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 adjuatments to anything you may read about in these Adobe manual downloads

www.film-tech.com

PENNYWISE
PERIPHERALS

CA21

Pennywise™ Cinema Automation Operating Manual

8th July 1997

Pennywise Peripherals Pty Ltd
518 Camberwell Rd, Camberwell, Vic, 3124, Australia
Phone +61 3 9809 2877, Fax +61 3 9889 5361
Email: pennywise@pennywise.com.au

Contents

1 Introduction

This manual describes how to operate the Pennywise CA21 Cinema Automation Unit.

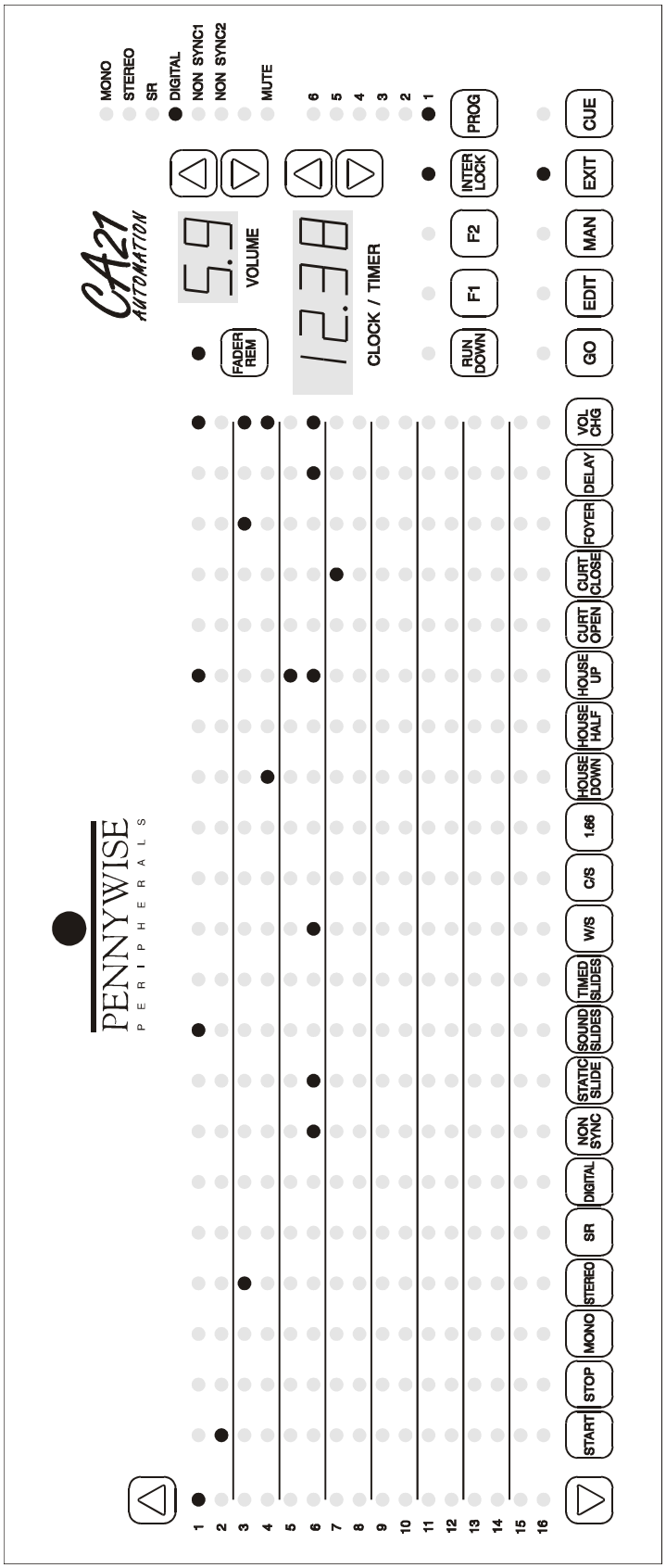
The CA21 enables a movie session to be run automatically. It controls the lights, curtains, slide projector, sound processor, and film projector according to a predefined sequence of operations called a program.

Six different programs each of up to 16 steps can be stored in the CA21. Each program step defines a set of operations to be performed in response to a cue.

Cues can be generated by foils on the film, by the slide projector, by time delays built into program steps, or manually by pressing the CUE key on the CA21.

Typical operations in program steps are START MOTOR, HOUSE LIGHTS PRESET, DIGITAL SOUND, SET FADER TO 7.2.

By choosing the operations in each step of the program, including any delays, and the positions of cues on the film and slide projectors, the projectionist controls how a session will proceed.

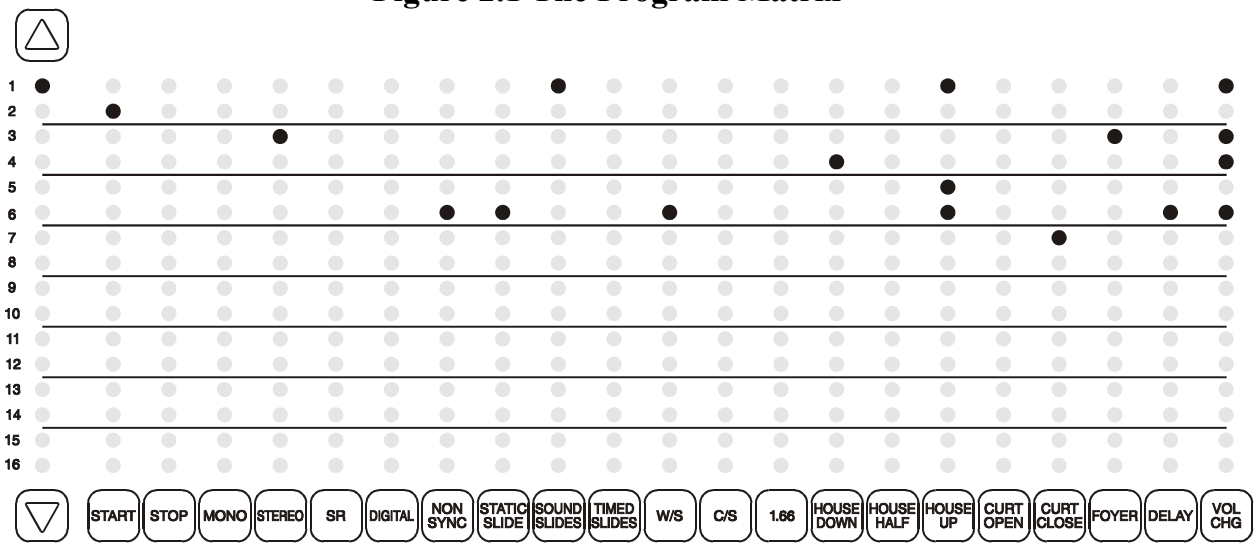

PENNYWISE
PERIPHERALS
CA21
AUTOMATION
MONO
STEREO
SR
DIGITAL
NON SYNC1
NON SYNC2
MUTE
VOLUME
CLOCK / TIMER
FADER REM
RUN DOWN
F1
F2
INTER LOCK
PROG
GO
EDIT
MAN
EXIT
CUE
VOL CHG
DELAY
FOYER
CURT CLOSE
CURT OPEN
HOUSE UP
HOUSE HALF
HOUSE DOWN
1.66
C/S
W/S
TIMED SLIDES
SOUND SLIDES
STATIC SLIDE
NON SYNC
DIGITAL
SR
STEREO
MONO
STOP
START

2 CA21 Front Panel Controls

A diagram of the front panel of the CA21 is shown on the previous page. The panel on your CA21 may have slightly different operations from those shown because of variations in cinema equipment or cinema operating procedures. However, the main functions of the CA21 remain the same.

The main area of the front panel is a 16 row by 21 column LED matrix. These LEDs display the details of the program currently selected.

Figure 2.1 The Program Matrix



On the left of the panel is a single column of LEDs numbered from 1 to 16, with an arrow key at the top and bottom. These LEDs indicate the step which is currently selected. The step selected in the diagram is number 1.

The current step is the one to be executed next when a session is running, or the step being modified when editing a program. The two arrow keys can be used to change the current step.

At the bottom of the LED matrix are the operation keys. Their names define the cinema control operations they perform. The keys are used to set operations in program steps (edit programs) or to control the cinema manually.

In the LED matrix, an operation is set in a step if the LED in the row of the step and column of the operation is illuminated. For example, in the program shown in the diagram, step number 6 is for the end of the feature. This step contains the operations NON SYNC (sound

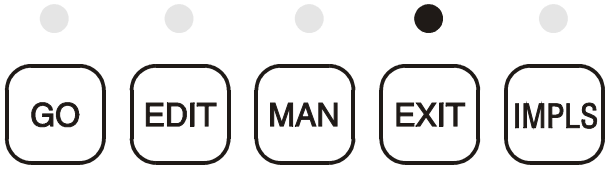
format), STATIC SLIDE (show a slide), WIDE SCREEN (lense), HOUSE UP (lights up), DELAY (till the next step), VOL CHG (new volume setting).

The number of the selected program is shown by the six LEDs on the right of the panel above the PROG key. Pressing the PROG key cycles through the six different programs. The LED matrix will be updated each time to display the selected program. In the diagram program number 1 is selected.

Figure 2.2 Program Number Selection

The keys labelled GO, EDIT, MAN and EXIT are used to control the overall operation of the CA21. GO is used to run a session, EDIT is used to edit a program, MAN is used to operate cinema equipment manually, and EXIT is used to terminate these functions and return the CA21 to the idle or standby state.

Figure 2.3 Keys Which Control CA21 Operation



The key labelled CUE can be used to generate a cue manually when a session is running. CUE is also used sometimes as an enter key, for example when setting the time of day clock.

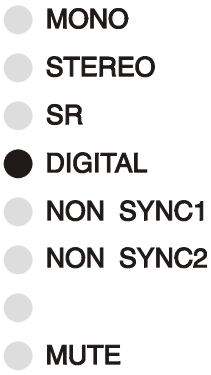
The two-digit display labelled VOLUME indicates the setting of the remote sound processor fader which is controlled by the CA21. The two arrow keys on the right of the display can be used to alter its setting. The volume is currently set to 5.9.

Figure 2.4 Sound Processor Fader

The FADER REM key beside the volume display allows the volume to be controlled by the remote fader in the CA21 or the local fader in the sound processor itself.

On the right-hand edge of the front is a column of LEDs labelled with sound processor formats. These LEDs may be driven from the sound processor to indicate the format currently selected. In the diagram digital sound is currently selected.

Figure 2.5 Sound Format Status LEDs



The four-digit display labelled CLOCK/TIMER is used mainly to schedule the starting time of the next session. It is also used to handle delays which have been set in program steps. When the timer is not otherwise busy, it will be showing the current time of day in 24 hour mode.

The two arrow keys to the right of the timer are used to change the value in the timer display. For example they are used to set the starting time of the next session or to set a delay time in a program step.

Figure 2.6 The Clock

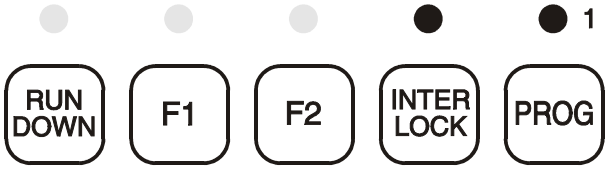
The row of keys above EXIT and with PROG on the right select special functions. They may vary from one version of the CA21 to another.

The RUN DOWN key is normally present. It is used to position the film at the starting point by turning on the projector motor until a cue is detected on the film.

INTER LOCK is also normally provided. It enables a single copy of a film to be shown in several cinemas at the one time by synchronising the projector motors.

The keys labelled F1, F2 etc. are spare keys which are sometimes predefined to perform additional functions. They are not used in all versions of the CA21.

Figure 2.7 Special Function Keys



3 Getting Started

Switch on the CA21. The wall mounting model has a power switch on the right-hand end of the cabinet. The console unit may not have a switch but will be turned on with other equipment.

3.1 Self Test

When the CA21 is first switched on it carries out a self test. In particular it checks its programs in memory to see if any have been corrupted. If so it will flash the number of the faulty program.

If a program number LED flashes, press EDIT and check the program, repairing it if necessary. Then press EXIT. Repeat this process for each damaged program. (More will be said later about editing programs and the reasons for them becoming corrupted.)

3.2 Setting the Time of Day Clock

Assuming the self test has found no problems the CA21 will start up in the idle state with the LED above the EXIT key on.

The CA21 will be displaying a program, the volume display will show the current fader setting, and the timer will show the current time of day.

The correct time is maintained by a battery when the CA21 is powered off. However the clock should be checked when the CA21 is powered on and adjusted if necessary.

To set a new time of day in the clock the CA21 must be idle (it is after first being powered on and clearing any errors).

(1) Use the two arrow keys on the right of the clock display to set the new time. Holding a key down will cause the time to change in larger steps.

(2) While the time is being set the decimal point on the clock stops flashing.

(3) Once the new time has been set, press the CUE key twice. The clock will start from the new time on the second press of CUE and the decimal point will start flashing again.

(4) If EXIT is pressed before CUE is pressed twice, the new setting will be aborted. The clock will revert to its original time and the decimal point will start flashing again.

3.3 When the CA21 is Idle

The CA21 is idle when the LED above the EXIT key is on. Pressing EXIT one or more times will return the CA21 to idle and terminate whatever else it was doing. The CA21 pictured in the diagram on page 2 is idle.

In the idle state many of the front panel keys will not do anything. In particular most of the operation keys below the program matrix will not respond. However, a few of them may be used for special functions in the idle state. For example, the number of sound slides to be shown is set in this way (see Section 6.2).

The LEDs above some of the special function keys may indicate the state of their functions. For example if the LED above the FADER REM key is on, the sound processor's remote fader will be selected.

It is possible to select different programs when the CA21 is idle, using the PROG key, and to change the current step in the selected program using the arrow keys.

The fader can be changed using its arrow keys. The FADER REM key will alternate between the sound processor=s local fader and the remote fader in the CA21.

Try altering the fader on the CA21. The digital volume display will change accordingly. If the sound processor is switched to remote then a corresponding change in the sound level should be heard.

The RUN DOWN key will work in idle state (in fact it will work in any state) and will start the projector motor and run it until a cue is detected on the film or until the RUN DOWN key is pressed again. Whilst run down is in progress, the LED above the key will be lit.

3.4 Manual Operation of Equipment from the CA21

If the MAN key is pressed when the CA21 is idle the CA21 enters the manual state. The LED above the MAN key will be illuminated.

In manual, cinema equipment can be operated directly by pressing the operation keys at the bottom of the program matrix.

For example, you can try changing the film format (lens and masking) by pressing the WIDE SCREEN or CINEMA SCOPE keys. Note that the actual labelling of these keys will usually be abbreviated and can vary from one installation to another.

Often in the cinema there will be manual keys on the equipment itself. For example the dimmer for the house lights may have buttons to allow the lights to be switched on, preset or off.

Operating the CA21 manually will generally have the same effect as pressing buttons on the equipment. But there may be some variations depending on how the cinema has been wired up.

But more significantly, some of the operation keys on the CA21 may be configured to perform more than one function. For example, pressing a film sound format key, such as STEREO, may also turn on the film projector picture by opening the change over shutter. Film sound format keys may also turn off the slide projector.

The two keys DELAY and VOL CHG do not function manually. They are only used when editing programs (as described in the next Sections).

To return the CA21 to the idle state press the EXIT key.

4 Editing Programs

4.1 Editing Simple Operations

Before the CA21 can be used to control a session a suitable program must be set up in its memory. This process is called editing.

An operation is included in a step when the LED in the step's row and the operation's column is on. For example in the diagram on page 2 the first step contains the operations SOUND SLIDES, HOUSE UP, and a VOLUME CHANGE.

To edit a program, use the following procedure. The DELAY and VOL CHG (volume change) operations are a little more involved and are described in the following Sections.

(1) Select the edit state by pressing the EDIT key whilst the CA21 is idle. The LED above the EDIT key will then turn on.

(2) Before doing anything else, select the program to be edited using the PROG key. Once editing has started, it is not possible to select a different program. It is necessary to return to idle by pressing EXIT and then to re-enter edit state by pressing EDIT again.

(3) Select the step to be edited using the two arrow keys.

(4) To include or exclude an operation in the step, press the operation key at the bottom of the LED matrix. When the LED in the step's row and the operation's column is on, the operation is included in the step. When the LED is off the operation is not included in the step.

4.2 Editing Delays

Delays are used during a session to execute steps automatically after a certain time. They effectively cause a cue to be generated after the delay time.

The current step contains a delay if the LED is on in the DELAY column of the program matrix. In edit state the size of the delay will be displayed in the timer in minutes and seconds. If there is no delay in the current step, "0.00" will be displayed in the timer.

When a session is running and a delay is in progress, the timer counts down in seconds to indicate how much of the delay remains. When there is no delay active the timer shows the time of day.

Setting a delay in the current step involves the use of the DELAY operation key in conjunction with the timer display. The CA21 must of course be in the edit state.

To set a new delay in the current step or alter an existing delay in the step, proceed as follows.

(1) Set the size of the delay in minutes and seconds using the TIMER/CLOCK arrow keys.

(2) Press the DELAY key. If there was no delay in the step previously, the LED in the DELAY column of the current step will turn on. If there was a delay there previously, the LED with go out briefly and then come back on.

To remove a delay from a step, simply press the DELAY key without first touching either of the two arrow keys. The LED in the matrix will then go out and the timer display will return to 0.00 to indicate the delay has been removed.

4.3 Editing Volume Changes

Where a LED is on in the VOL CHG column, it indicates that a fader setting has been specified in the step. When a session is running and that step is executed, the fader will be set to the new level specified in the step.

In all states other than edit, the volume display shows the current setting of the CA21 remote fader. The arrow keys can be used to change that setting and alter the sound level in the auditorium without altering any programmed volume changes.

However in edit state the volume display shows the volume level programmed at the current step.

There does not have to be a volume change in every step of a program. If the current step does not contain a volume change but there is a change programmed into an earlier step, then the volume display will show the setting from that earlier step.

In other words, in edit, the volume display shows the volume which would be set at each step if the program has been run up to that point.

If the volume display is blank, it means that no volume has been set in the current step or any of the previous steps.

To insert a volume change in the current step, or alter an existing volume change in the step, proceed as follows.

(1) Set the volume display to the desired value using its arrow keys.

(2) Press the VOL CHG key. If there was no volume change in the step previously, the LED in the VOL CHG column of the current step will turn on. If there was a volume change there previously, the LED with go out briefly and then come back on.

To remove a volume change from a step simply press the VOL CHG key without first touching either of the two arrow keys. The LED in the matrix will then go out and the volume display will change to display the nearest setting in an earlier step.

4.4 Inserting and Deleting Whole Steps

It is sometimes useful to be able to delete a complete step from a program or to create space to insert an additional step.

When a step is deleted, all the later steps move up one to replace the deleted step. The last step (16) is cleared.

When a step is to be inserted, all the later steps move down one to make room for a new step. The new step will be blank and the last step is shifted off the bottom of the program and lost.

To insert or delete a step the CA21 must be in edit state.

(1) Set the current step to where the insertion/deletion is to take place and press the EDIT key. The current step LED will start flashing.

(2) To delete the current step, press the up arrow key. All the lower steps will then move up one.

(3) To create space for a new step at the current one, press the down arrow key. All the lower steps, including the current one, will then move down to leave the current step blank.

If you press EDIT and the step LED starts flashing but you decide you do not want to proceed with an insertion or deletion, press any key other than the step arrow keys. The step LED will then stop flashing but nothing else will change.

5 Running Sessions

5.1 General Comments

When a session is running, the CA21 operates the equipment in the cinema automatically as specified by the selected program.

The CA21 waits until a cue is received (for example from a foil on the film) and then performs the operations in the current program step. The current step then advances by one.

This process continues until all of the remaining steps are empty. The CA21 then exits back to idle.

During a session the CA21 monitors fail safe inputs such as film break and xenon fail. If any one of these is detected, a special fault sequence of operations will be performed Fail Safe operation is discussed in Section 8.

5.2 Starting a Session Manually

A session can be started either manually or automatically.

Manual starting enables a session to be started immediately. Automatic starting involves the use of the timer and enables a session to be started at a specified time of day.

To start a session manually, first ensure the CA21 is idle. Pressing EXIT will return it to the idle state.

(1) Select the program to be used for controlling the session by pressing the PROG key.

(2) Select the step where the program is to start. Normally this will be step 1.

(3) Press the GO key. This will cause the CA21 to go to the run state. The LED above the GO key will turn on.

(4) Press CUE to perform the first step of the program.

Further steps will be executed by cues generated by foils on the film, cues generated by showing slides, delays programmed into steps, or manual presses of the CUE key.

When no more steps remain in the program, the CA21 will return to the idle state. Automatic control of the session is then complete.

5.3 Starting a Session Using the Timer

To start a session automatically at a certain time the procedure is essentially the same as starting a session manually. The only difference is that the timer must be set before pressing GO.

The timer will count down until the starting time is reached. The first step of the program will then be performed automatically. It is not necessary to press the CUE key.

Ensure the CA21 is idle. Pressing EXIT will return it to the idle state.

(1) Select the program to be used for controlling the session by pressing the PROG key.

(2) Select the step where the program is to start. Normally this will be step 1.

(3) Set the starting time in the timer by using the arrow keys. A starting time can be set anywhere within the next 24 hours. To change the timer in larger jumps, hold an arrow key down.

(4) Press the GO key but do not press CUE.

(5) The CA21 will go to the run state. The timer will show the time remaining and start counting down. The LED above the GO key will flash to indicate the timer is active.

(6) When the timer reaches zero, the first step of the program will be performed automatically.

While the timer is counting down, it displays the time remaining in hours and minutes. However, during the final minute, seconds are displayed to give a more accurate idea of exactly when the session is going to start.

When the timer reaches zero, a cue will be generated automatically to execute the first step of the program. Further steps will be executed by cues generated by foils on the film, cues generated by showing slides, delays programmed into steps, or manual presses of the CUE key.

When no more steps remain in the program, the CA21 will return to the idle state. Automatic control of the session is then complete.

5.4 Overriding the Timer

Even though a session has been scheduled to start using the timer, it can be started immediately simply by pressing the CUE key. The first step of the program will be executed and the timer will be reset.

If EXIT is pressed whilst the timer is counting down, or in fact at any time whilst the CA21 is in run state, the session will be terminated and the CA21 will return to the idle state.

5.5 Remote Control of Sessions

Some CA21s are provided with two remote buttons to control when a session starts. These two remote buttons only work after GO has been pressed and the CA21 is waiting either for a cue to start the session or for the timer to count down.

Activating Remote Start has a similar effect to pressing the CUE key. It will cause the program to start immediately, even if the timer is counting down and has not yet reached zero.

If a program is waiting on the timer, Remote Stop will prevent the program starting automatically. The timer is cleared and the program is left waiting for the CUE key or Remote Start to initiate it. The effect is as if the session had been started manually by pressing GO without first setting the timer.

Once the session has started Remote Start and Remote Stop are ignored.

5.6 Performing Manual Operations from Run

When the CA21 has been scheduled to run a session or has actually started to run a session it is possible to branch out of run state temporarily, go to manual, and then return again. (It is also possible to branch to edit as described in the next Section.)

(1) To enter manual from run press the MAN key. The LED above MAN will turn on but the LED above the GO key will remain on to indicate that the CA21 can return to run again.

(2) Operations can be performed manually by pressing their keys as described in Section 3.3.

(3) To return to the running program at the original point press EXIT once. The LED above the MAN key will then go out leaving only the LED above GO on.

Note that when the CA21 is in manual it will not respond to cues from any source. Any programmed delay will keep counting down but if it reaches zero when the CA21 is still in manual the cue will be lost.

5.7 Editing When in Run

When the CA21 has been scheduled to run a session or has actually started to run a session it is possible to branch out of run state temporarily and go to edit in the same way as described above for manual.

(1) To enter edit from run press the EDIT key. The LED above EDIT will turn on but the LED above the GO key will remain on to indicate that the CA21 can return to run again.

(2) Once in edit, a different program can be selected and the step can be moved around. All editing functions can be performed as described in Section 4.

(3) To return to the running program at the original point press EXIT once. The LED above the EDIT key will then go out leaving just the LED above GO on. The program which had been running will be selected again at its current step.

Note that when the CA21 is in edit it will not respond to cues from any source. Any programmed delay will keep counting down but if it reaches zero when the CA21 is still in edit the cue will be lost.

6 Driving the Cinema Equipment

The actual operations provided on the CA21 can vary from one installation to another, depending on the cinema equipment used and the preferred operating procedures of the cinema.

An additional AConfiguration Manual≅ is normally provided with the CA21. This manual defines the exact functions performed by each front panel operation key for your particular configuration.

The following sections give some examples and strategies for driving the various pieces of equipment in the cinema.

The discussion is fairly general and attempts to cover the various ways of controlling equipment.

6.1 Controlling the Film Projector

6.1.1 Functions Controlled

The CA21 can control the following film projector functions.

(1) Switch the xenon lamp on and off,

(2) Start and stop the projector motor,

(3) Turn the picture on and off using the change over shutter,

(4) Rotate the turret to one of two or three positions and change the masking to suit.

(5) Turn the exciter on and off.

The way in which these functions are controlled by the CA21 may vary somewhat from one installation to another.

More than one function may be built into each front panel operation. For example there may not be picture control keys on the CA21 front panel. Instead the picture will be turned on when a film sound format, such as digital, is selected and turned off when a non sync sound format is selected.

Sometimes an AUTO START operation is provided which performs the whole sequence of operations required to start showing a film. It may open the curtains, turn the lights down, switch on the xenon lamp, turn on the exciter, and start the projector motor.

6.1.2 Run Down

When threading the film the RUN DOWN key enables the projector motor to be run until a cue is detected on the film. The film will be positioned automatically at the first cue in readiness for the session.

When run down is in progress and waiting for a film cue, the LED above the RUN DOWN key is lit.

Run down completes and the projector motor is turned off when one of the following events happens.

(1) A film cue is encountered. This is the normal way run down completes.

(2) The motor is turned off manually from the CA21 front panel.

(3) The motor is turned off by the button on the projector itself, providing the CA21 is able to monitor the state of the projector motor. This ability is not provided on all projectors.

(4) RUN DOWN is pressed a second time. The run down function is then aborted and the projector motor is stopped immediately without waiting for a cue.

6.1.3 Starting the Projector

The film projector motor will usually be started during a session, when the last slide is being shown.

When the projector motor is switched on it takes time to come up to speed and stabilise. A sufficient leader must be provided at the start of the film so that the feature is not reached until the projector is running smoothly. Only then should the picture be turned on and the required sound format selected.

Two program steps are normally used. The first step is performed by the slide cue generated by the final slide. It just starts the projector without opening the shutter. The slide projector is not turned off yet so the final slide remains on the screen.

Once the projector is up to speed and the feature is reached a second program step is performed. It switches the sound processor to the appropriate film format and opens the shutter. At the same time the slide projector is turned off so there is a smooth transition from slide to film.

The cue to perform this second step is best produced by a foil on the film at the start of the feature. But it may be produced by a carefully determined delay in the program step which starts the projector.

In some cinemas the curtains may be closed in between the slides and the start of the film. The procedure is then somewhat different from that described above.

6.1.4 Controlling the Picture

The picture is either controlled by the dowser or the change over shutter. It depends on the projector in use.

There may be PICTURE ON and PICTURE OFF keys on the CA21 but more often control of the picture by the CA21 is linked to the sound format. There is then no need for special picture control keys.

When the CA21 selects a film sound format, such as digital, SR, stereo, it will also turn the picture on. When the CA21 selects a non film format, such as non sync 1 and non sync 2, the picture will be turned off.

It is important to realise that the CA21 provides this dual function. If a sound format is selected using the sound processor controls rather than the CA21, the picture will not be altered.

6.1.5 Changing the Film Format

When the CA21 changes the film format (using keys such as WIDES and SCOPE) it will rotate the turret and may also alter the masking.

To prevent picture being sprayed over the ceiling when the turret is rotated, the picture must be turned off during the rotation.

The CA21 will automatically check if the picture is on when a turret rotation is performed. If the picture is on, the CA21 will close the change over shutter before rotating the turret. The picture will not be turned on again until the turret has stopped in its new position.

Because projectors take varying times to complete the turret rotation, the actual timing of the picture control can be set by options in the CA21 setup.

Some projectionists prefer to splice in black film during a turret change rather than close the shutter. There may be also be a setup option which causes the picture to be left on during a turret rotation.

6.1.6 Stopping the Film Projector

The CA21 can use film break to automatically turn off the projector motor when the film runs out. As explained in section 8, on Film Breaks, the CA21 detects the physical end of film when it encounters a film break with the picture shutter closed. It responds by stopping the projector motor.

The last cue on the film should be at the end of the feature. The corresponding step will close the shutter to turn off the picture. It can also turn up the lights and switch to non sync sound. The projector motor is left running.

The CA21 will turn the motor off automatically when the film break is eventually detected at the physical end of the film.

6.2 Controlling the Slides

Not all cinemas show slides. Even when they do, there are various types of presentations. The two most common ones are timed slides and sound (or talkie) slides. The CA21 may also provide an operation to show a static slide.

6.2.1 Static Slide

Often at the start and end of a session a static slide is shown. All the CA21 does is turn on the slide projector. The static slide is the one in the current carousel position and will be shown when the slide lamp turns on.

6.2.2 Timed Slides

The CA21 shows timed slides by advancing to the next slide at regular intervals (usually every 12 seconds). However, some slide projectors may have their own timer. The CA21 then only has to start the slide projector at the beginning, and stop it at the end of the presentation.

6.2.3 Sound Slides

For sound slides, there is an associated tape unit (or perhaps a mini disk) with sound commentary on one or more tracks. Pulses are recorded on another track to mark when the next slide has to be shown.

Different schemes are available for showing sound slides using the CA21. There may be a special control unit which picks up the slide advance pulses from the tape and feeds them directly to the slide projector. The CA21 then only has to be able to start the slide presentation and stop it.

Alternatively, the CA21 can perform the role of the control unit. The tape pulses are fed to the CA21. Each time a pulse is detected, the CA21 instructs the slide projector to show the next slide.

In both cases the CA21 will start the tape at the beginning of the slides and stop the tape and rewind it at the end of the slides. It may also reset the slide carousel to the home position.

6.2.4 Detecting the Last Slide

With both timed and sound slides, the CA21 needs to be able to detect when all slides have been shown so that a cue can be generated to continue with the program. Two methods of detection are available.

The slide projector can be equipped with a cue detector to detect the last slide. The cue detector may require a foil to be placed opposite the final slide.

Alternatively the CA21 can be told how many slides are to be shown. It will then generate the cue itself without the need for a cue detector.

When the last slide is detected, the CA21 will stop advancing the sides. But it will leave the projector on still showing the last slide.

6.2.5 Turning off the Slide Projector

Assuming the film follows immediately after the slides, the step of the program which is triggered by the final slide will turn on the film projector motor.

As explained in section 6.1.3 above, the film picture will not be turned on until the projector is up to speed and the feature has been reached. The last slide remains on the screen till then to ensure a smooth transition from slides to film.

An operation which turns off the slide projector should be put in the program step which actually turns on the film picture.

In some cinemas there is no STOP SLIDES key. There may not even be a PICT ON key. Instead both functions (stop slides and picture on) are performed when a film sound format is selected.

The way in which the slide projector is turned off by the CA21 depends on the projector. Some projectors only have a single switch which turns off the lamp and the power at the same time.

More advanced projectors have separate lamp and power controls. The CA21 will then turn the lamp off immediately but keep the power on for some time so that the blower cools the lamp down.

Even more advanced projectors may have a standby mode. The projector is switched on manually at the beginning of the day and left on for the whole day's operation. The CA21 then switches the projector in and out of standby as required. Some Kodak Ektapro projectors have this feature when driven by their serial port.

6.2.6 Specifying the Slide Count

When a slide count is used to determine the final slide, it is necessary to enter the value into the CA21. There may be counts for timed slides, sound slides or both, depending on the types of slides shown.

(1) To inspect or alter the slide counts, press one of the slide operation keys whilst the CA21 is idle. The actual key used, depends on the front panel operations on the particular CA21.

(2) Either "nS" or Ant≅ will appear in the volume display. AnS≅ means set the number of sound slides, and Ant≅ means set the number of timed slides.

(3) The corresponding count will be displayed in the timer.

(4) Use the timer arrow keys to adjust the count and then press the CUE key to lock the new value in.

(5) Pressing the volume arrow keys will alternate between AnS≅ and Ant≅ (if both counts are available).

(6) Repeat the process to alter the counts as required.

(7) Press EXIT to return to idle.

6.3 Controlling the Sound Processor

The CA21 allows the sound level and format to be changed on the sound processor. A set of status LEDs is also provided to show what format the sound processor is currently set to.

However, there are a wide variety of sound processors on the market. Their operation varies somewhat and not all their functions may be able to be controlled from an automation unit. For instance, not all processors provide format status information which can be used to drive the CA21 status LEDs.

6.3.1 Controlling the Fader Level

Most sound processors can have their volume set either by their own local fader or a remote fader. The CA21 simulates the remote fader.

Providing the sound processor allows it, the FADER REM key on the CA21 can be used at any time to switch between the local fader in the sound processor and the remote fader in the CA21. The LED above the FADER REM key will be on when the remote fader is selected.

Some sound processors allow both the local and remote faders to be active together. There is no local/remote switch. The volume display on the CA21 will then track that on the sound processor and vice versa.

In all normal CA21 states except edit, the volume display on the CA21 shows the remote fader level currently set. Pressing the arrow keys will change the level. If the remote fader is selected, the volume in the auditorium will change accordingly. The arrow keys thus provide a convenient way of adjusting the volume manually.

The CA21 fader provides 50 different levels from 0.0 to 9.8. When driving some of the newer sound processors, 100 levels may be provided.

When a program step containing a volume change is executed during a session, the CA21 fader will change to the programmed level. The level changes smoothly at the fader slew rate.

6.3.2 Changing the Sound Format

The sound format operation keys on the CA21 allow format changes to be performed in programs or to be changed manually.

In some cinemas the CA21 will fade the sound level down and up again when the sound format is changed. The change from one format to another is then less abrupt. Some sound processors perform this cross fading themselves.

6.3.3 Other Functions Coupled to Sound Format Changes

The sound format used for sound slides is usually non sync 2. There may not be an operation key on the CA21 to select this format. Instead the sound processor will be switched to non sync 2 as part of the CA21 operation which starts the sound slides.

Often other functions will be coupled in the CA21 to sound format changes. Often the CA21 turns the picture on when a film format (Stereo, SR, Digital etc) is selected. The picture is turned off again when a non sync format is selected.

The slide projector may also be turned off when a film format is selected by the CA21.

It is important to realise that in these cases the additional functions will only occur if the sound format change is performed by the CA21. If a format change is caused by pressing a button on the sound processor itself, the CA21 may not be aware of the change. If not, any functions coupled to the format change in the CA21 will not be performed..

6.3.4 The Sound Format Status Display

The CA21 has a column of LEDs which can display the sound format currently selected. These LEDs can only be driven if the sound processor is able to provide status information in a suitable form to the CA21.

6.4 Controlling Lights and Curtains

Your installation may not have stage lights or curtains. Even if it does, they may not have separate CA21 front panel operations.

To minimise the number of front panel operations, the stage lights may be linked to the curtains. If so, the curtain open operation will usually turn the stage lights down and the curtain close operation will turn the stage lights up.

Sometimes there are two different house light preset levels but only one house light preset operation on the CA21 front panel. One preset level will then be selected when the house lights are being brought down and the other level will be selected when the house lights are being brought up.

7 Interlocking

7.1 How Cinemas are Interlocked

Interlocking of projectors is provided for showing a single print simultaneously in more than one cinema. All the projectors showing the print must be synchronised so they start and stop together. Faults on any one of them affect all the projectors showing the print.

CA21s are wired into groups for interlocking when they are installed. For example cinemas 1, 2, and 3 may have been prewired in this way. Their projectors can then be synchronised as a group.

But not all cinemas in a group may have to be interlocked at all times. To provide flexibility, each CA21 can be temporarily switched in and out of the group using the INTER LOCK key on the front panel or using an optional external switch. (Note that on some CA21 front panels the INTER LOCK key is labelled F3.)

The INTER LOCK key only works when the CA21 is in manual. To indicate when interlocking has been selected, either by the front panel key or the external switch, the LED above the INTER LOCK key is turned on.

In the above example, if only cinemas 1 and 2 need to be interlocked for a session, but cinemas 1, 2 and 3 are wired together for interlocking, interlocking must be selected on cinemas 1 and 2 but not on cinema 3. Cinema 3 will then operate normally and be unaffected by what happens to the projectors in cinemas 1 and 2.

7.2 How Projectors Operate When Interlocked

When several projectors are interlocked their motors will all be turned on and off together. Also, if a fault such as film break is detected on any one of the interlocked projectors, the film break sequence will be run in all the interlocked cinemas.

Note that the CA21 can only act on faults which are signalled to it. Some fault conditions may not actually be detected by the equipment so the CA21 will not know about them. For example a broken projector motor belt may not be detected. Ideally the film tension should be checked between each interlocked projector.

No particular CA21 in an interlocked group needs be the master. Any CA21 in the group can be used to start or stop the motors. In fact start and stop can be performed by different CA21s. But only one CA21 in the group should attempt to start the motor and only one should attempt to stop it.

The RUN DOWN key will operate with interlocking and will start the motors on all projectors selected for interlocking in the group. However only the CA21 where RUN DOWN was pressed will detect the cue on the film and stop the motors.

When cinemas are interlocked all their projector motor functions must be performed from the CA21 and not by using the projector's own controls. That is unless motor feedback wiring has been included in the installation. Only then can the CA21 detect if a projector motor has been turned on or off at the projector itself.

8 Fail Safe

8.1 Film Break

Film break is detected via the film break input. This may come from the platter or a sensor on the projector.

For a film break to be considered valid the projector motor must have been on for at least 8 seconds. The film break condition must also have been set for at least 0.2 seconds. Film break will be ignored if the film is being run down (see Section 6.1.2 earlier).

When a film break occurs the action taken depends on whether the picture is on.

(1) If the picture is off when film break is detected it is assumed that the physical end of film has been reached and that a fault has not occurred. The projector motor is just turned off.

(2) If the end of film is detected on an interlocked projector, the motors on all the interlocked projectors will be turned off.

(3) If a film break is detected when the picture is on, a fault is assumed to have occurred. The film break sequence of operations is performed and the projector motor is turned off.

(4) When a film break fault is detected on an interlocked projector, the motors on all the interlocked projectors are turned off. The film break sequence is also performed on those interlocked CA21s which have their pictures on.

When a film break occurs on a projector, the alarm (beeper) on that projector sounds 5 times.

8.2 Xenon Fail

Xenon fail is detected via the xenon fail input. The input works in reverse. When the xenon lamp is on the input is off and vice versa.

Before a xenon fail can be detected, the xenon must have been turned on by the CA21 for at least 8 seconds. If the xenon has been turned on manually from controls not on the CA21 there is no such time limit because the CA21 does not know when the lamp was actually turned on.

A failure occurs when the xenon fail input goes off for at least 2 seconds.

(1) When a xenon failure occurs without interlocking, the CA21 turns off the projector motor and performs the film break sequence.

(2) When a xenon failure occurs on an interlocked projector, the film break sequence is only performed by the particular CA21 which detected the failure. All the motors of the

interlocked projectors are left running and no other CA21 in the group performs the film break sequence. That way only one cinema is affected.

When xenon fail is detected on a projector, the alarm (beeper) on that projector sounds 10 times.

8.3 Emergency Shutdown

An emergency input may be provided so that if there is a reason to evacuate the cinema, such as a fire alarm, a special emergency sequence will be performed. This sequence of operations is built into the CA21.

The normal emergency sequence is to shut down the projector, turn the house lights up, and mute the sound. The beeper on the CA21 also sounds 15 times.

8.4 Fault Indicator

On some installations when a film break, xenon failure or emergency shutdown occurs an external fault indicator such as a light or beeper will sound until any key is pressed on the CA21.

Any key can be pressed to clear the fault. No other function will be performed by the key.

9 Setup

This is a special state which can be used to perform privileged functions, such as clearing all programs, and to set values such as time delays which are built into some operations.

As an example, consider the operation which rotates the projector turret to a new lens position. The typical procedure followed by the CA21 is as follows (although it may vary for different projectors).

(1) Turn off the picture if it was on.

(2) Wait a short time to ensure the picture is actually off.

(3) Instruct the turret to rotate.

(4) Wait sufficient time for the turret to reach its final position.

(5) Turn the picture back on if it was initially on.

The time delays in steps (2) and (4) above may vary from one projector to another. They are best determined once the projector has been installed in the cinema. The resulting values are entered into the CA21 using setup.

To restrict access to setup, a PIN security scheme is provided. Each digit of the PIN is set as a step number and then entered by pressing the CUE key as follows.

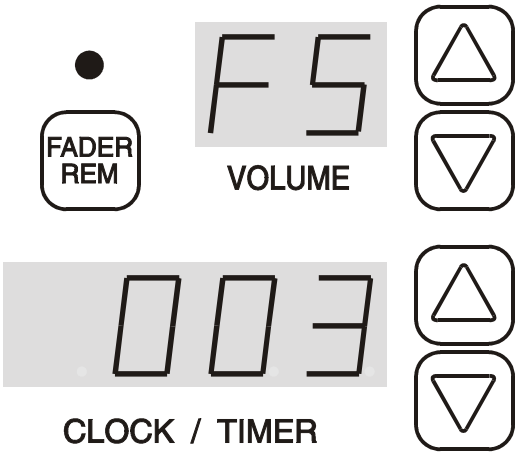
(1) With the CA21 in idle state set the step number to the first digit of the PIN and press CUE.

(2) Set the step to the second digit of the PIN and press CUE.

(3) Repeat this procedure for the remaining digits of the PIN.

If the PIN is verified by the CA21, setup will be entered and indicated by blanking out all the LEDs above GO, EDIT, MAN, and EXIT. The volume and timer displays will also change.

Figure 9.1 Setup Option AFS≅ with a Value of 3



Each setup function is identified in the volume display by a two-character code. Pressing the volume arrow keys will step through the various functions which are available.

At the same time any value associated with the function will be displayed in the timer digits. Pressing the timer arrow keys will step through the permitted range of values.

If the CUE key is pressed, the function whose code is displayed will be selected. For example if the function enables a time to be set, the value currently displayed in the timer digits will be entered. If the function clears all programs, pressing CUE will erase all the steps of all programs.

Once a value has been entered using setup, the value remains stored in the CA21. It is preserved even when the CA21 is switched off. Of course the stored value may be changed at some later date by re-entering setup.

After CUE is pressed to perform a function, setup will display the next available function.

To leave setup press the EXIT key. The LED above EXIT will then illuminate to indicate the CA21 has returned to the idle state.

In setup most of the functions performed will depend on the actual configuration of the CA21 provided. However, two functions are normally always present.

(1) Clearing all programs, (volume display shows "CP"),

(2) Setting the fader slew rate, (volume display shows "FS"). The fader slew rate is determined by a number from 0 to 6. A value of 0 gives the fastest slew rate and 8 the slowest.

Figure 9.1 above shows how the option to set the fader slew rate will appear.

10 Checks on Stored Programs

The memory used to store the six programs and setup values is checked regularly to ensure nothing has been corrupted. If the battery used to backup the memory goes flat, the memory contents can get damaged. The battery is a long life lithium cell and should last at least five years.

If the CA21 detects that a program has been corrupted it flashes the number LED of the damaged program. The EDIT key must then be used to select edit state. The program can be checked and corrected if necessary. Nevertheless when EXIT is pressed to return to idle the fault condition on that program will be cleared.

The above procedure must be repeated for all programs which have been corrupted.

If the programs are severely corrupted as they will normally be after changing or disconnecting the battery, they can be cleared by executing the "clear all programs" function described above in setup. However, errors in the individual programs will have to be remedied first as just described.

11 Instructions for Installing New Firmware in CA21s

When installing new firmware PROMs in a Pennywise CA21 Cinema Automation Unit, the following procedure should be followed.

Follow the same procedure, but omit step (2), if the battery is ever disconnected.

(1) Switch the CA21 power off.

(2) Remove the old PROM and install the new one the correct way around. The notch marking the pin-1 end of the PROM must face the notch on the circuit board overlay. Also, ensure that all the PROM pins plug into the socket and that none are bent under.

(3) Power on the CA21.

(4) It is possible that errors will be detected in some session programs. Errors are indicated by flashing a program number led. To clear an error in a program press EDIT. Edit the program to fix any errors and then press EXIT. This procedure must be repeated for each program in error. (See Section 10 above for details.)

(5) Enter Setup and check the values of all the options. There may be additional options in the new firmware which have to be set. Section 9 above explains how to enter Setup. The AConfiguration Manual≅ will gives details of all the options.

(6) Whilst in Setup, the ACP≅ option can be used to clear all the session programs.

(7) Turn the CA21 power off and then on again to ensure everything starts up again correctly.

 8th July 1997

Front Panel Operations for Christie
CA21 Cinema Automation and Back Board
and CS30 Status Panels

Auto Start
Auto Stop
Motor On
Motor Off
Dowser Open
Dowser Close
Flat
Scope
Other/Mono
Stereo

SR
Digital
Non Sync 1
Non Sync 2
House Up
House Preset
House Down
Slide On
Slide Off
Delay
Volume Change

Relay Allocation

1	(Does not exist)
2	
3	Masking Flat
4	
5	Lens Cinema Scope
6	Lens Flat
7	Curtain Open
8	Stage Lights Down
9	Stage Lights Up
10	Masking Cinema Scope
11	
12	House Lights Up
13	House Lights Preset 2
14	Curtain Close
15	House Lights Down
16	House Lights Preset 1
17	(Does not exist)
18	Motor On
19	Fader Local/Remote
20	Motor Off
21	Spare Relay 3
22	Change Over
23	Non Sync 1
24	Non Sync 2

		37	Spare Relay 1
25	Digital	38	Spare Relay 2
26	SR	39	
27	Mute	40	Interlock Motor Start
28	Exciter On/Off	41	Slide Power On
29	Dowser Close	42	
30	Dowser Open	43	
31	Mono	44	
32	Stereo	45	
33	(Does not exist)	46	
34		47	
35		48	Interlock Motor Stop
36			

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. In particular the turret motor control relays are pulsed for a preset time, or less if current control is enabled.

Input Use

1	Film Cue
2	CP500 Is On
3	Spare Input 1
4	Remote Stop
5	Spare Input 2
6	Xenon Fail
7	Film Break
8	Panic
9	Motor Feedback
10	Remote Start
11	Spare Input 3
12	
13	
14	Fader Remote
15	
16	
17	
18	Interlock Motor Start
19	Interlock Motor Stop/Fault
21	CP500 Status (most significant bit)
22	CP500 Status
23	CP500 Status (least significant bit)
24	Turret Current High

Notes on Inputs

Film Cue — 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.

Remotes — These two inputs enable sessions to be started and stopped. The behaviour depends on the AG (Auto Go) option in Setup. See the description after the Section on Setup Options.

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.

CP500 Stat. — These three inputs tell the CA21 what sound format is selected on the CP500. The CA21 uses this information to drives it sound format display LEDs. To enable this mode of operation the Setup option ASP≅ must be set to 2.

Setup Options (PIN is 3124)

CP Clear all programs.

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.)

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.)

FS Fader Slew Rate (0 to 8). 0 is the fastest rate, 8 is the slowest.

FI Initial fader setting - the fader will be set to this value when the CA21 is powered on.

CC Curtain Close Delay - 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.

2P Two Projector Operation Enable - when set to 1 two projector operation is enabled and a serial port is used to couple the two CA21s. Not all CA21's will be equipped with this option.

CH Two Projector Change Over Delay - the delay is the change over delay for use when Achanging over≅ from one projector to the other during two projector operation. Not all CA21's will be equipped with this option.

HP House Preset Delay - the delay in Auto Start from House Preset 1 until the curtain is opened. The delay is from 0 to 20 secs in 1 sec steps.

Ld Lens Delay - the delay from when the dowser is closed until the lens is changed. The delay is from 0 to 2.0 secs. The factory setting is 1.0 secs.

tF "tF" is the maximum time the turret motor is driven to change the lens to Flat (Wide Screen). If current sensing is used to turn the motor off it will cause the motor to be turned off sooner. The maximum time the motor will be left running is still "tF". The range of "tF" is 1.0 to 6.0 secs. Factory setting is 3.5 secs.

tP The equivalent of "tF" when changing the lens to Cinema Scope. Factory setting is 3.5 secs.

tH "tH" is an initial delay to allow the turret motor to come up to speed and stabilise before its current is sensed. If a current overload is then detected the turret is assumed to have rotated to its final position and the motor will be turned off. However the motor will never be run longer than "tF" or "tP". The factory setting is 2.0 secs.

To simply rotate the turret for a preset time set "tH" to be greater than "tF" or "tP". Current sensing will then be disabled. The range of "tH' is 1.0 to 6.0 secs.

tA This option allows the aperature and turret motors to be tweeked for 0.1 secs each time the SCOPE or FLAT keys are pressed in idle. A value of 1 enables the option. The factory setting is 1.

Ut Mute mode - the relay is set/reset if the value is 0 and pulsed if the value is 1.

Lr Fader local/remote mode - the relay is set/reset if the value is 0 and pulsed if the value is 1.

SP This option selects the type of sound processor interface to be used on the CA21.

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≅ = 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≅ = 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≅ = 5 the Panastereo sound processor can be driven serially. Sound format, sound level and sound format status are all conveyed via the serial port.

NOTES:

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

Remote Control of Sessions

The two inputs Remote Stop and Remote Start together with the Setup option Auto Go (AAG≅) allow sessions to be controlled remotely. The operation of the remote inputs is summarised in the tables below.

Note that Auto Go also affects the operation of the GO key when starting a session without the use of the timer.

If GO is pressed with Auto Go = 0, the CA21 enters run state but the first step of the program is not performed until a CUE is received, usually by pressing the CUE key.

If GO is pressed with Auto Go = 1, the CA21 enters run and starts the program automatically. It is not necessary to generate a CUE to perform the first step.

Operation of Remote inputs with Auto Go = 0

CA21 State	Remote Start	Remote Stop
Idle	No action	No action
Run waiting for timer	Starts the session immediately (like CUE)	Clears the timer but stays in run
Run waiting for first CUE	Starts the session (like CUE)	No action
Running a session	No action	No action

Operation of Remote Inputs with Auto Go = 1

CA21 State	Remote Start	Remote Stop
Idle but film not loaded	No action	No action
Idle with film loaded	Enters run and starts a session immediately using the selected program (like pressing GO)	No action
Run waiting for timer	Starts the session immediately (like CUE)	Aborts the session and returns to idle (like EXIT)
Running a session	No action	Aborts the session and returns to idle (like EXIT)

Functions

Auto Start

(Slide Off can be included in the program step)
Motor On (18)
Stage Down (8)
House Preset 1 (16)
House Preset Delay (HP in setup)
Curtain Open (7)
Dowser Open (30)
Exciter On (close 28)
Stereo (32) and ensure mute off (open 27)

Auto Stop

Curtain Close (14)
Curtain Close Delay (CC in setup)
Stage Lights Up (9)
House Lights Up (12)
Dowser Close (29)
Exciter off (open 28)
Non Sync 1 (23) and ensure mute off (open 27)
(Slide On can be included in the program step)
(The motor is turned off when the film runs out)

Motor On

Pulse relay 18

Motor Off

Pulse relay 20

Dowser Open

Pulse relay 30
Close relay 28 (exciter on)

Dowser Close

Pulse relay 29
Open relay 28 (exciter off)

Flat

Masking Flat (3)
If the turret is already postioned at Flat do nothing more

Otherwise if the dowser is open
Mute On (set or pulse 27 depending on Ut option)
Dowser Close (29)
Lens Delay (Ld in setup)
Lens Flat (pulse 6 for required time - see setup)
Wait till relay 6 pulse completed
Dowser Open (30)
Mute Off (reset or pulse 27 depending on Ut option)
else
Lens Flat (pulse 6 for required time - see setup)

Scope

Masking Scope (10)

If the turret is already positioned at Scope do nothing more

Otherwise if the dowser is open
Mute On (set or pulse 27 depending on Ut option)
Dowser Close (29)
Lens Delay (Ld in setup)
Lens Scope (pulse 5 for required time - see setup)
Wait till relay 5 pulse completed
Dowser Open (30)
Mute Off (reset or pulse 27 depending on Ut option)
else
Lens Scope (pulse 5 for required time - see setup)

Mono

If SP=0, 1, 2 or 3 then:
Pulse relay 31 and ensure mute off (open 27)
else:
Use serial interface to select mono.

Stereo

If SP=0, 1, 2 or 3 then:
    Pulse relay 32 and ensure mute off (open 27)
else:
    Use serial interface to select stereo

SR

If SP=0, 1, 2 or 3 then:
    Pulse relay 26 and ensure mute off (open 27)
else:
    Use serial interface to select SR.

Digital

If SP=0, 1, 2 or 3 then:
    Pulse relay 25 and ensure mute off (open 27)
else:
    Use serial interface to select digital.

Non Sync 1

If SP=0, 1, 2 or 3 then:
    Pulse relay 23 and ensure mute off (open 27)
else:
    Use serial interface to select non-sync1.

Non Sync 2

If SP=0, 1, 2 or 3 then:
    Pulse relay 24 and ensure mute off (open 27)
else:
    Use serial interface to select non-sync2.

House Up

Pulse relay 12
Pulse relay 9 (stage up)

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

Pulse relay 16
Pulse relay 8 (stage down)

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

Pulse relay 13
Pulse relay 8 (stage down)

House Down

Pulse relay 15
Pulse relay 8 (stage down)

Slide On Sequence

Curtain Open (7)
Slide Projector On (close 41)
Curtain Close Delay (CC in Setup)
Pulse Spare Relay 1 (tape start)Slide Off Sequence

Pulse Spare Relay 1 (tape stop)
Curtain Close (14)
Curtain Close Delay (CC in Setup)
Slide Projector Off (open 41)

Film Break and Xenon Fail Fault Sequence

Motor Off (20)
Dowser Close (29)
Exciter Off (open 28)
House Lights Up (12)
Stage Lights Up (9)
Select Non Sync 1

Fire Sequence

Motor Off (20)
Dowser Close (29)
Exciter Off (open 28)
House Lights Up (12)
Stage Lights Up (9)
Select Non Sync 1
Mute (set or pulse 27 depending on Ut option)

Abort Session (by pressing EXIT or activating Remote Stop)

Slides Off (open 41)
Motor Off (20)
Dowser Close (29)
Exciter Off (open 28)
House Lights Up (12)
Stage Lights Up (9)
Select Non Sync 1

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 connect the 20 way header on the CA21 front panel circuit board to the 20 way header on the CA21 back panel circuit board. One end of this cable plugs into connector J9 on the CA21 front panel circuit board. The other end plugs into connector JP1 on the CA21 back panel circuit board.

CP500 Sound Processor Serial Port Adapter Cable
Used inside CA21 to connect J9 to JP1

20 way female socket
(Ribbon cable crimp type)

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

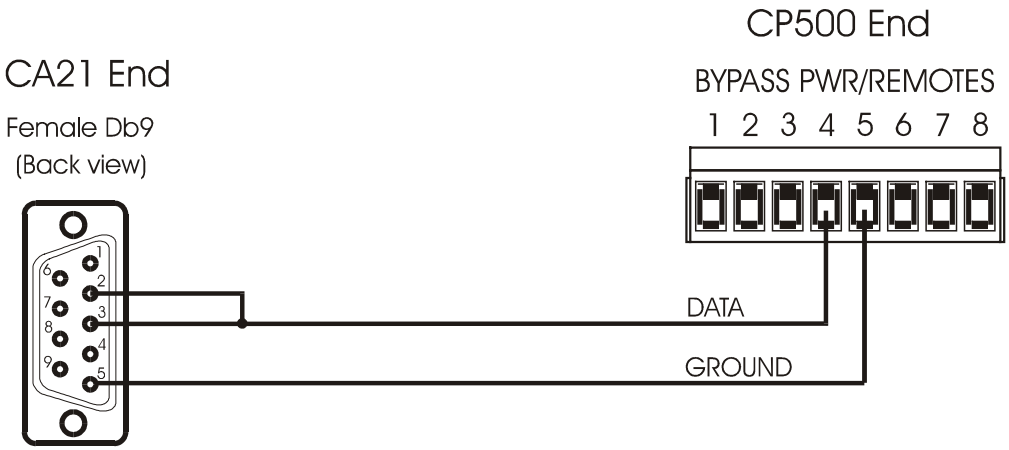
20 way female socket
(Ribbon cable crimp type)

Plug into connector JP1 on Back Panel circuit board. This is the 20way connector at the top of the back board furtherest from the CA21 power cable.

Cable 2:

The second cable is a two wire cable connecting the 9 pin serial slide 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:

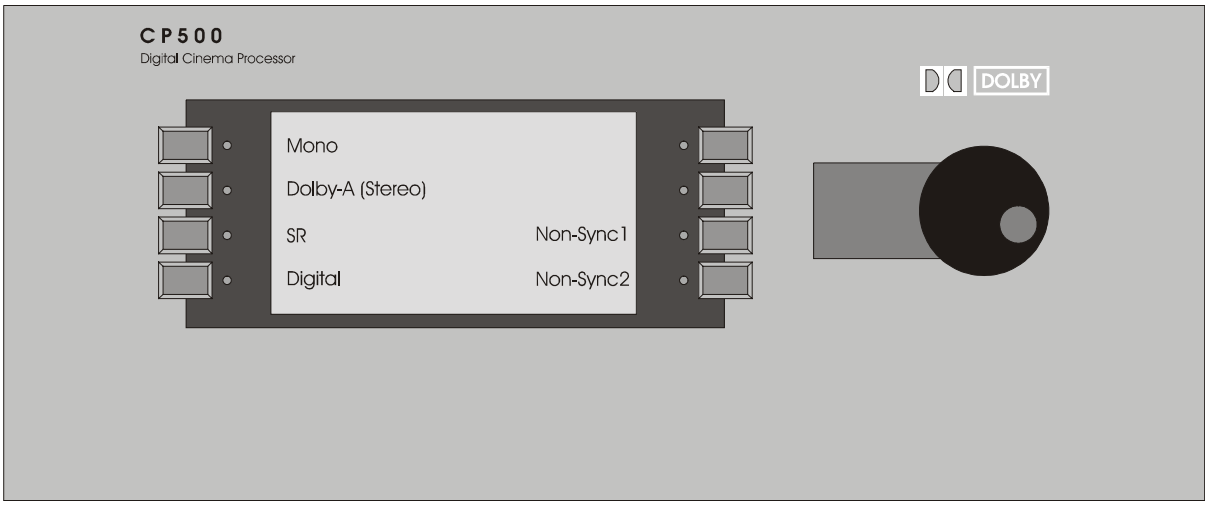
For serial control of the CP500 the auditorium fader must be **disabled**.

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


CP500
Digital Cinema Processor
DOLBY
Mono
Dolby-A (Stereo)
SR
Digital
Non-Sync1
Non-Sync2

INTERFACE MODULE (195667-001)
CONSOLE AUTOMATION TERMINATIONS

TB- 5 TERMINAL ASSIGNMENT	DB CONNECTOR - PIN ASSIGNMENT
1. & 1b. 120 VAC	(JUNCTION POINTS ONLY)
2. & 2b. 120 VAC NEUTRAL	(JUNCTION POINTS ONLY)
3. & 3b. GROUND	P1 - 15,16,17
4. & 4b. MOTOR FEED *(FROM C.B.)*	P1 - 1 (motor latch), 14 (motor on) (+24VDC to relay)
5. & 5b. PROJECTOR DRIVE MOTOR	
6. a. XENON LAMP N.C. b. XENON LAMP N.O.	
7. & 7b. XENON LAMP FEED	
8. & 8b. C.O. FEED *(120 VAC FROM C.B.)*	
9. & 9b. C.O. OPEN COIL	P1 - 2 (+24VDC to relay)
10. & 10b. C.O. CLOSE COIL	P1 - 3 (+24VDC to relay)
11. C.O. NORMALLY CLOSED	
12. EXCITER FEED	P1 - 4 (+24VDC to relay)
13. EXCITER ON	
14. SLIDE PROJECTOR FEED	P1 - 5 (+24VDC to relay)
15. SLIDE PROJECTOR SWITCHED	
16. HOUSE DIMMER FEED ***	P2 - 7
17. HOUSE DIMMER MID 1 **	P2 - 19
18. HOUSE DIMMER DOWN	P2 - 6
19. HOUSE DIMMER MID 2 **	P2 - 18

20. HOUSE DIMMER UP	P2 - 5
21. STAGE DIMMER FEED ***	P2 - 17
22. STAGE DIMMER UP	P2 - 4
23. STAGE DIMMER DOWN	P2 - 16
24. +24 VDC *	P2 -2,3,15
25. 0 VDC ****	
26. CUE +24VDC *	
27. CUE FEED (0VDC) ****	
28. CUE INPUT	P2 - 14
29. FAIL-SAFE FEED (0VDC) ****	
30. FAIL-SAFE INPUT	P2 - 1
31. C.O. TRANSMIT	P3 - 5
32. C.O. RECEIVE	P3 - 9
33. C.O. COMMON (SHIELD)	P3 - 4
34. STATUS BUS 1	P3 - 8
35. STATUS BUS 2	P3 - 3
36. AUDIO SWITCHING FEED	P1 - 13
37. AUDIO - NON - SYNC 1	P1 - 25
38. AUDIO - NON - SYNC 2	P1 - 12
39. AUDIO - MONO	P1 - 24
40. AUDIO - STEREO	P1 -11
41. AUDIO - STEREO S.R.	P1 - 23

42. AUDIO - DIGITAL	P1 -10
43. MUTE	P1 - 22
44. LOCAL/REMOTE	P1 - 9
45. FADER A	P1 - 21
46. FADER B	P1 - 8
47. AUDIO - C.O. N.O.	P1 - 20
48. AUDIO - C.O. N.C	P1 - 7
49. SYNC I/L START BUS	P1 - 19
50. SYNC I/L FAIL-SAFE BUS	P1 - 6
51. REMOTE START (EXPECTS 0VDC INPUT)	P1 - 18
52. REMOTE STOP (EXPECTS 0VDC INPUT)	P2 - 20
53. PANIC (EXPECTS 0VDC INPUT)	P2 - 8
54. MASKING COMMON	P2 - 21
55. MASKING FLAT	P2 - 9
56. MASKING SCOPE	P2 - 22
57. MASKING OTHER	P2 - 10
58. CURTAIN FEED	P2 - 23
59. CURTAIN OPEN	P2 - 11
60. CURTAIN CLOSE	P2 - 24
61. XENON FAIL-SAFE FEED (OVDC) ****	
62. XENON FAIL-SAFE INPUT	P2 - 12
63. TURRET (+24VDC OR 0VDC)	P2 - 13
64. TURRET (OPPOSITE OF #54)	P2 - 25

65. SPARE INPUT 1	P4 - 1
66. SPARE INPUT 2	P4 - 6
67. SPARE INPUT 3	P4 - 2
68. SPARE RELAY 1	P4 - 7
69. SPARE RELAY 1	P4 - 3
70. SPARE RELAY 2	P4 - 8
71. SPARE RELAY 2	P4 - 4
72. SPARE RELAY 3	P4 - 9
73. SPARE RELAY 3	P4 - 5
74. SPARE WIRE	P3-1
75. SPARE WIRE	P3-6
76. SPARE WIRE	P3-2
77. SPARE WIRE	P3-7

TB6 MANUAL PANEL CONTROL

1. +24VDC
2. 0VDC
3. MOTOR START (REMOVE JUMPER 1)
4. MOTOR LATCH
5. DOWSER OPEN
6. DOWSER CLOSE

NOTES

* - Indicates jumpers between terminals on PCB.

P1 - DB25 low voltage (male on Christie PCB).

P2 - DB25 low voltage (female on Christie PCB).

P3 - DB9 serial connection (male on Christie PCB).

P4 - DB9 low voltage spares (female on Christie PCB).

Jumper 1 - remove if using pushbutton manual control.

Jumper 2, 3, 5 - required always.

Jumper 6 - connects house Mid 1 and Mid 2.

Jumper 7 - connects House com to Stage com.