picture is turned on again. Except that with a Cinemeccanica three lense turret dd is the time from when the turret pulse is removed until the picture is turned on again.
- SP This option selects the type of sound processor interface to be used on the CA21. It is set to a value between 0 and 5 inclusive.

If "SP" = 0 relays are driven to select the required sound format and the CA21 sound format status LEDs are driven by the format selected by the CA21. No status information is used from the sound processor.

If "SP" = 1 relays are driven to select the required sound format and the CA21 sound format status LEDs are set based on lines connected to the CA21 processor board from the sound processor. Status information from the sound processor is used.

If "SP" = 2 relays are driven to select the sound format and the CA21 sound format status LEDs are driven using the CP500 encoding status scheme where three BCD inputs are read. Status information from a CP500 sound processor is used.

If ASP $\cong$  = 3 the CP45 sound processor can be driven. Relays are driven to select the required sound format. The fader control voltages are set for CP45 operation and the local/remote relay is used to enable/disable the remote fader. The CA21 sound format status LEDs are driven by the format selected by the CA21.

If ASP $\cong$  = 4 the CP500 sound processor can be driven serially. Sound format, sound level and sound format status are all conveyed via the serial port.

If ASP $\cong$  = 5 the Panastereo sound processor can be driven serially. Sound format, sound level and sound format status are all conveyed via the serial port.



- Ut Mute mode - the relay is set/reset if Ut is 0 and pulsed if Ut is 1.
- dU Do mute - a value of 1 mutes the sound when the picture is off during a lense change.
- Lr Fader local/remote mode - the relay is set/reset if Lr is 0 and pulsed if Lr is 1.

### **NOTES:**

- 1/ See the end of this document for details on serial CA21 to CP500 connection

## Functions

Auto Start

Xenon On (close 2)

Auto Stop

Xenon Off (open 2)

Motor On

Relay 1 on, pulse relay 27 and relay 37 on

Motor Off

Relay 1 off, pulse relay 28 and relay 37 off

Dowser Open

Pulse relay 3  
Exciter on (relay 20 on)

Dowser Close

Pulse relay 4  
Exciter off (relay 20 off)

Flat (two position turret)

Masking Flat (23)

If the dowser is open

Mute On (if  $AdU_{\cong} = 1$ , set or pulse 19 depending on "Ut")

Dowser Close (4)

Lens Delay (Ld in setup)

Lens Flat (21)

Dowser Delay (dd in setup)

Dowser Open (3)

Mute Off (if  $AdU_{\cong} = 1$  reset or pulse 19 depending on "Ut")

else

Lens Flat (21)

Scope (two position turret)

Masking Scope (24)

If the dowser is open

Mute On (if  $AdU_{\cong} = 1$  set or pulse 19 depending on "Ut")

Dowser Close (4)

Lens Delay (Ld in setup)

Lens Scope (22)

Dowser Delay (dd in setup)

Dowser Open (3)

Mute Off (if  $AdU_{\cong} = 1$  reset or pulse 19 depending on "Ut")

else

Lens Scope (22)

Flat (CMC three lense turret)

Masking Flat (23)

If the dowser is open

Mute On (if  $AdU_{\cong} = 1$  set or pulse 19 depending on "Ut")

Dowser Close (4)

Lens Delay (Ld in setup)

Lens Flat (turn relay 21 on)

Wait until the inputs 11 and 12 are on indicating the turret is Flat

Wait a further tP before turning relay 21 off

Dowser Delay (dd in setup)

Dowser Open (3)

Mute Off (if  $AdU_{\cong} = 1$  reset or pulse 19 depending on "Ut")

else

As above but without turning the picture off or muting.

Scope (CMC three lense turret)

Masking Scope (24)

If the dowser is open

Mute On (if  $AdU_{\cong} = 1$  set or pulse 19 depending on "Ut")

Dowser Close (4)

Lens Delay (Ld in setup)

Lens Scope (turn relay 22 on)

Wait until the inputs 10 and 12 are on indicating the turret is Scope

Wait a further tP before turning relay 22 off

Dowser Delay (dd in setup)

Dowser Open (3)

Mute Off (if  $AdU_{\cong} = 1$  reset or pulse 19 depending on "Ut")

else

As above but without turning the picture off or muting.

1.66 (CMC three lense turret. Selected by Non Sync 2 key)

Masking 1.66 (30)

If the dowser is open

Mute On (if  $AdU_{\cong} = 1$  set or pulse 19 depending on "Ut")

Dowser Close (4)

Lens Delay (Ld in setup)

Lens 1.66 (turn relay 29 on)

Wait until the inputs 10 and 11 are on indicating the turret is at 1.66

Wait a further tP before turning relay 29 off

Dowser Delay (dd in setup)

Dowser Open (3)

Mute Off (if  $AdU_{\cong} = 1$  reset or pulse 19 depending on "Ut")

else

as above but don=t turn off the picture or mute

Mono/Other

Pulse relay 13

Stereo

Pulse relay 14

SR

Pulse relay 15

Digital

Pulse relay 16

Non Sync 1

Pulse relay 17

Non Sync 2

Used to select 1.66 lense

House Up

Pulse relay 5  
Pulse relay 9 (stage up)  
Relay 35 off (trailers)  
Relay 36 off (feature)

House Preset 1 (select when house being switched to preset from up)

Pulse relay 6  
Pulse relay 10 (stage down)  
Relay 35 on (trailers)  
Relay 36 off (feature)

House Preset 2 (select when house being switched to preset from down)

Pulse relay 7  
Pulse relay 10 (stage down)  
Relay 35 on (trailers)  
Relay 36 off (feature)

House Down

Pulse relay 8  
Pulse relay 10 (stage down)  
Relay 35 off (trailers)  
Relay 36 on (feature)

Slides On

Slide power on (depends on slide projector selected in Setup)  
Delay 5 secs  
Slide lamp on  
Open curtains (11)  
Delay  $APt \cong$  (the time each slide is shown)  
Advance the slide then wait  $APt \cong$ . Repeat until the required number of slides has been shown. Then generate a cue to perform the next program step. If the number of slides is set to zero do not advance the slides and do not generate a cue.

Slides Off

Curtain Close (12)  
Curtain Close Delay (CC in setup)  
Stage lights up (9)  
Slide lamp off  
Cycle slides

Delay

Execute the next step after the delay time programmed into the current step.

Volume Change

Change sound processor remote fader to the volume level programmed into the current step.

Film Break Fault Sequence

Motor Off (open 1 and pulse 28)  
Dowser Close (4)  
Xenon off (open 2)  
Exciter Off (open 20)  
House lights preset (6 if house was up, 7 is house was down)  
Slides on  
Non Sync 1 (17)

Fire Sequence

Motor Off (open 1 and pulse 28)  
Dowser Close (4)  
Exciter Off (open 20)  
Xenon Off (open 2)  
House lights up (5)  
Non Sync 1 (17)  
Mute (set or pulse 19 depending on "Ut")

F1 Interrupt Sequence when in manual mode

Motor Off (open 1 and pulse 28)  
Dowser Close (4)  
Xenon off (open 2)  
Exciter Off (open 20)  
House lights preset (6 if house was up, 7 is house was down)  
Slides on  
Non Sync 1 (17)

F2 Resume Sequence when in manual mode

Dowser Close (4)  
Motor On (close 1 and pulse 27)  
Xenon on (close 2)  
House lights down (8 and 10)  
Delay 8 seconds  
Dowser Open (3)  
Slides off

## Using a CA21 to CP500 Serial Interface.

### Introduction:

The CA21 can be connected to a Dolby CP500 sound processor by a serial interface. This serial interface is a two wire interface with only *DATA* and *GROUND* connections. The serial interface allows the following control:

- 1/ Any volume changes made on the CA21 will also be shown on the CP500. ie The CP500 volume will track any CA21 volume changes.
- 2/ Any volume changes made on the CP500 will also be shown on the CA21. ie The CA21 volume will track any CP500 volume changes.
- 3/ Any sound format change made on the CA21 will also be done on the CP500.
- 4/ Any sound format change made on the CP500 will also be shown on the CA21 sound format status LEDs. The CA21 sound format status LEDs are the LEDs at the top right of the CA21 panel that show MONO, STEREO etc. Note that the CA21 MUTE sound format status LED will be on whenever the CP500 is muted.

### Cabling:

Two cables are normally required to connect a CP500 serially to a CA21 as follows:

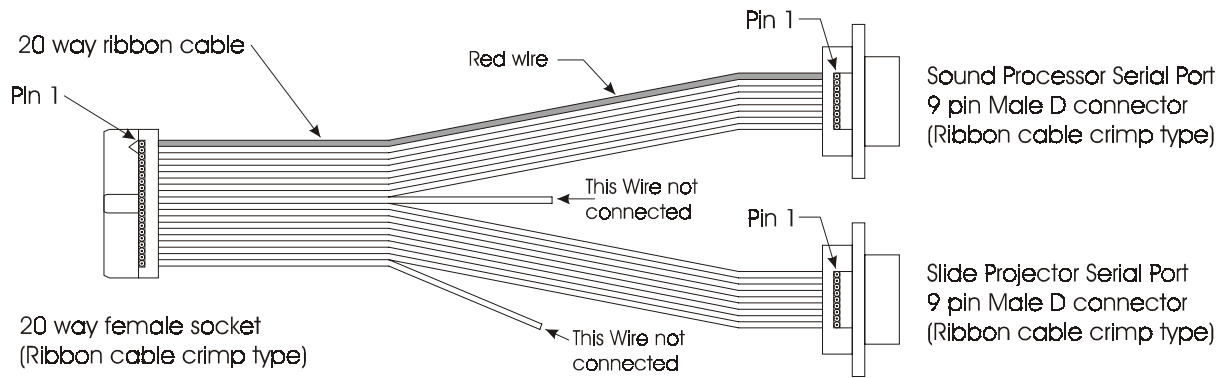
#### Cable 1:

The first cable is an adapter cable to adapt the 20 way header on the CA21 to two 9 pin D connectors. One connector is for the serial sound processor and the other is for a serial slide projector or minidisk player. Make sure you use the right one. This cable plugs into connect J9 on the CA21 circuit board. This is the 20 pin connector closest to the battery.

In some 19" rack mount versions of the CA21 a D connector labelled *ASPI Serial Sound Processor* will already be mounted on the back panel. In this case use this connector. In 19" rack mount versions of the CA21 not equipped with this connector you will need the cable being described. This cable can be run out of the box between the top cover and the back panel.



## Slide and Sound Processor Serial Port Adapter Cable

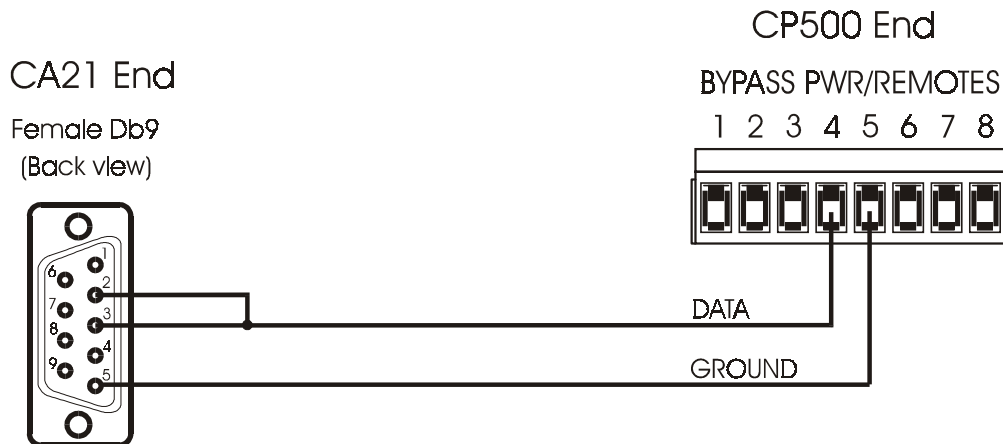


Plug into connector J9 on CA21 circuit board. This is the 20way connector closest to the battery.

### Cable 2:

The second cable is a two wire cable connecting the 9 pin serial sound processor D connector on the adapter cable to the ABYPASS PWR/REMOTES connector on the back panel of the CP500.

## CA21 to CP500 Serial Cable



## CA21 Setup for serial CP500:

In the CA21 A3124" setup mode the setup parameter ASP≡ should be set to 4 for serial CP500 operation.

## CP500 Setup for serial CP500:

For serial control of the CP500 the auditorium fader must be **disabled**.

When controlling the CP500 from the CA21 there should not be any preset fader levels on any sound formats on the CP500. If there are any formats which have a fader preset set then the preset will show beside the format button on the CP500 display.

If there are any volume presets remove them by pressing: *Menu, System Setup, Format Configuration, Build Format Selector, Assign Fader Settings* and then selecting the sound format to have its fader setting removed and then rotate the volume knob until *None* is selected for the fader setting. Then press OK and exit saving the new settings.

The CA21 assume a particular assignment of sound format to CP500 buttons. The assignment is as shown below:

## Required CP500 Button Format Assignment

