CELCO.

GOLD

OPERATORS MANUAL

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Welcome to the Celco 88 Range

We would like to thank you for selecting our Celco Gold Control Board for your Production. In doing so you have joined many other Designers throughout the world who demand State - of - the - Art lighting control.

Warning.

We fully understand that in your enthusiasm you will wish to set up and operate your Celco Gold Board immediately. However before proceeding any further may we suggest that you at least read the section on Electrical Connection, to avoid making any embarrassing and costly mistakes.

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1.   Preparation.

1.1.   Unpacking.

1.1.1.   Remove the Celco Gold from its flightcase.

1.1.2.   Remove the protective plastic dust jacket—It may be advisable to keep this for future use.

1.1.3.   Make a note of the Serial number (located on the rear panel)—You will need this to complete the Warranty Registration Card.

1.1.4.   Remove the XM-LNE Power Lead from the Spares Kit - This is located in the left hand draw.

1.2.   Electrical Connection.

1.2.1.   Ensure that the Voltage Selector Switch (located on the rear panel) is set for operation on the local mains voltage and that the fuse is correct for that voltage setting.

- *To change the Voltage Selection turn the Fuse Holder anti-clockwise through ninety degrees. The Fuse Holder, along with the integral fuse can then be removed. Next, take a screw driver or a coin, and, by locating it in the notches of the Voltage Selector Switch, turn the Voltage Indicator to the correct setting.*

- *Replace the Fuse Holder with the correct fuse fitted. For fuse ratings refer to the Technical Appendix Section.*

1.2.2.   Connect a suitable mains voltage connector to the free end of the XM-LNE Power Lead, following the wiring code below:

Brown Wire — LiveTerminal (Hot)

Blue Wire — Neutral Terminal

Green/Yellow Wire — Earth Terminal (Ground)

1.2.3.   Connect the Mains Voltage Connector to the Mains Supply and insert the XM-LNE Connector into the socket located next to the Voltage Selector Switch – The Celco Gold is now ready for operation.

1.3.   General Care.

- *Never place drinks or any liquid, on or near the Board. Failure to adhere to this may result in liquid entering the Board and serious damage may occur.*

- *Always protect the Board from direct sunlight, rain and very dusty environments.*

- *Take care whilst transporting the Board to ensure that it is not dropped or placed beneath heavy equipment. Storage and transportation should be carried out with the Board in a purpose designed case.*

- *Keep the Board clean with a lightly damped cloth, never use cleaning agents as these may damage the surface. If the Board should become particularly dusty then it is advisable to clean it with a soft haired brush first.*

1.4.   Battery Backup.

The battery fitted in a Celco Gold is for the retention of it's memory for up to three months when fully charged. Although the Board leaves the factory with a fully charged battery it may have been stored for some time.

Therefore it is important that the Board is left connected to a Mains Supply for 24 hours either before or after it is first used. This will ensure that the battery's are fully charged and no memory loss occurs.

If the Board has not been used for some time it is advisable to follow this procedure.

2.   Manual Operation.

2.1.   Operating Mode Keyswitch.
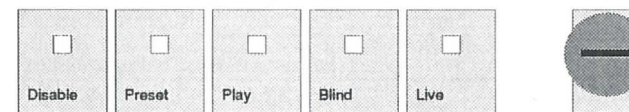
Fig. 1. The Operating Mode Keyswitch.

Insert one of the two keys supplied with the Spares Kit into the Operating Mode Keyswitch (situated on the middle right hand side of the Board) and note that there are Five available Modes of Operation.

Mode	Operational Status
Disabled	Preset 1, Preset 1 Master.
	Channel Flash buttons, Flash buttons Master.
	Output Limits.
	Grand Master.
Presets	Preset 1, Preset 1 Master.
	Preset 2, Preset 2 Master.
	Channel Flash buttons, Flash buttons Master.
	Output Limits.
	Grand Master.
Playback	Preset 1, Preset 1 Master.
	Preset 2, Preset 2 Master.
	Cue Faders, Cue Master.
	Cue Pages.
	Sequence Master.
	Sequence Patterns.
	Flash buttons, Flash buttons Master.
	Output Limits.
	Grand Master.
	Real Time Tape Activation.(Playback).

- *The Playback Mode is ideally suited for normal operation - all sections of the Board are accessible.*

Mode	Operational Status
Blind	Preset 1, Preset 1 Master.
	Cue Faders, Cue Master.
	Cue Pages.
	Sequence Master.
	Sequence Patterns.
	Flash buttons, Flash buttons Master.
	Output Limits.
	Grand Master.
	Tape Data Storage and Retrieval.

• *In Blind Mode Preset 2 is used discreetly - it will not output to the Dimmers. This allows Storing and Modifications to be made to either Cue Faders or Sequence Patterns without affecting the current output of the Board.*

Live	Preset 1, Preset 1 Master.
	Preset 2, Preset 2 Master.
	Cue Faders, Cue Master.
	Cue Pages.
	Sequence Master.
	Sequence Patterns.
	Flash buttons, Flash buttons Master.
	Output Limits.
	Grand Master.
	Real Time Tape Encoding.
	Tape Data Storage and retrieval.

• *Live Mode enables Storing and Modification to be executed on the Live outputs of the Board from Preset 2.*

• *The Key may be removed from any one of the five positions to restrict the Boards operation.*

2.2. Overview of Preset Controls.
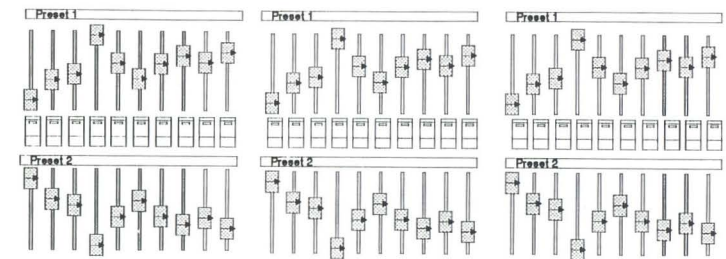
Fig. 2. Preset Section.

Function	Description.	Colour.
Channel Indicators	The 90 Indicator lights located within the Channel Flash Buttons.	Yellow
Preset 1	The 90 faders located at the top of the Board.	Black
Preset 2	The 90 faders located beneath Preset 1.	Black
Channel Buttons	The 90 Flash (Bump) Buttons situated between Presets 1 & 2.	Black
Output Limiters	The 90 Rotary Knobs located at the very top of the Board.	Orange
Grand Master	Single fader located at the right hand side of the lower section.	Orange
D.B.O./F.B.O.	The single Paddle Switch located above the Grand Master.	Orange
Preset 1 Master	Single fader located at the right hand side of the lower section.	Yellow
Preset 2 Master	Single fader located at the right hand side of the lower section.	Blue
Buttons Master	Single fader located at the right hand side of the lower section.	Grey
Override	The single Paddle Switch located above the Buttons Master.	Grey

2.3.   Preset 1 and Preset 1 Master.
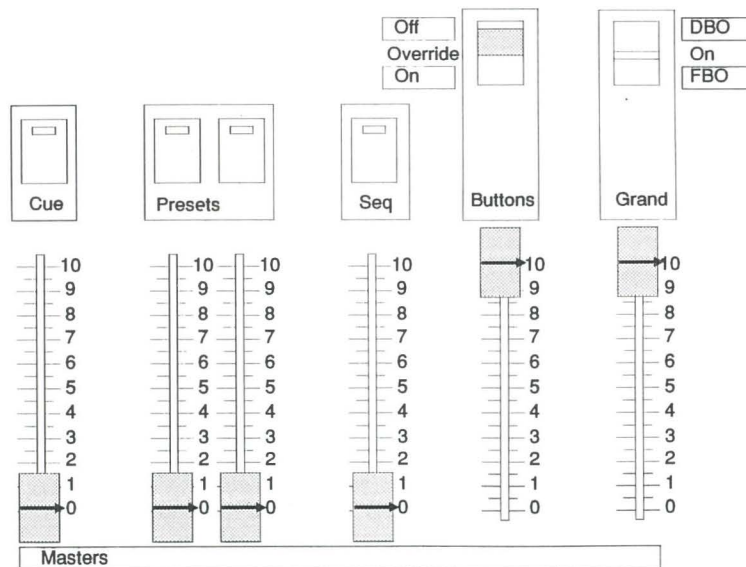
Fig. 3. The Master Section.

Status:

Operating Mode Keyswitch	Set to 'Presets'
Grand Master	Maximum
D.B.O./F.B.O.	On
Override Switch	Off
Flash button Master	Maximum.

2.3.1.   Set some or all of the faders of Preset 1 to a level above zero. Now, by using the Preset 1 Master and moving it above zero you will see the Channels you have selected appear on the Channel Indicators.

2.3.2.   Note the Yellow Indicators, located at the top left hand side of each bank of ten Preset faders, also illuminate. These show that Preset 1 is 'active'. Every time a Preset Master is moved above 25% they will appear - informing you that any alterations made to that Preset will result in a change on the stage.

2.3.3.   Next, move the Preset 1 Master back to zero and press the Preset 1 Master Flash button. You will see the same Channels appear on the Channel Indicators, only, this time, they will appear instantaneously. Using the Preset 1 Master Flash button allows any combination of Channels on Preset 1 to be 'bumped' to their respective levels quickly.

2.4.   Preset 2 and Preset 2 Master.

Status:

Operating Mode Keyswitch	Set to 'Presets'
Grand Master	Maximum
D.B.O./F.B.O.	On
Override Switch	Off
Flash button Master	Maximum

2.4.1.   Preset 2 operates in the same fashion as Preset 1, it too has a Master that allows scenes containing any combination of lighting Channels to be set on Preset 2 and activated when the Master is moved or the Master Flash button pressed.

2.4.2.   Try setting two different scenes up on the Presets. Select the first ten Channels of Preset 1 and the last ten Channels of Preset 2. By moving the Masters slowly you will be able to cross fade between the two Presets. By using the two Master's Flash Buttons you will be able to 'bump' between the two Presets.

2.4.3.   Now position the first ten Channels of Preset 1 to 50% and the first ten Channels of Preset 2 to maximum. Place Preset 1 Master at maximum, notice the Channel Indicators. Next place Preset 2 Master to maximum and note that the Channel Indicators get brighter.

2.4.4.   This exercise illustrates the principle of 'Highest Takes Precedence' where any Channel will be at the level determined by the highest source for that Channel. This is the common operating principle for most Lighting Control Boards.

2.5. Channel Flash buttons and Master.

Status:

Operating Mode Keyswitch	Set to 'Presets'
Grand Master	Maximum
D.B.O./F.B.O.	On
Override Switch	Off
Flash Button Master	Zero

The Channel Flash buttons provide individual and instantaneous control of any Channel. All Flash buttons are controlled from the Flash buttons Master, allowing Channels to be flashed, or 'bumped' at pre-determined levels - A very useful feature in television or video recording.

2.5.1. With the Flash button Master at zero start 'bumping' the Flash Buttons on Channels 1 and 2. At the same time move the Flash Buttons Master up towards maximum - notice how you are able to see the intensity of the two channel Indicators rise as the Flash Buttons Master moves up.

2.6. Override Switch.

Status:

Operating Mode Keyswitch	Set to 'Presets'
Grand Master	Maximum
D.B.O./F.B.O.	On
Override Switch	On
Flash button Master	Maximum

When set to the On position the Override Switch offers an alternative method of controlling the Flash buttons.

2.6.1. Select a combination of Channels on Presets 1 and 2 and leave their Masters in the maximum position. Now press a Channel Flash Button, notice how all the Channel Indicators, except that of the Flash button pressed, have disappeared. Now, release the Flash Button - the Channel Indicators will return.

- *This feature, some times known as 'swap' allows any channel or group of Channels to Override any Channels set on the faders.*

2.6.2. You can also use the Override facility to operate the Preset Masters in the same way. With Preset 1 Master at maximum, with Channels selected, press the Flash button for Preset 2 Master. Note how the Channels of Preset 1 will swap with the Channels of Preset 2. You will also see the Preset 1 Master Indicator, located in the Flash button, and the Yellow Activation Indicators of Preset 1 extinguish.

2.7. Output Limiters.

Status:

Operating Mode Keyswitch	Set to Presets
Grand Master	Maximum
D.B.O./F.B.O.	On
Preset 1 Master	Maximum

The Output Limiters offer an excellent method of controlling the maximum output of the individual Channels. Although their use will become more apparent as you progress through the Memory Sections of this manual it would be wise that you have a basic understanding of their function at this stage.

2.7.1. Move Preset 1 Master to maximum and position the first ten Channels of Preset 1 to full. Whilst viewing the levels of the Channel Indicators turn the first Output Limiter anti-clockwise slowly. Note that the output of channel 1, as shown on the Channel Indicator, reduces as the Output Limiter is turned.
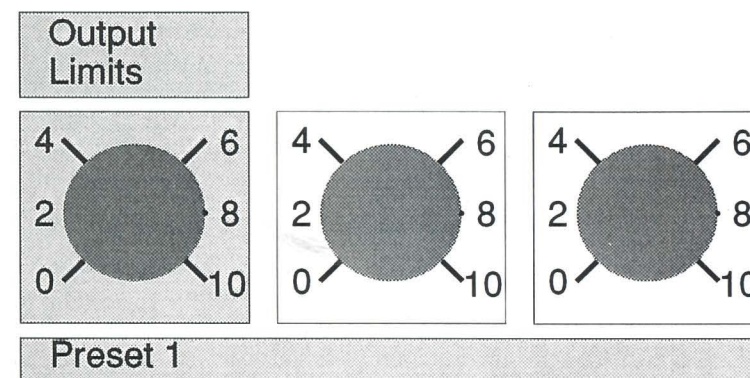
Fig. 4. The Output Limits.

2.7.2.   By selecting different settings for the 90 Output Limiters the upper levels of any Channel can be controlled. Alternatively, an Output Limiter can be fully turned anti-clockwise to delete a Channel completely — this allows mistakes on stage to be rectified with the Channel deleted from any Presets or, as described later on, any Cues or Sequences.

- *Output Limiters also offer many benefits when working on video or television productions as the levels of any Channels 'flaring' on camera can be quickly reduced without affecting the settings of the Presets or Memory Section.*

3.   Cue Operation.

3.1.   Overview of Cue Controls.

Name.		Description.
Cue Faders	The 30 Cue Faders are located at the centre lower section.	Black
Cue Buttons	The 30 Cue Flash Buttons are situated above each Cue Fader.	Black
Cue Buttons Mode	Located above Cue Fader number 30	White
Cue Master	Single Fader located at the lower right hand section.	Black
Cue Pages	The 15 Buttons located at the lower right hand section.	Black
Enter Button	Located in the lower left hand section.	Black
Modify Indicators	The 90 Indicators below Preset 2.	Red/Yellow
Modify Button	Situated next to the Enter Button.	Black
Time Faders	The 2 faders located in the lower right hand section.	Black
Time Fade Clocks	The 2 Time Fade Clocks are situated above the Time Faders.	Red
AutoFade Button	Located between the Time Faders and the Time Fade Clocks.	Black
'X' Master	Single Fader located to the right of the Cue Faders.	Black
'X' Master Button	Flash button located above the 'X' Master.	Black

3.2.   Using the Cue Section.

The Cue Faders and the Cue Pages are used in conjunction, to recall the various pre-programed lighting scenes needed in a production.

The Celco Gold has fifteen Pages and thirty Cue Faders giving a combined total of 450 Cues.
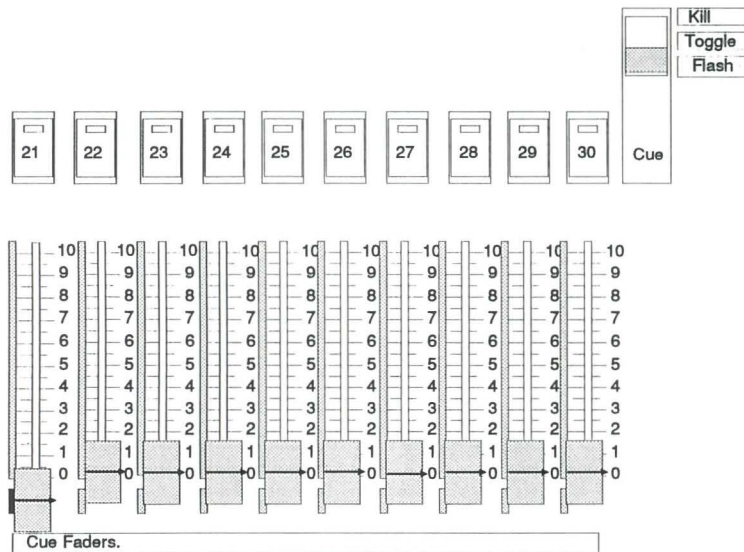
Fig. 5. Cue Faders, Cue Flash Buttons and Mode Switch.

3.3.   Cue Flash Buttons.

The Cue Flash buttons allow any lighting scene to be outputted instantaneously. Their level is controlled by the Flash button Master.

3.3.1.   Whilst holding a Flash button down move the Flash button Master from zero to maximum, notice how the Bar Chart beneath the Flash button rises and falls indicating the level of the Flash button Master.

  • *The Indicator in the Flash button shows only the status of the Flash button not the level, this is required when in KILL or TOGGLE mode as described below.*

3.4.   Cue Flash Button Mode Switch.

The Cue Flash button Mode switch sets the operational mode of the Cue Flash buttons only. There are three available modes as follows:

3.4.1.   **Flash.**

In this Mode any Cue Flash button will output whilst it is being held down. This is the normal mode.

3.4.2.   **Toggle.**

Any Cue Flash button will 'Lock On' allowing the switch to be released without the output disappearing. Subsequent presses of the Flash button will alternately clear and reset the output.

Fig. 6. The Cue Flash Button Mode Switch.

3.4.3.   **Kill.**

Similar to toggle in that pressing any Flash button causes it to 'Lock On' and it may then be released. When another Cue Flash button is pressed the previous 'Locked On' Flash button will clear and the new one will 'Lock On'. This function is particularly useful when combined with AutoFade as it allows Cross-Fading between one Cue and another.

In KILL and TOGGLE modes more than one Cue Flash button may be pressed at once causing all those pressed to 'Lock On'. It is also possible to move from KILL and TOGGLE modes without 'Unlocking' any Cue Flash buttons. However moving the mode switch to Flash clears all 'Locked' Flash buttons.
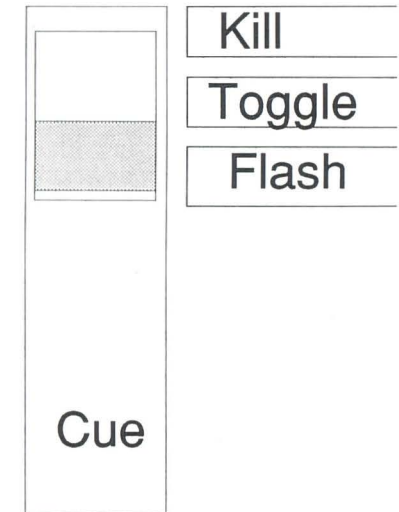
3.5.   Override Switch.

The Override switch, is described in the Preset section. However its operation also affects the Cue Flash buttons allowing any Flash button to Override or 'Swap' with any Fader settings. Normally the Override mode is used when the Cue Flash button Mode Switch is set to Flash. It may however be used with KILL and TOGGLE but will only Override whilst a Cue Flash button is being pressed. Releasing a Flash button stops it Overriding but does not affect the KILL and TOGGLE locks.

Off

Override

On

Buttons
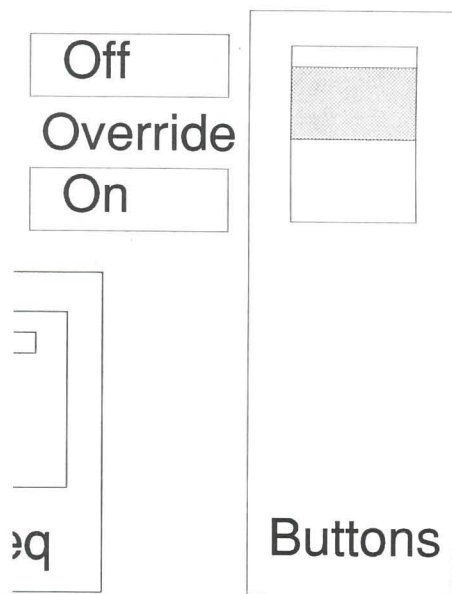
Fig. 7. The Override Switch.

4.   Storing Cue Information.

4.1.   Storing Cue's Live.

Status:	
Operating Mode Keyswitch	Set to Live
Grand Master	Maximum
D.B.O./F.B.O.	On

4.1.1.   Set the first ten Channels of Preset 2 at half, remember to move Preset 2 Master to maximum. The Yellow Channel Indicators will glow showing that the Channels are active.

4.1.2.   Select Page 1 of the Page Group - the Yellow Indicator will illuminate.

4.1.3.   Move the Cue Master to maximum.

4.1.4.   Now, Pull Down Cue Fader 1 (i.e. move the Cue Fader down below the zero point) the bottom Yellow Indicator will illuminate. Some or all of the Red Modify Indicators, situated below Preset 2, might also illuminate. These are *Previewing* (displaying) the current Channels stored in Cue Fader 1.

4.1.5.   Whilst still pulling down Cue Fader 1 press the Enter Button. You will immediately see that the Modify Indicators change from their current display. The new display on the Modify Indicators will duplicate that of the Yellow Channel Indicators showing that the first ten Channels of Preset 2 have been successfully recorded into the memory. Of course, you can now release the Cue Fader —it will return to it's normal setting at zero.
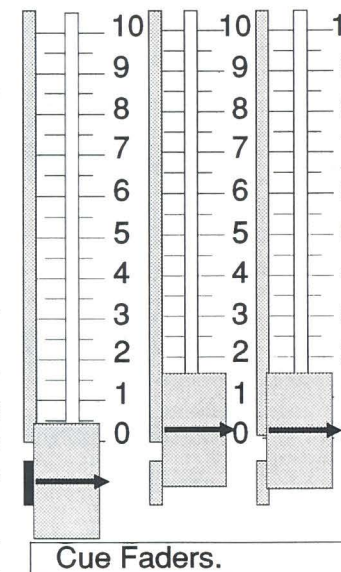
Cue Faders.

Fig. 8 Pulling down Cue Fader # 1.

4.1.6. Next, we can demonstrate the use of the Cue Fader by moving the Preset 2 Master to zero and pushing Cue Fader 1 up to maximum. The Yellow Indicators will illuminate again, showing that the output of the Board is the same as that which was previously set on Preset 2.

- *Up to thirty different scenes can be recorded onto the Cue Faders in this manner. When all thirty have been stored you can select a new Page and carry on storing the next thirty. Repeat this process until all 450 scenes are recorded or until all the scenes required are entered.*
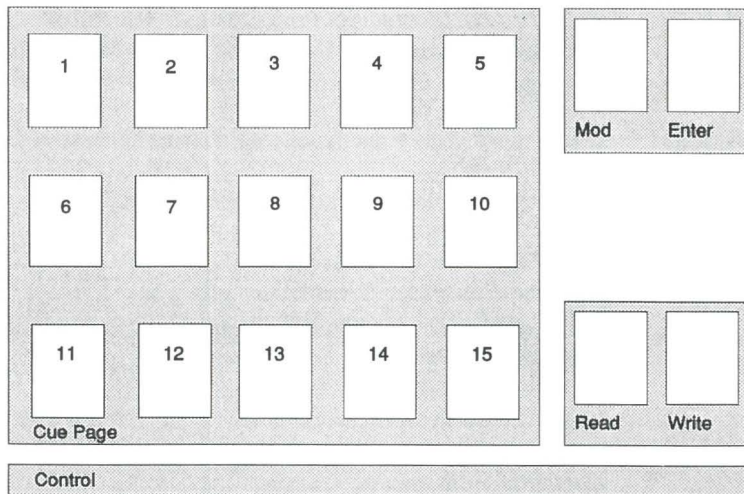
Fig. 9 The Cue Control Section.

4.2. Storing Cue's Blind.

Status:	
Operating Mode Keyswitch	Set to Blind
Grand Master	Maximum
D.B.O./F.B.O.	On

4.2.1. Set the second ten Channels of Preset 2 at half, remember to move Preset 2 Master to maximum. The Red Modify Indicators will glow showing that the Channels are discreet.

4.2.2. Select Page 1 of the Page Group - the Yellow Indicator will illuminate.

4.2.3. Move the Cue Master to maximum.

4.2.4. Now, Pull Down Cue Fader 2 (i.e. move the Cue Fader down below the zero point) the bottom Yellow Indicator will illuminate. Some or all of the Red Modify Indicators, situated below Preset 2, might also illuminate. These are *Previewing* (displaying) the *current* Channels stored in Cue Fader 1.

4.2.5. Whilst still pulling down Cue Fader 1 press the Enter Button. You will immediately see that the Modify Indicators change from their current display. The new display on the Modify Indicators will duplicate that of the Channel Faders showing that the second ten Channels of Preset 2 have been successfully recorded into the memory. Of course, you can now release the Cue Fader — it will return to it's normal setting at zero.

4.2.6. Moving Cue Fader 2 to it's maximum position will cause the second ten channels to output as indicated by the Yellow Channel Indicators.

Once you are fully conversant with the storing of lighting scenes, as described above, we can progress to understanding how recorded lighting scenes can be modified to enable 'fine tuning' of the lighting scene or the deletion of one or more Channels.

5.   Alpha-numeric Display

5.1.   Entering Legends.

The Keyboard is located in the right hand lockable draw beneath the control section. Unlock the draw and pull it out, note that a work-light has been provided. The work-light will switch on when the draw is open and off when it is closed.

Ensure that the Keyboard Switch (located above the numeric keypad) is set to Internal Mode before attempting to use the keyboard.

The Alpha-numeric Display enables an eight character legend to be written above each and every Cue Fader. This can act either as a prompt or, if programed correctly, as a rolling Cue sheet.

Any of the characters on the Keyboard can be used in the Display along with any numbers. Lower and upper case characters are controlled by the shift key. In addition most of the special characters can be entered by using the shift key.

If you have not already done so the Keyboard should be connected to the RS232c connector on the back of the Board and the thumbscrews tightened. This must be done with the Board disabled or disconnected from the mains supply.

Legends may be entered with the Board in the Live or Blind modes. The flashing Cursor indicates the position at which characters entered will appear.

- *To move the Cursor left or right by one character on a Celco Gold use the single arrow keys next to the numeric keypad. Use the double arrow keys to move the Cursor left or right by one window. The Home key moves the Cursor to Cue Fader 1.*

Legends can be entered on each Page so when all the Cue Faders on one Page are filled up move to a new Page. Remember that with the Keyboard connected and Live or Blind Mode selected on the Keyswitch, leaning or placing heavy objects on the Keyboard may result in your legends being erased. To prevent this select the Playback Mode on the Keyswitch when you are not using the Keyboard.

6.   Modifying Cues.

6.1.   Modifying Cue's Live.

Status:	
Operating Mode Keyswitch	Set to 'Live'
Grand Master	Maximum.
D.B.O./F.B.O.	On

6.1.1.   Clear all Channels on Preset 2 down to zero. Set Preset 2 Master at maximum.

6.1.2.   With the Cue Master at maximum move Cue Fader 1 to it's full position.

6.1.3.   The output of Cue Fader 1 will display on the Channel Indicators - this should still be the first ten Channels.

6.1.4.   Press the Modify Button, notice how the Red Modify Indicators duplicate the Yellow Channel Indicators.

6.1.5.   Now move fader 1 of Preset 2 up towards maximum - do this slowly at this stage.

- *Note how the Red Modify Indicator of Channel 1 changes colour to Yellow as the fader crosses the half way stage, informing you that you have taken control of that Channel. It will remain Yellow throughout it's travel towards maximum, as Yellow indicates a change from the recorded scene.*

6.1.6.   If you now bring Fader 1 down again slowly towards zero, you can observe that the Modify Indicator briefly changes back to Red at the halfway point and then back to Yellow as it travels nearer zero. This demonstrates the advantage of the Modify circuits of a Celco 88 Range Control Board as any Channel can be matched on Preset 2 to that of the same Channel stored in the Cue, Red being the colour of the Indicator when the Channel is matched.

6.1.7.   When Fader 1 of Preset 2 is at zero the Enter Button can be pressed. At this point the Modify Indicator will extinguish and the modification made will be entered into the memory.

6.2. Modifying Cues Blind.

Status:

Operating Mode Keyswitch	Set to 'Blind'
Grand Master	Maximum
D.B.O./F.B.O.	On
Preset 2 Master	Maximum

6.2.1. Pull down Cue Fader 1 on Page 1 - it should still contain the ten Channels entered in the 'Modifying Live' Section. These will be displayed on the Modify Indicators.

6.2.2. Whilst holding down the Cue Fader press the Modify Button.

6.2.3. Release the Cue Fader, the Modify Indicators will remain on.

Fig. 10 Press the Modify Button.

6.2.4. Now move one or more of the first ten Channels on Preset 2, you will be able to 'grab' that Channel in a similar manner to that in Modifying Live. The Modify Indicator of the Channel being Modified will change to Yellow as you pass the point where the Channel has been stored.

6.2.5. Once you have made the Modification go back to the Cue Fader you are Modifying - you'll be able to tell which one it is if you look for the Yellow Indicator at the bottom of the Bar Charts. Now, pull down the Cue Fader again - this allows you to perform a quick check between what's in the Memory and what's about to be stored and finally, press the Enter Button.

Fig. 11 Pull down the Cue Fader.

7. Time Fades and the AutoFade Function

In the last two sections we looked at recording the Channels and Modifying them. This can now be developed further to include Fade Times.

Fade Times allow a Cue to rise and fall at a pre-determined rate. The time entered for both the Up and Down time is recorded along with the lighting Channels. Fade Times can also be modified in the same way.
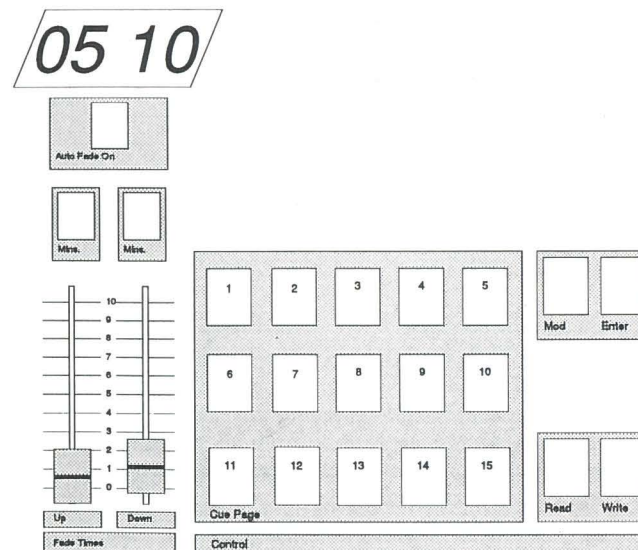
Fig. 12. The Cue Control and Autofade Section.

7.1. Setting the Fade Time.

Status:

Operating Mode Keyswitch	Set to 'Blind'
Grand Master	Maximum
D.B.O./F.B.O.	On
Preset 2 Master	Maximum

7.1.1.   Set the first ten Channels of Preset 2 to a level above zero.

7.1.2.   Select the Up Time Fader to 05 (5 seconds) and the Down Fader to 10 (ten seconds). Note how the times are displayed above the AutoFade section.

7.1.3.   Pull down Cue Fader 1 and press Enter. Note how the Fade Times appear above Cue Fader 1 and the channels stored appear on the Modify Indicators.

7.1.4.   The new combination of Channels along with their Fade Time has now been recorded into the Memory.

7.1.5.   To explain how the Preview circuit operates for Fade Times clear the Time Faders down to zero. (They will read 00 00)

7.1.6.   Pull down Cue Fader 1 and observe that the Channels are displayed on the Modify Indicators. Now look at the Clocks above the AutoFade section - they will be displaying 05 10, the times set.

- *Using the above procedure Fade Times up to 60 seconds can be stored. By using the Minute Buttons above either the Up or Down Time Faders, times between 0.1 minute (6 seconds) and 6 minutes may be stored along with the channel levels.*

7.2.   Using AutoFade

Status:	
Operating Mode Keyswitch	Set to 'Live','Blind' or 'Playback'
Grand Master	Maximum
D.B.O./F.B.O.	On
Cue Master	Maximum
Flash button Master	Maximum
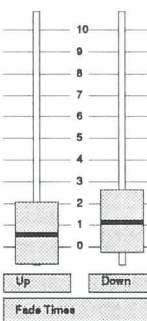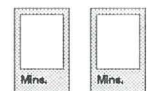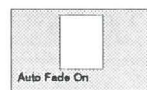
Fig. 13 Setting the Time Faders.

7.2.1.   Activate the AutoFade System by pressing the button, marked 'On', located above the Minutes Selection Switches — the Yellow Indicator will illuminate.

7.2.2.   Now move Cue Fader 1 to maximum, this time do it quickly, and observe that the Bar Chart along side Cue Fader 1 is flashing. It is informing you that a Fade Time is in progress on that Cue Fader.

7.2.3.   As the flashing Indicator climbs up the Bar Chart look at the output shown on the Yellow Channel Indicators - see how they are steadily glowing brighter as the fade time progresses.

7.2.4.   When the Fade Time is completed the flashing Indicator will stay permanently on and the output of the Channels in that Cue will remain static.

7.2.5.   Now Pull Down Cue Fader 1 to zero. This time be careful not to go below zero and into the Preview Mode. Notice that the flashing Indicator is reversing back down the Bar Chart and the output is reducing.

7.2.6.   As the Fade Time is completed the flashing Indicator on the Bar Chart will stop.

7.3.   Activation by the Cue Flash Buttons.

7.3.1.   Fade Times can also be activated by the Cue Flash buttons. Select the Toggle Mode on the Cue Buttons and press the Flash button of Cue Fader 1. The Flash button will lock in position and the Fade Time will rise. When the Fade has finished you can press the Flash Button again, it will then start to fall back to zero.

7.3.2.   When more Fade Times are used they can be activated by the Flash Buttons again — this time select the Kill Mode. Pressing one Flash Button will result in that Button being locked in position and the Fade Time rising, pressing another Flash button will clear the first, resulting in the Fade Time reducing, and activate the second.

8. Modifying Fade Times.

8.1. Modifying Fade Times Live.

Fade Times are Modified in the same way as Channels for both Live and Blind Modes.

Status:	
Operating Mode Keyswitch	Set to 'Live'
Grand Master	Maximum
D.B.O./F.B.O.	On

8.1.1. Move Cue Fader 1 to full and press the Modify Button.

• *Modify Indicators will illuminate.*

8.1.2. Make an alteration on the Time Faders - if any part of the Time Faders or Minutes selection switches are touched at this stage a modification of Time Fades will occur.

• *It may be necessary to modify the up time alone. If this is desired only move the Up Time Fader.*

8.1.3. Next, press the Enter Button - the Modification has now been entered into the Memory.

• *Fade Times or Channels can be modified together or separately. Remember, any alteration made to either the Channels or the Fade Times will result in a change of the Memory content after the Enter button is pressed.*

• *This feature allows simple and easy modification of any part of the contents of a Cue, if though, at any time in the process of Modification, you wish to return to the original Cue just turn the Modify Button off by pressing it again. This will return you to the original program.*

8.2. Modifying Fade Times Blind

Status:	
Operating Mode Keyswitch	Set to 'Blind'
Grand Master	Maximum
D.B.O./F.B.O.	On
Preset 2 Master	Maximum

8.2.1. Pull Down Cue Fader 1, the Time Fades set will be displayed on the Time Fade Clocks above the AutoFade Section.

8.2.2. Whilst holding Cue Fader 1 down press the Modify Button.

8.2.3. Adjust the two Time Faders to read a new setting. You may wish to change one of them to Minutes by selecting the Minutes Switch.

8.2.4. Pull down Cue Fader 1 and, whilst holding it down, press the Enter Button. The new Time Fade has now been entered into the Memory.

9. The 'X' Master

9.1. Using the 'X' Master.

The 'X' Master allows the Designer to move from a current Page to a new Page discreetly, without affecting the output of the Board. The 'X' Master will temporarily hold the output of any Cue Fader(s) and any Channels selected on Preset 2 allowing the Cue Faders to be cleared down and a new Page selected. Once the new Page is selected the 'X' Master can be faded out and a new Cue Fader brought up.

Status:

Operating Mode Keyswitch	'Playback' or 'Live'
Grand Master	Maximum
D.B.O./F.B.O.	On
Cue Master	Maximum

9.1.1. Place one or more Cue Faders on Page 1 to a level above zero.

9.1.2. With the 'X' Master at the zero position press the LOAD button.

9.1.3. Move the 'X' Master to maximum.

9.1.4. Clear the Cue Faders on Page 1 down to zero and select a new Page.

9.1.5. Fade up the new Cue Faders and fade down the 'X' Master.

- *The 'X' Master will always remember the last combination of Channels entered. This can always be checked by Previewing in the normal manner.*

- *Fade Times cannot be transfered onto the 'X' Master from the Cue Faders, however the 'X' Master can be used in the AutoFade mode by manually setting the desired time on the Time Faders.*
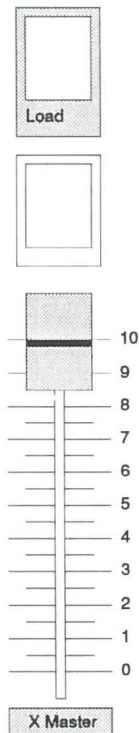
9.2. 'X' Master Flash button

The 'X' Master is similar to the Cue Faders in that it too has a Flash button. The Flash button may be used in any of the 3 modes KILL, TOGGLE and FLASH like the Cue Faders, with the Override switch ON or OFF. In the KILL or TOGGLE modes the Flash button will only Override whilst the button is being held down.

9.3. Copying Cues from Page to Page

In addition to providing continuity between Pages the 'X' Master can also assist in Programing. If it were necessary to copy the contents of a Cue Fader from one Page to another then the 'X' Master would be used to hold the contents ready for entering into a Cue Fader on a new Page.

Status

Operating mode Keyswitch	'Live'
Grand Master	Maximum
D.B.O./F.B.O.	On
Cue Master	Maximum

9.3.1. Place a Cue Fader on Page 1 at maximum.

9.3.2. Load the 'X' Master, ensuring it is at zero.

9.3.3. Move the 'X' Master to maximum and the Cue Fader to zero.

9.3.4. Select Page 2 and "Pull Down" the Cue Fader onto which the scene is to be copied and press ENTER.

- *This process may be taken further and used to compile scenes from many Cue Faders ready for storing as a complete Cue. After following the steps above repeat the process with the X Master at maximum when loading the second or subsequent Cue's. The 'X' Master will then contain both scenes at the correct levels.*

- *The scene stored on the 'X' Master may be added to, or may be stored on another Cue Fader on any Page. This is the quickest and easiest way of combining many Cues into one.*

10. Sequence Operation

There are 24 Sequence Patterns available on the Celco Gold. Each Pattern can contain up to 99 steps. Each Sequence step can contain one or more Channels or Cue Faders. Channels are stored at maximum level.

10.1. Overview of Sequence Controls

Function		Description
Sequence Master	Single Fader located at the lower Right-hand section.	Red
Sequence Flash button	Single Flash button situated above the Sequence Master.	Black
Sequence Speed Fader	Single Fader located at the lower right-hand section.	Red
Seq. Speed Switch	The paddle switch located above the Sequence speed Fader	Red
Sequence Patterns	The eight buttons located at the lower right-hand section	Black
Seq. Block A,B & C	Function button 1, 2 & 3 located on the internal keyboard	Grey
Seq. Channel Store	Single Button located at the lower right-hand section marked CHAN	Black
End of Seq. Button	Single button next to CHAN marked END	Black
Sequence Stop,Step and End Buttons	Three buttons located beneath the Sequence Buttons marked END, STOP and STEP.	Black

10.2. Sequence Block A, B & C.

The 24 Sequences available on a Celco Gold are divided into 3 blocks of 8 Sequences; Sequence Block A, Sequence Block B and Sequence Block C. When the board is first turned on Sequence Block A is automatically selected and the Alpha-numeric display will show 'Sequence Block A' along with the status of all the other keyboard functions The other Sequence Blocks may be selected by pressing the appropriate Function button on the keyboard*.

* *Refer to Advanced Operation - Keyboard Functions.*
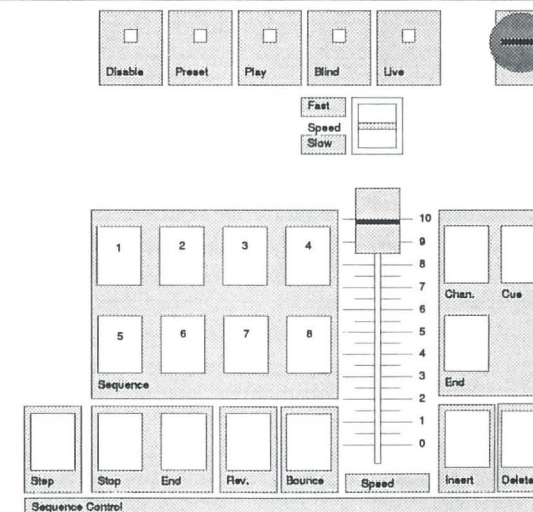
Fig. 14. Overview of Sequence Controls.

10.3. Storing Live Sequence Steps.

Status:	
Operating Mode Keyswitch	Set to 'Live'
Grand Master	Maximum
D.B.O./F.B.O.	On
Preset 2 Master	Maximum
Sequence Master	Zero

10.3.1. Press the Stop Button and the Sequence Clock will stop running.

10.3.2. Select Pattern 1 - the Sequence Clock will reset to step one (01).

10.3.3. Set Channel 1 on Preset 2 at maximum and press the Sequence Store Button. Note that the Sequence Clock has moved on to the next increment (02).

10.3.4. Now move Channel 1 back to zero and place Channel 2 at full, again press the Sequence Store Button.

10.3.5. Repeat the above steps for Channels 1 to 10.

10.3.6. When all ten Channels have been entered, step by step, the Sequence Clock will display Eleven (11) ready for the next step. However, at

this point we are going to end the Sequence of Steps by pressing the End of Sequence Button. This instructs the Sequence that at this point the Sequence should revert back to the start.

10.3.7. Now, release the Stop Button, the Sequence Clock will start running again. It may be advantageous to adjust the speed of the chase by moving the Speed Fader up or down. If you wish, the Sequence can be Previewed by pulling the Sequence Master down, the Channels contained on the Ten Steps will display on the Modify Indicators.

10.3.8. With the Sequence running at the correct speed the Sequence Master can be moved to maximum and the output will display on the Yellow Channel Indicators.

10.4. Storing Cue Steps

Status:

Operating Mode Keyswitch	Set to 'Live'
Grand Master	Maximum
D.B.O./F.B.O.	On
Cue Master	Maximum
Sequence Master	Zero

Cue Steps are stored in an identical manner to Channels.

10.4.1. Press the Sequence Stop Button and the Sequence Clock will Stop.

10.4.2. Select Pattern 2 - the Sequence Clock will be reset to Step 1 (01).

- *Ensure the Cue Master is at maximum and place Cue fader 1 at full.*

10.4.3. Press the Cue Store Button. The Cue Step will be entered and the Sequence Clock will indicate Step 2 (02).

10.4.4. Continue storing additional Cue Steps in this way. Remember to finish by pressing Store End if less than 99 Steps are required.

When designing a Sequence it is possible to combine Cue Steps and Channel Steps in the same Sequence by pressing the appropriate Cue or Channel Store button.

- *Note: A Cue Sequence Step is not previewed when the Sequence Master is 'pulled down'. However if a Sequence contains both Cue and Channel Steps then the Channel information will preview when the Sequence reaches that Step, if the Sequence Master is 'pulled down'.*

When running a Sequence containing Cue Steps, the Memory contents on the current Page of a Cue Fader will be outputed when the Sequence reaches that Step. In practice a Cue Step Sequence would be designed for a particular Page, however by selecting another Page the Designer will have access to an alternative effect.

Sequences containing Cue Steps will also activate the TimeFades if AutoFade is selected. In this instance stopping the clock and stepping through will cause the Cue Fades to rise and fall at their respective time settings.

10.5. Storing Blind Sequence Steps.

Status:

Operating Mode Keyswitch	Set to 'Blind'
Grand Master	Maximum
D.B.O./F.B.O.	On
Preset 2 Master	Maximum
Sequence Master	Zero

10.5.1. Stop the Sequence Clock by pressing the Stop Button.

10.5.2. Select a Pattern for the Sequence to be stored on. It may be wise not to use Pattern 1 at this stage.

10.5.3. Now select a Channel on Preset 2, move it to maximum. Notice how this time the output is only displayed on the Modify Indicators. Next press the Sequence Store Button, the Sequence Clock will increment to the next step (02).

10.5.4. Continue recording Sequence Steps up to a maximum of 99. When the Sequence Clock reads 99 only one more step can be recorded. Record the last step by pressing the Sequence Store, the Clock will automatically reset to zero–one (01). There is no need to press the End of Sequence Button for the 99th. step – The Sequence Section will automatically remember this.

10.5.5. Once the Sequence Steps have been recorded the Sequence Stop Button can be released. The Sequence Clock will now run. At this point the Speed can be altered and the Sequence Previewed. If it looks good move the Sequence Master up towards maximum until the correct level setting is reached.

11. Sequence Modification.

11.1. Live Sequence Modification.

Status:

Operating Mode Keyswitch	Set to Live
Grand Master	Maximum
D.B.O./F.B.O.	On
Preset 2 Master	Maximum
Sequence Master	Maximum

11.1.1. Select Sequence Pattern 1.

11.1.2. Press the Sequence Stop Button, the Clock will stop at some point in the Sequence.

11.1.3. Now, step through the Sequence manually using the Sequence Step Button until Step 3 (03) is displayed in the Sequence Clock - If the Clock is displaying a number greater than 3 (03) it will be quicker to press Sequence Pattern Button 1 again, returning the Pattern to 1 (01), before stepping through to 03. This eliminates the need to step all the way through the Sequence.

11.1.4. When the Sequence Clock is displaying Step 3 (03), Channel 3 will be illuminated on the Channel Indicators.

11.1.5. Now, press the Modify Button - the Red Modify Indicator will illuminate.

11.1.6. By moving Fader 3 of Preset 2 you will be able to 'grab' Channel 3 from the Sequence Pattern. Note, as the Sequence Section will only store Channels as Off or On, Fader 3 needs to be moved right up towards maximum. The Modify Indicator will remain red, because no alteration has been made, until the Fader is returned back towards zero, at which point it will change to Yellow.

11.1.7. Having removed Channel 3 from the Sequence a new Channel can be selected. Move Fader 11 of Preset 2 up at maximum, the Modify Indicator will glow Yellow and the Channel Indicator will also illuminate.

11.1.8.   Now, press the Sequence Store Button. You will notice that the Sequence Clock will move on to display Step 4 (04).

11.1.9.   Clear Preset 2 down to zero and step through to Step 3 (03) whilst pulling the Sequence Master down to Preview. When you have reached Step 3 observe that it now contains Channel 11 instead of Channel 3. You have successfully modified the Sequence Pattern.

11.2. Blind Sequence Modification.

Status:

Operating Mode Keyswitch	Set to 'Blind'.
Grand Master	Maximum.
D.B.O./F.B.O.	On
Preset 2 Master	Maximum.

11.2.1.   Select Pattern 1 and stop the Sequence using the Stop Button.

11.2.2.   Now step through to Sequence Step 3 (03), using the Sequence Step Button and Pull Down the Sequence Master Fader. Channel 11 will illuminate on the Modify Indicators.

11.2.3.   Press the Modify Button and release the Sequence Fader from it's Pull Down Mode. Channel 11 will remain illuminated on the Modify Indicators.

11.2.4.   Move Fader 11 of Preset 2 up towards maximum and 'grab' the Channel. The Modify Indicator will change to Yellow as you return Fader 11 back towards zero.

11.2.5.   Take the Fader of Channel 3 and move it to maximum, the Modify Indicator will glow Yellow informing you that an alteration has been made.

11.2.6.   Now press the Sequence Store Button - It is not necessary to Pull Down The Sequence Master when modifying a Sequence Pattern. Of course you can always pull it down to check which Channel is currently stored on Step 3. (In this case it will show Channel 11).

11.2.7.   Release the Stop Button and move the Sequence Master to maximum, your modified Sequence will now be displaying the same as it was when you started working through the Sequence Section.

12. Deleting and Inserting Steps.

In addition to modifying the contents of Sequences, all of the 8 Sequences may be changed in length either by Deleting Steps that are not required or by Inserting new Steps.

Both these functions are best explained if a simple 5 Step Sequence containing Channels 1 thru 5 is Stored in the conventional manner.

12.1. Deleting Steps

Status:

Operating Mode Keyswitch	Set to Live or Blind
Grand Master	Maximum
D.B.O./F.B.O.	On
Sequence Master	Maximum

12.1.1.   Press the Sequence Stop Button.

12.1.2.   Step through the Sequence using the Step Button until Step 3 is reached. (As shown by the Sequence Clock).

12.1.3.   Press the Delete Button ONCE only.

- *Notice that the Sequence Clock now shows Step 2 and this still contains Channel 2. If the Step Button is pressed once more the Sequence Clock shows 3 but this Step now contains Channel 4, because the previous Step 3 has been Deleted.*

12.1.4.   Continue pressing the Step Button and observe that the Sequence is now only 4 Steps long, and that it contains Channels 1,2,4 and 5.

12.2. Inserting Steps

The instructions below describe how to Insert Step 3 back into the Sequence.

Status:

Operating Mode Keyswitch	Set to Live or Blind
Grand Master	Maximum
D.B.O./F.B.O.	On
Sequence Master	Maximum
Preset 2 Master	Maximum

12.2.1. Press the Sequence Stop Button.

12.2.2. Step through the Sequence using the Sequence Step Button until Step 2 is reached.

12.2.3. Press Insert Button ONCE only. (Sequence Clock now shows 03)

• *New Steps are always Inserted after the currently displayed Step, and are completely blank allowing either Channels or Cues Faders to be Stored.*

12.2.4. Put Channel 3 on Preset 2 to maximum and Press Chan Store Button. (Sequence Clock now shows 04 ready for next Step).

12.2.5. Press the Step Button repeatedly and notice that the Sequence is 5 Steps long and that it contains Channels 1, 2, 3, 4 and 5 again.

Cue Faders are stored in the same way as Channels (by pressing Cue Store) except that they can of course only be stored if they are at maximum and the Live Mode is selected.

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13. Other Sequence Functions.

In the last four sections we used the Sequence Stop and Step Buttons to assist us with recording Sequence Patterns. However, they can be used whilst running a Sequence during a show.

13.1. Stop Button.

Stops the Sequence Clock and output on any Channel.

13.2. Step Button.

Allows the Sequence to be stepped through manually when the Stop Button is activated.

13.3. End Stop.

Instructs the Sequence to stop on the last step of the current Pattern and the Stop Button Indicator to illuminate. The Sequence will run again when the Stop Button has been released. At any point during a Sequence the End Stop Button may be released allowing the Sequence to continue uninterrupted.

• *The End Stop button can also be used to dramatic effect if the Sequence Pattern selected has the last step blank, i.e. without any Channel information entered. This allows a Sequence Pattern to run, when the Stop Button is released, and 'rest' on the blank step ready to be sent again. This effect is particularly useful when emphasising something on stage, such as simulating a lightning flash.*

13.4. Reverse

The Reverse Button reverses the direction of the Sequence currently running. It has a toggle action so that each time the Reverse Button is pressed the Sequence runs in the other direction, until it is pressed again. A green indicator in this Button is lit when the Sequence is running in reverse.

13.5. Bounce

This Button, when pressed causes the Sequence to reverse direction when it reaches it's last Step, and when it reaches the beginning. If for instance a ten Step Sequence had been programed into Sequence 1 and Bounce was selected, then when the Sequence reached Step 10 instead of returning to Step 1 it would run in reverse until it reached Step 1. When it reached Step 1 it would run forward again. The indicator in the Reverse Button shows the direction of the Sequence at any given time. The Reverse Button may be used when Bounce is selected to continually change the direction of the Sequence.

14. Digital Clock

Located in the middle of the right hand section above the Cue Page controls is the Digital Clock, which shows the Time in Hours, Minutes and Seconds when the Board is first turned on. It can also be used as a Stopwatch for timing the length of a Show or for timing the Cassette when loading.

- *When the Board is Turned off the Clock continues running because it is powered by the internal Battery. The Stopwatch will however have reset itself to zero.*

14.1. Setting the Digital Clock Time

14.1.1. With the Board in either Blind or Live Mode the Time displayed may be changed. Pressing the Reset Button changes the Hours and the Start/Stop Button the Minutes.

14.1.2. If the Start/Stop Button (Minutes) is pressed the Clock will stop and the Seconds Display will Zero allowing it to be started at exactly the right Time by pressing the Mode Button. If the Reset Button is pressed (Hours) then the Minutes and Seconds will not stop and reset allowing you to change Time Zones without reseting the Clock

14.2. Using the Stopwatch

14.2.1. The Stopwatch Mode is selected by pressing the Mode Button once when the Display will change to all Zero's. The Stopwatch is started by pressing the Start/Stop Button and may be stopped by pressing it again. This Stopping and Starting may be repeated as often as required without reseting the count. Resetting the Stopwatch to Zero is done by pushing the Reset Button.

- *Whilst the Stopwatch is running the Mode Button may be pressed to show the Time and the Stopwatch will continue to run. It may be viewed again by pressing the Mode Button.*

15. Cassette Interface.

The Cassette Interface allows the contents of the Celco Gold memory to be recorded onto a Cassette or Tape Player for subsequent retrieval when required. It does not erase the contents in the Board but merely makes a copy onto the tape. This allows experimentation in the level settings of the cassette recorder to be performed without sacrificing the memory content of the Celco Gold .
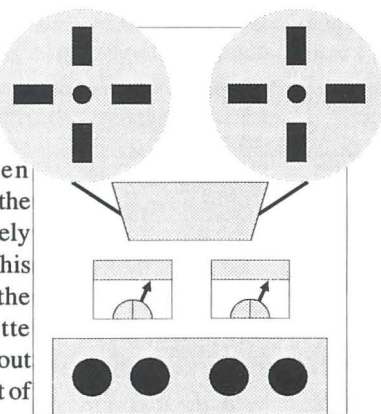
Fig. 15. The Cassette / Tape Interface.
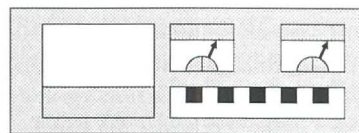
The Cassette Interface also allows a show to be recorded and played back automatically using the ingenious Real Time recording routine.

15.1. Recording information on Cassette.

To record your lighting programs follow the instructions below:

Status:	
Operating Mode Keyswitch	Set to 'Live' or 'Blind'.

15.1.1. Connect a suitable Tape or Cassette Recorder to the DIN Socket located on the rear panel or the 2 RCA jacks located in the right hand draw. Ensure that the Cassette switch in the draw is set appropriatly to Internal or External mode.

15.1.2. After setting the correct bias settings on the cassette player, and turning all noise reduction systems off, activate the Record Button of the Tape or Cassette Recorder and ensure that the tape has wound past the

'leader'. The V.U. meter should be set to approximately 0 V.U. or greater. As this depends on the characteristics of each tape machine you should attempt to determine the correct level setting required before recording an important show.

15.1.3. Once the 'leader' of the tape has passed over the heads the Cassette Write Button can be pressed. The Yellow Indicator will illuminate.

15.1.4. After approximately 25 minutes the Yellow Indicator will extinguish informing that the Celco Gold has written the contents of the memory section on to the tape. (Assuming that the tape or cassette recorder has been connected correctly).

• *Throughout the recording process any section of the Celco Gold can be used, providing the Board remains in the Live or Blind Mode, allowing memory contents to be stored during showtime. However, no Cues or Sequences can be Entered or Modified during writing, this eliminates the chance of a failed recording.*

15.2. Retrieving information from Cassette

Status:	
Operating Mode Keyswitch	Set to 'Live' or 'Blind'.

15.2.1. Connect the same Tape or Cassette Recorder to the DIN Socket located on the rear panel.

15.2.2. Press the Cassette 'Read' Button - the Yellow Indicator will illuminate.

15.2.3. Set the Tape or Cassette Recorder to playback. Ensure that you have selected the correct equalisation setting for the type of tape used and turn all noise reduction systems off.

15.2.4. When the Cassette 'Read' Indicator extinguishes the new memory content has been loaded into the Celco Gold .

• *If the Cassette 'Read' Indicator starts flashing the Celco Gold has found an error on the tape. This could be due to insufficient record level, tape drop-out or incorrect bias and E.Q. settings. Should this occur Disable the Board (by switching the Operating Mode Keyswitch to Disable and back to Live or Blind) and repeat*

steps 1 to 4 after checking all connections and Tape or Cassette settings.

- *In some cases combinations of certain types of Cassette machine and Chromium Dioxide tape do not work satisfactorily. Therefore we repeat our warning to make certain that the combination of machine and tape you use perform correctly BEFORE attempting an actual show recording.*

- *If, at some point, you wish to copy the contents of one Celco Gold on to another you may do so, without limitation, PROVIDING that the combination of machine and tape chosen has been proved to work with a Celco Gold .*

15.3. Real Time Tape Interface Recording

Using the Real Time Cassette Interface allows the operation of a Celco Gold to be encoded onto a tape in a similar fashion to recording music. Any movement of the Memory Section executed whilst taping in this mode will result in that movement being repeated when the tape is played back.

Real Time Taping has many uses in Audio Visual Shows, discotheques and Son et Luminaire performances where repetition of the sound and lighting is required in synchronisation.

Status:

Operating Mode Keyswitch   Set to 'Live' or 'Blind'.

15.3.1. Connect a Tape or Cassette Recorder to the DIN Socket located on the rear panel.

15.3.2. Set the Tape or Cassette Recorder to Record and ensure that the 'leader' passes over the tape heads. Set the record level to approximately 0 V.U..

15.3.3. Operate any part of the Celco Gold Memory Section (this includes Cue Faders, Pages, AutoFade, Sequence - but not Sequence speed.)

- *On your first attempt at recording in Real Time it may be advisable to keep your routines simple so that you will be able to check that the operation is correct when you Playback your tape. Select Page 1 and try moving Cue Faders 1 through 30 up and*

down, working from left to right. Then select Page 2 and repeat the routine for Cue Faders 1 through 30. Always remember that the current or new Page must be pressed to register the recording before moving any Cue Faders.

15.3.4. When you have finished the recording switch the record button of your tape player off and rewind the tape to the beginning.

15.4. Real Time Tape Interface Playback

Status:

Operating Mode Keyswitch   Set to 'Playback'.

15.4.1. Connect the same Tape or Cassette Recorder to the DIN Socket located on the rear panel.

15.4.2. Set the tape or cassette recorder to playback.

15.4.3. The Celco Gold will be activated by the tape or cassette and will follow the same routine that you originally recorded.

15.4.4. At any point the Board can be operated in the conventional manner whilst the tape is running although it is important to note that signals originating from the tape will activate all sections of the Celco Gold unless either the tape machine is stopped or the Board is switched out of the Playback Mode.

- *If the tape is stopped midway through operation the last signal sent will remain locked until the Board is disabled (By setting the Operating Mode Keyswitch to Disable). For example, If the tape instructs Cue Fader 1 to move to maximum and the tape is stopped BEFORE the instruction for Cue Fader 1 to return to zero has been sent, Cue Fader 1 will remain at maximum until the Board has been cleared by using the Disable Mode.*

- *When compiling a Real Time Show this can be used to effect as it may be desirable for several Cue Faders to be left at maximum whilst the tape rewinds to the beginning. When incorporating a routine such as this it must be remembered that the first instruction that is recorded onto the tape must be to clear the Board of any Cue Faders you may wish to leave up at the end of the tape. This is easily achieved by starting the recording process*

with the Cue Faders up and clearing them down before proceeding through the routines and, at the end of the tape, putting the same Cue Faders up. With a self rewinding machine the complete lighting process can be designed as an endless loop with no interruptions.

15.5. Recording in Real Time with Sound.

When using a standard DIN lead the lighting information will be recorded onto the left channel of the Tape or Cassette machine. Therefore the music or speech should be recorded onto the right channel.

If more elaborate machines are used then stereo music or speech can be recorded onto two channels and the lighting recorded onto the third. Some experimentation may be necessary with all the combinations of channels available before anything major is attempted.

16. Auxiliary Input

16.1. Use of the Auxiliary Input

The Auxiliary Input connector, located on the back of the Board, allows any 0 - +10 Volt control signal to drive any of the ten Cue Faders. When a 10 Volt signal is applied, the Cue Fader will output it's contents on the selected Page. This could be used for instance with a Sound to Light unit, or any effects unit, to operate scenes already stored in the Celco Gold . In this application the Bass output of the effects unit could be connected to Cue Fader 1, the Mid output to Cue Fader 2 and the Treble to Cue Fader 3. When the effects unit is activated the three Cue Faders will respond to the Music signal.

· *Using the Auxiliary Input in this way does not affect the Boards operation in any way, Manual control can be used as well.*

· *Some effects units allow the output to be routed to different zones. With this type of unit the zones could be wired as follows:*

Zone 1	Bass	Cue Fader 1
	Mid	Cue Fader 2
	Treble	Cue Fader 3
Zone 2	Bass	Cue Fader 4
	Mid	Cue Fader 5
	Treble	Cue Fader 6
Zone 3	Bass	Cue Fader 7
	Mid	Cue Fader 8
	Treble	Cue Fader 9

In addition to this certain manufacturers provide a facility whereby the Zones may be controlled by an external +10 Volt signal. With this type of unit the zones could be wired to three Channels of the Board (via a suitable connecting lead) and the zones activated by these Channels. This offers an elegant method of control as the effects unit could be adjusted to 'run' continuously, but it's output would only be routed to the Cue Faders when one of the Channels connected to the zone inputs is at maximum.

The above method can be taken to it's logical conclusion by storing combinations of the three Channels onto Cue Faders along with scenes. This would mean that when a particular scene was brought 'up' the effects unit would be automatically activated.

As there are many different types of effects units available it is not possible to give more explicit detail here. However hopefully the above will inspire Designers to experiment and discover the potential of the Auxiliary Input.

- *Full wiring details of the Auxiliary connector can be found in the Technical Appendix located at the end of this manual.*

17. RS232c Interface

17.1. Use of the RS232c Interface

The RS232c Interface is accessible via the connector marked RS232c located on the back of the Board. It enables communication between the Board and other Computer devices. On Celco Gold it is used for serial communication between the board and a computer (for instance, when running VDS or DRT). For further details refer to Section 6 - RS232c Interface.

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1.   Advanced Operation.

1.1.   Keyboard Functions.

The seventeen Function Buttons, located at the top of the Keyboard, are used to select the different operational modes and additional features required by the Designer.

Important

- *Ensure that the Keyboard switch is set to Internal (Int) Mode.*

- *When using Keyboard Functions, features such as Page Freeze, Cue Lock and Dipless Cross-Fade remain active, even if the Board is powered off.*

1.1.1.   Function Button identification:

Function	Title	Description
Function Button 1	F1	Sequence Block A.
Function Button 2	F2	Sequence Block B.
Function Button 3	F3	Sequence Block C.
Function Button 4	F4	Dipless Cross-fade On.
Function Button 5	F5	Dipless Cross-fade Off.
Function Button 6	F6	Page Freeze On.
Function Button 7	F7	Page Freeze Off.
Function Button 8	F8	Cue Lock On (+ number between 3 and 9)
Function Button 9	F9	Cue Lock Off.
Function Button 10	F10	Set Up Fade Time.
Function Button 11	F11	Set Down Fade Time.
Function Button 12	F12	Insert Cue
Function Button 13	F13	Delete Cue
Function Button 14	F14	Align Sequence
Function Button 15	F15	Print from Q-Card/Board.
Function Button 15	F16	Keyboard Menu Display On.
Function Button 16	F17	Keyboard Menu Display Off.

1.2.   F1 - Sequence Block A.

Pressing Function button 1 sets the Sequence Block to group A allowing the Designer access to the eight Sequence Patterns on that block.

The Alpha-numeric display will show that Sequence on Block A has been selected. to turn the Keyboard Function menu off refer to Function button 17 (F17) Display Off.

1.3.   F2 - Sequence Block B.

Pressing Function button 2 sets the Sequence Block to group B allowing the Designer access to the eight Sequence Patterns on that block.

The Alpha-numeric display will show that Sequence on Block B has been selected. to turn the Keyboard Function menu off refer to Function button 17 (F17) Display Off.

1.4.   F3 - Sequence Block C.

Pressing Function button 3 sets the Sequence Block to group C allowing the Designer access to the eight Sequence Patterns on that block.

The Alpha-numeric display will show that Sequence on Block C has been selected. to turn the Keyboard Function menu off refer to Function button 17 (F17) Display Off.

1.5.   F4 - Dipless Cross-Fade On.

Dipless Cross-Fade changes the operational characteristics of the AutoFade System. In it's conventional mode the AutoFade system will simply fade up and down the contents of any selected Cue Fader. This can be taken a step further when the AutoFade System is used to Cross Fade between Cue Faders. However, this does not take into account the possibility of there being any common Channels present, the resultant effect being that the common Channels 'dip' as the Cue Faders cross. This effect is identical in operation to moving the Cue Faders manually. With the Dipless Cross-Fade facility offered in a Celco Gold this 'dip' in Channel level is eliminated.

To understand fully the effect of the Dipless Cross-Fade facility the following test procedure should be performed.

1.5.1.   Clear all Function Buttons - by pressing the Off switches to ensure that there will be no inter-action at this stage.

1.5.2.   Select Page 1 and store Channels 1 to 20 at maximum level onto Cue Fader 1 with an Up and Down Time of five seconds (05,05).

1.5.3.   Remain on Page 1 and store Channels 11 to 60, again at maximum level onto Cue Fader 2 with an Up and Down Time of five seconds (05 05).

1.5.4.   Move Cue Fader 1 to maximum and activate the AutoFade system. Do not select the Dipless Cross-fade facility at this point.

1.5.5.   Now, at the same time, move Cue Fader 1 to zero and Cue Fader 2 to maximum. Observe how the common Channels (11 to 20) 'dip' in intensity as Cue Fader 1 fades to zero and Cue Fader 2 'picks up' the common Channels as it fades towards the maximum position.

1.5.6.   Repeat steps 4 and 5 with the Dipless Cross-Fade facility selected (Function Button 4). Leave the AutoFade System in the active mode. This time observe how the common Channels do not 'dip' as the two Cue Faders perform their Cross Fade. This describes the principle of Dipless Cross-fading, it offers the Designer many possibilities as there are no restrictions to Fade Time settings, other than that they are no longer than 6 minutes, or amount of Cue Faders cross- fading at any given time. Bear in mind that the more complex the task asked of the processor the longer it will take to perform other functions. This can sometimes result in a 'response lag' from the Cue Flash Buttons. In normal operation it is unlikely that any side effects will be encountered as it is unusual that a Designer would wish to perform many cross-fades and attempt to 'bump' the Cue Flash Buttons at great speed during the same show.

1.6.   F5 - Dipless Cross-Fade Off.

1.6.1.   Pressing this button cancels Function Button 4.

1.7. F6 - Page Freeze On.

Page Freeze can be selected to enable the Designer to change from one Page to another without affecting the output of any Cue Faders above zero. It offers a different approach to that of the 'X' Master. In use it is assumed that the Page Freeze would be selected before the Board is operated. However, if desired the Page Freeze function can be switched in and out as required.

1.7.1. Select Page Freeze On by pressing Function Button 6 once.

1.7.2. Place any Cue Fader above the zero position, the output will display on the Yellow Channel Indicators *.

1.7.3. Now select another Page. The output of the Cue Fader above zero will remain the same.

1.7.4. Other Cue Faders can now be moved above zero - these will output the memory content of the current Page.

1.7.5. When required, move the first Cue Fader back to the zero position. At this point the Cue Fader will 'join' the 'current Page'. This can be checked by 'pre-viewing'.

1.7.6. If the first Cue Fader is now moved above zero the output will be that of the 'current Page'.

· *As many Cue Faders as required can be above zero when a new Page is selected. The output of these Cue Faders will remain the same until they are returned to the zero position.*

· *It is also possible to combine and hold the output of Cue Faders from different Pages. Again, when any one is returned to the zero position it will join the 'current Page'.*

· *Using Page Freeze does not affect the operation of the AutoFade System. It is possible to have a Cue Fade returning, at a pre-set time, to the 'down' position on Page 1 and, at the same time, change to another Page without altering the output. When the Cue has returned to the zero position it will 'join' the 'current Page'.*

1.8. F7 - Page Freeze Off.

1.8.1. The Page Freeze facility can be cancelled at any time by pressing this button once.

1.9. F8 - Cue Lock On.

Cue Lock allows certain Cue Faders to be 'locked' to a particular Page. This is useful if there are several Cues that are always required to be in a certain position throughout a show. Cue Lock saves the Celco Gold Designer from having to repeat the storing process of identical scenes throughout the 15 Pages.

1.9.1. Press Function Button 8 once followed by a number between 3 and 9 - using the numeric keypad on the right hand side of the Keyboard. The number selected will be the number of Cue Faders required to be locked to the selected Page.

1.9.2. Cue Lock will always lock the Cue Faders from left to right, always starting with the first three. For example, if the Cue Lock Button was pressed followed by number 3, the first three Cue Faders will be locked - Cue Fader 1, Cue Fader 2 and Cue Fader 3. If Cue Lock was pressed followed by number 5 the first five Cue Faders will be locked - Cue Faders 1-5.

1.10. F9 - Cue Lock Off.

1.10.1. Cue Lock can be cancelled at any time by pressing Function Button 9 once. This will clear all the Cue Locks and return the Board to normal operation.

1.11. F10 - Set Up Fade Time.

Up Fade Times can be set by using either the keyboard or the Time Faders. In both cases the Fade Time selected is displayed above the Time faders on the Board. The Designer will quickly discover which method most suits his particular requirements.

Setting Fade Times using the keyboard allows a maximum of 9.9 minutes or 99 seconds to be displayed and recorded.

Setting Fade Times with the Time Faders allows a maximum of 6.0 minutes or 60 seconds to be displayed and recorded.

To select an Up Fade Time using the keyboard follow the steps below:

1.11.1. Press the 'Set Up Fade Time @' button on the Keyboard and enter a two digit time using the number keys on the keyboard.

  • *Pressing the full stop (point) key will automatically change the AutoFade display to Minutes instead of seconds.*

1.11.2. Pressing the + and – keys will increase or decrease the time set.

1.11.3. All numbers typed on the keyboard will update the displayed time until another function or non-number key is pressed.

  • *If the Time Faders on the board are moved then the Fade Time will be controlled by the fader instead of the keyboard. If the 'Set Up Fade Time @' button is pressed then the display will change to show the last keyboard entered Fade Time.*

1.12. F11 - Set Down Fade Time.

Down Fade Times are set in an identical manner to Up Fade Times – the same conditions apply.

Use the 'Set Down Fade Time @' button to select this function before entering a two digit time.

1.13. F12 - Insert Cue.

The Insert Cue facility is used to make room for a new Cue in an existing Page of Cues. To insert a new Cue follow the steps overleaf:

1.13.1. Pull down and hold the Cue Fader that you want to contain the new Cue and press the Insert Cue button on the keyboard.

  • *The Cue on the selected fader, and all other Cues to the right of the selected fader, will move one place to the right. The Cue on the last Cue Fader will move onto the X Master and anything stored on the X Master will be lost.*

1.13.2. The selected Cue Fader will now contain a blank Cue (no program). Use the selected Cue Fader to store your new Cue on in the

conventional way – see Chapter 4, Section 1, Entering Information into the Cue Faders.

1.14. F13 - Delete Cue.

Any Cue can be removed from a current Page by using the Delete Cue Function.

1.14.1. Pull down the Cue Fader you want to delete and press the Delete Cue button on the keyboard.

  • *All Cues to the right of the selected Cue Fader will move one place to the left. Therefore the Cue to the immediate left of the selected Cue Fader will now occupy the position of the selected Cue Fader.*

  • *The last Cue Fader will now contain the contents of the X Master. The X Master will now be blank.*

1.15. F14 - Align Sequence.

This function allows you to start all Sequences from step 1 at the same instant.

It is useful when a Designer has a number of Sequences running at the same time but has stopped one of them by using the Stop, Step or End Stop buttons, consequently making that Sequence out of alignment.

1.15.1. To align Sequences simply press the Align Sequence button on the keyboard. All Sequences will then start from step 1.

1.16. Combining Cue Lock & Page Freeze.

Cue Lock can also be used in conjunction with the Page Freeze facility offering the Designer the ability to lock Cue Faders from different Pages.

1.16.1. Ensure that Cue Lock is Off by pressing Function Button 9 once.

1.16.2. Select Page Freeze - Function Button 6 - by pressing once.

1.16.3. Select Cue Fader 1 and the Page required to be locked and move Cue Fader 1 above zero.

1.16.4. Select Cue Fader 2 and the Page required to be locked and move Cue Fader 2 above zero.

1.16.5. Select Cue Fader 3 and the Page required to be locked and move Cue Fader 3 above zero.

1.16.6. Now select Cue Lock (Function Button 8) followed by number 3. This will now lock the first three Cue Faders to their respective Pages and the outputs of these Cue Faders will remain the same even if Page Freeze is switched off. Clear the Cue locks and returning the Board to normal operation is achieved by pressing Cue Lock Off (Function Button 9).

1.17. F15 - Print from Q-Card/Board.

The memory of the Q-Card or the Celco Gold can be printed if required.

1.17.1. To print the contents of the board connect a suitable serial printer to the printer connector located on the back of the board.

1.17.2. Press F15, the 'Print from' button, on the keyboard.

1.17.3. After a short delay the printer will start printing the memory contents of the board. This will include information in the following format:

Page #
Cue #
Alpha-numeric description
Fade Time
Stored Channel @ % level
Sequence Pattern #
Sequence Step 1, Channel # thru Step 99, Channel #

• *The printout will not contain blank memories.*

1.17.4. To print the contents of a Q-Card repeat steps 1 - 3 with a Q-Card inserted in the D.S.I. drive. The printout will be in the same format as described above but has the additional Q-Card title at the beginning.

1.18. F16 - Display On.

The Designer can request an immediate status of the SoftOptions functions presently selected by pressing Function button 16.

1.19. F17 - Display Off.

The Alpha-numeric display will return to the Cue Legends entered by the Designer when Function button 17 is pressed. This can also be performed by pressing any Page button including the current Page or by 'pulling down' any Cue Fader.

2.   Clear Facility.

It is possible to 'clear' the memory content of the Board to enable a new design to be programed. This is useful if the new design does not fully occupy the total memory capacity leaving certain Cue Faders or Sequences programed from the last design. Whilst this presents little problem to the new Designer it can cause embarrassment if the wrong Cue Fader or Sequence is in-advertantly out-putted. With the Clear facility implemented before a new design, any Cue Fader or Sequence in-advertantly used during a show will not output as the memory content has been emptied.

2.0.1.   To operate the Clear facility hold the Control Button on the Keyboard down and, at the same time, type the word **CLEAR**. The memory content will immediately disappear.

- *For reasons of security the instructions for using the Clear facility are not printed on the Keyboard. It is advisable that this policy is continued, eliminating the chance of a Board being cleared of memory content by un-authorised personnel.*

- *Empty or blank Cues are identified by the eight dashes (--------) on the Alpha-numeric display.*

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3.   Sequence Assignment.

3.1.   Overview.

Celco Gold allows all 24 Sequences to be assigned, individually, to any Cue Fader on any Page. This greatly increases the flexibility of the Sequence section as it is now possible to run all 24 Sequences at once, if required, fading each individual Sequence in and out or laying one Sequence 'on top' of another.

3.1.1.   To assign a Sequence select the Live operating mode, using the Operating Mode Keyswitch.

3.1.2.   Select the Sequence Block and Pattern to be assigned by using both the Sequence Block and Sequence Pattern Buttons.

3.1.3.   Leave the selected Sequence running and move the Sequence Master to maximum.

3.1.4.   Choose the Page and Cue Fader onto which the Sequence Pattern is to be assigned and 'pull down' the Cue Fader as if to store.

3.1.5.   Whilst 'pulling down' the Cue Fader, press the Enter Button and you will immediately see that the Preview Indicators duplicate that of the Sequence output. The Sequence assignment has been stored.

3.1.6.   Continue storing several Sequences in this way. It will then be possible to fade in and 'layer' several Sequences at once.

- *All Sequences will run at the same speed, as set by the Sequence Speed Control Fader and Time Switch. It is not possible to enter other information along with the Sequence assignment*

- *The Stop, Step and End Buttons control the selected Sequence Pattern only – To check what the current Sequence Pattern is 'pull down' the Sequence Master – This allows a Sequence Pattern to be controlled manually using these Buttons along with the Sequence Master. However, if the currently selected Sequence Pattern has been assigned to a Cue Fader and the Sequence Master is down, these buttons will control the assigned Sequence Cue Fader.*

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1.   Digital Storage Interface.

1.1.   Overview.

There are two versions of the Digital Storage Interface (D.S.I.), the internally located version, as fitted to the Celco Major's/Gold, and the stand-alone type, as supplied for use with Celco Plus or Series 2 Board's.

This chapter describes the D.S.I. unit fitted to a Celco Major/Gold. For details of the stand-alone unit refer to that component's Operation Manual.

1.2.   The Q-Card.

The Q-Card, a small credit card size device, is used to store and retrieve the lighting programs onto and from. There are four types of Q-Card, each one has a different memory size. The Q-Card sizes are:

Q-Card	For use with
Q-Card No. 1	Connexion Units
Q-Card No. 2	Celco 30 Major, Celco 30 Plus*, Series 2 Thirty*
Q-Card No. 3	Celco 60 Major, Celco 60 Plus*, Series 2 Sixty*
Q-Card No. 4	Celco '88 Gold, Celco Series 2 Gold*

*   *When used in conjunction with the stand alone D.S.I.*

Q-Cards can be used in different boards providing they have enough memory. For example, a No. 4 Q-Card can be used to retain the information from any Celco control board or Connexion unit, *it has enough memory,* however, a No. 2 Q-Card can only be used to hold the information from a Celco 30 Major (or Celco 30 Plus/Series 2 Thirty with stand alone D.S.I.) or Connexion unit. It *does not* have enough memory to hold the information from a Celco Gold.

1.3.   Q-Card Compatibility.

Q-Cards are totally compatible. Furthermore, the D.S.I. units that they are used with allows information to be transferred from one board to another without the problems usually associated with floppy disk

drives. The information held on a Q-Card can also be transferred from one type of board to another, providing that consideration is given to the operating limitations of some boards over others.

For instance.

- *A Q-Card written from a Celco 30 Major can be read into a Celco 30 Plus (providing a stand alone D.S.I. unit is connected), however, as the Celco 30 Major has 150 Cues on 15 Pages and the Celco 30 Plus has 40 Cues on 4 Pages it is not possible to access all the information, only the first 4 Pages. Similarly, only the first 4 of the 8 Sequence Patterns available on a Celco 30 Major would be accessible on a Celco 30 Plus.*

- *None of the SoftOption operating features could be used on the Celco 30 Plus in it's standard format, however, if the Celco 30 Plus were equipped with SoftOption 88 then all the Cues, Sequences and SoftOptions 88 operating features could be used.*

- *Note that a Celco 30 Plus fitted with SoftOptions 88 and connected to a D.S.I. unit will operate identically to a Celco 30 Major.*

- *A Q-Card written from a Celco 30 Major can be read into the first thirty channels of a Celco 60 Major or Celco Gold.*

- *A Q-Card written from a Celco 30 Major can be read into the first thirty channels of a Celco 60 Plus, Series 2 Sixty or Celco 90 Plus, Series 2 Ninety or Celco Series 2 Gold providing that they are fitted with a stand alone D.S.I.*

1.4. Writing the Q Card.

The D.S.I. unit is located at the right hand side of the front wood member underneath the arm-rest. You can recognise the D.S.I. unit's slot (into which you insert the Q-Card) by looking for the two illuminated yellow bars.

1.4.1. Insert the Q-Card with the arrow uppermost and pointing into the slot. Press the card home gently but firmly.

- *When the card is correctly located the illuminated yellow bars above and below the slot will extinguish and the alpha- numeric*

display* (Not fitted on Celco 30 Major's) will state the size of the Q-Card.

1.4.2. Press the Write button twice* - the board will now write to the Q-Card. **This will overwrite anything already in the Q-Card.**

* *In between the first and second press of the Write button the Designer is able to enter a 32 character title for the Q-Card using the Keyboard. The title will appear in the alpha-numeric display* (Not fitted on Celco 30 Major's) on the board. When the Write button is pressed the second time the description will be stored in the Q-Card along with all the memory information. The given title will appear whenever the Q-Card is inserted into a board. The title can be edited at a later date if required.*

1.4.3. The yellow indicator in the Write button and the yellow drive indicator in the D.S.I. unit will illuminate. When the board has finished writing to the Q-Card the Write indicator and D.S.I. drive indicator will extinguish. At this point you may remove the Q-Card.

1.5. Reading the Q Card.

1.5.1. Insert the Q-Card with the arrow uppermost and pointing into the slot. Press the card home gently but firmly.

- *When the card is correctly located the illuminated yellow bars above and below the slot will extinguish and the alpha- numeric display will state the size of the Q-Card*

1.5.2. Press the Read button twice* - the board will now read the information in the Q-Card. **This will overwrite anything already in the board.**

* *In between the first and second press of the Read button the Designer is able to read the title of the Q-Card on the board's alpha-numeric display* (Not fitted on Celco 30 Major's) . If the Q-Card contains show information that is not required simply remove the Q-Card from the D.S.I.'s slot. Do not press Read a second time as the information will be read into the board.*

1.5.3. The yellow indicator in the Read button and the yellow drive indicator in the D.S.I. unit will illuminate and pulse. When the board has

finished reading from the Q-Card the Read indicator and D.S.I. drive indicator will extinguish. At this point you may remove the Q-Card.

1.6.   Caution.

Each Q-Card contains a minute battery, this is used to retain the memory content. As with all non-rechargeable batteries it has a finite life.

To safeguard your most important shows it is advisable to change the battery every 12 months. New batteries are obtainable from all good electronic component suppliers. If you have difficulty obtaining batteries consult your Celco Distributor.

1.7.   Changing Batteries.

The Battery is located in a small compartment at the bottom edge of the Q-Card.

1.7.1.   To change the battery place the Q-Card face down on a table so that you are able to read CelcoSoft Q-Card No.# on the bottom side. Pull the compartment out and away from the Q-Card, observe that the compartment is approximately 1" (25mm) long.

1.7.2.   When the compartment is removed fully the battery can be taken out. Please dispose of the old battery carefully.

1.7.3.   Replace the new battery in the compartment with the positive (+) side up and insert the compartment into the Q-Card. Note that the Q-Card must be face down in order for the compartment to be inserted.

1.8.   Retaining Information.

The contents of your Q-Card can be temporarily retained whilst you change the Q-Card's battery by first writing the information into a suitable board. Write the information back into the Q-Card when the battery has been changed.

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1.   Linking Boards

Celco 88 Range Boards can be linked together to increase the total number of Channels. This is extremely useful if a lighting design requires more than the number of Channels available on any one of the Celco 88 Range Boards.

When two Celco 88 Range Boards are linked one of them is designated as the Master and the other as the Slave. This enables all the Mastering to be carried out on the first Board, the second Board being used for individual Channel control either from the two Presets or the Flash buttons and for selecting the Channels on Preset Two for entering into the memory.

With this combination there is no restriction as to the amount of facilities that can be used, every function that is available on any individual Board will operate over the two combined Boards.

1.1.   Identical Celco Plus Boards.

Read this section before attempting anything as the particular method of connecting the two Boards and 'powering up' is critical.

When linking similar Boards i.e. identical models, the process required for linking is extremely simple.

1.1.1.   Ensure that one of the two boards is set to the Master position by checking the Master - Slave switch, on the back of the Board. In normal use the Master - Slave switch is always set to Master. If it needs to be re-set to the Master position simply insert a screw driver into the slot and push the switch up.

1.1.2.   Select the Master - Slave switch of the Slave Board to the down position. This instructs the Board to receive commands from the Master Board.

1.1.3.   Now link the two Boards together by using the Celco Link lead and connecting this between the Link Connector sockets on the back of each Board. Make sure that the screw threads on the Link lead connectors are securely fastened to the sockets on each Board. Do not use any other lead for connection between the two Link connectors.

Only use the Link cable supplied by Celco to ensure that all signals are transmitted accurately.

1.1.4. Switch the Operating Mode Keyswitch of the Slave Board to the Blind position and leave it in that position whilst Linked. It may be wise to remove the key to prevent the Operating Mode being changed by un-authorised personnel.

1.1.5. Ensuring that both Boards are set to the correct voltage for the country of operation, connect the two Boards to a common mains socket. When both Boards are connected turn the mains supply on. It is important that this procedure is followed step by step to allow the two linked Boards to 'power up' together.

1.1.6. With the two Boards Linked programing the Channels can be carried out following the same procedures described for programing individual Boards. This time, however, Channels can be selected on Preset 2 from both Boards and stored using the Enter button located on the Master Board.

1.2. Identical Celco Major Boards.

Read this section before attempting anything as the particular method of connecting the two Boards and 'powering up' is critical.

When linking similar Boards i.e. identical models, the process required for linking is extremely simple.

1.2.1. Ensure that one of the two boards is set to the Master position by checking the Master - Slave switch, on the back of the Board. In normal use the Master - Slave switch is always set to Master. If it needs to be re-set to the Master position simply insert a screw driver into the slot and push the switch up.

1.2.2. Select the Master - Slave switch of the Slave Board to the down position. This instructs the Board to receive commands from the Master Board.

1.2.3. Link the two boards together by using the Celco Link Lead and connecting this between the Link Connector sockets on the back of each board. Make sure that the screw threads on the Link Lead connectors are securely fastened. Do not use any other lead for connection between the two Link Connectors. Only use the Link Lead

supplied by Celco to ensure that all the signals are transmitted accurately.

1.2.4. Switch the Operating Mode Keyswitch of the Slave Board to the Blind position and leave it in that position whilst Linked. It may be wise to remove the key to prevent the Operating Mode being changed by un-authorised personnel.

1.2.5. Connect the RS232c 'Y' Split Lead between the two boards using the two male plugs. Plug the SoftOptions 88 keyboard into the female connector on the 'Y' Split Lead. Make sure that all thumbscrews are tightened.

1.2.6. Ensuring that both Boards are set to the correct voltage for the country of operation, connect the two Boards to a common mains socket. When both Boards are connected turn the mains supply on. It is important that this procedure is followed step by step to allow the two linked Boards to 'power up' together in synchronisation.

1.2.7. With the two Boards Linked programing the Channels can be carried out following the same procedures described for programing individual Boards. This time, however, Channels can be selected on Preset 2 from both Boards and stored using the Enter button located on the Master Board.

1.3. Linking and the Internal D.S.I.

When linking two Celco Majors the memory content of each board is written to two separate Q-Cards.

1.3.1. **Writting to the Q-Card.**

Insert a Q-Card into both D.S.I. units.

Press the Write button on the 'master' Celco Major.

The memory information of both boards will be writen to their respective Q-Cards. After the information has been written ensure that you clearly label the Q-Cards as 'Master' and 'Slave'.

1.3.2. Reading the Q-Cards.

Insert the Q-Cards into their respective D.S.I. units ensuring that the master Q-Card is located in the master board and the slave Q-Card is in the slave board.

Press the Read button on the master Celco Major.

1.3.3.

The memory information of both Q-Cards will be read by their respective boards.

1.4. Linking Different Boards.

Linking different boards can be broken down into two main areas.

Linking boards of different channel sizes e.g. a Celco 60 Plus to a Celco 30 Plus.

Linking boards from different ranges e.g. a Celco 30 Major to a Celco 30 Plus.

1.4.1. Linking Boards of Different Channel Sizes.

- *If the two board's total channel combination exceeds 120 channels then a Multi Channel Interface (M.C.I.) is required.*

- *If more than two boards are linked then a Multi Channel Interface is required.*

When linking boards of different sizes the settings of the BIT Switch located in the Slave board must be altered in order for the board to function properly when linked.

In order to gain access to the BIT Switches in the Slave board it's Preset Panel needs to be removed.

1.4.2. Un-screw the two screws on the back edge of the Preset Panel.

1.4.3. Push the Panel towards the back of the Board until it stops (approx 10mm.).

1.4.4. Lift the Right hand end of the Preset Panel to the upright position. Be careful not to damage any cables.

1.4.5.

Whilst supporting the Preset Panel the BIT Switches may be set as shown below.

- *The BIT Switch is located on the CPU Card between IC35 and IC39 marked as SW1, it is numbered 1 thru 8.*

- *Switch number 1 is coloured Brown and switch number 8 Grey. The On position is with the switch towards IC39 or in the direction of the arrow.*

- *Only BIT switch settings 1, 2, 7 and 8 need altering.*

The following tables show how to set the BIT switches of any Celco control board when used in the Slave mode. Do not change the BIT switches in the Master board.

1.5. BIT Switch Settings.

1.5.1. 30 Channel Slave.

The BIT Switch settings for a 30 Channel Board (Slave) when connected to:

Master	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
30	On	On	On	On	Off	On	On	On
60	Off	Off	On	On	Off	On	Off	On
90/Gold	Off	Off	On	On	Off	On	On	Off
Normal*	On	On	On	On	Off	On	On	On

* Standard setting when not linked as Slave Board.

1.5.2. 60 Channel Slave.

The BIT Switch settings (channels 1 - 30) for a 60 Channel Board (Slave) when connected to:

Master	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60	Off	On	On	On	Off	On	Off	On
90/Gold	Off	On	On	On	Off	On	On	Off
Normal*	Off	On	On	On	Off	On	On	On

* Standard setting when not linked as Slave Board.

The BIT Switch settings (channels 31 - 60) for a 60 Channel Board (Slave) when connected to:

Master	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60	Off	On	Off	On	Off	On	Off	On
90/Gold	Off	On	Off	On	Off	On	On	Off
Normal*	Off	On	Off	On	Off	On	On	On

* Standard setting when not linked as Slave Board.

1.5.3.   90 Channel Slave.

The BIT Switch settings (channels 1 - 30) for a 90 Channel Board (Slave) when connected to:

Master	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
90/Gold	On	Off	On	On	Off	On	On	Off
Normal*	On	Off	On	On	Off	On	On	On

* Standard setting when not linked as Slave Board.

The BIT Switch settings (channels 31 - 60) for a 90 Channel Board (Slave) when connected to:

Master	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
90/Gold	On	Off	Off	On	Off	On	On	Off
Normal*	On	Off	Off	On	Off	On	On	On

* Standard setting when not linked as Slave Board.

The BIT Switch settings (channels 61 - 90) for a 90 Channel Board (Slave) when connected to:

Master	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
90/Gold	On	Off	On	Off	Off	On	On	Off
Normal*	On	Off	On	Off	Off	On	On	On

* Standard setting when not linked as Slave Board.

1.5.4.   Linking boards from different ranges.

Any Celco 88 Control Board can be linked to any Series 2 Control Board providing that the following additional conditions are understood:

- *That any SoftOptions features available to the Master board will not operate on the Slave board unless the Slave board is fitted with SoftOptions too.*

- *That the extra SoftOptions 88 features available to a Master board will not operate on a Slave board fitted with SoftOptions 87. Only the features common to both SoftOptions 87 and SoftOptions 88 will operate on both boards.*

- *That, when using a Celco Major as the Master the internal DSI unit will not store information from the slave board.*

1.6.   Cassette Interface.

The Cassette Interface can be used to Store and Retrieve information of the two Linked Boards as well as perform Real Time functions. There are two methods for Writing and Reading information onto and from a cassette recorder using Boards in the Linked Mode, these are:

Treating each Board as an individual case Writing and Reading the information of each Board separately onto two cassettes.

Making a lead up that will enable one Board to Write and Read onto and from the left channel of a stereo Cassette Recorder and the second Board to Write and Read the right channel. This is the more elegant solution.

The steps below describe the method required to Write and Read the contents of each Board individually:

1.6.1.

With the two Boards either Linked or Un-Linked connect a suitable lead between the record socket of the Cassette Recorder and the Cassette Interface DIN socket of one of the two Boards.

1.6.2.

Record the information following the same procedure as described in the Cassette Interface section of this manual.

1.6.3.   When the recording is complete clearly label the Cassette and write whether the recording was made from the Master or Slave Board.

1.6.4.   Take a new Cassette, or use the other side of the previous Cassette and perform the same routine for the other Board. Again, when the recording has finished, clearly identify the Cassette, or each side of the Cassette, as being made from the Master or Slave.

1.6.5.   Reading the information from the Cassette is carried out in a similar manner by connecting the Cassette Player to each Board individually. Ensure that the correct Cassette tape is used for the each Board.

The second method of Writing and Reading offers a less time consuming method whereby each Board records onto one of the two stereo tracks simultaneously. For this a special lead is required to enable the Cassette Interfaces of both Boards to be connected to the left and right channels simultaneously. As it is always wise to follow a standard we suggest the following method of wiring:

| Left Channel | Cassette wired to DIN connector and labelled 'Master'. |
| Right Channel | Cassette wired to DIN connector and labelled 'Slave'. |

• *Depending on the particular type of Cassette Recorder employed it may be possible to wire both the record and playback connectors of both Boards to the one Cassette Recorder plug. Consult the technical manual for your Cassette Recorder to see if this is possible.*

1.6.6.   With the lead connected between the Cassette Recorder and the two Boards, and with the two Boards Linked together, press the record button of the player and wait for the leader tape to pass over the heads. Now press the Write button of the Master Board, both Boards will simultaneously output to the Cassette Recorder. Wait for the Write Button's Yellow Indicator to extinguish before stopping the Cassette Recorder.

1.6.7.   Reading information back from the Cassette Recorder is performed in a similar manner. Only the one Read Button needs to be pressed.

In use the two linked boards perform as one unit, this allows quick programing and easy replay. With Celco 88 Range Boards there are no particular routines to follow when Linking, so a Designer does not have to attempt to learn a new method of control. Digital Storage Interface.

1.   Technical Appendix.

1.1.   Dimensions and Connectors.

Weights and Dimensions

Length	30 Channel	725mm(28.5 inches)
	60 Channel	1385mm (54.5 inches)
	90 Channel	2045mm (80.5 inches)
	Gold	2082mm (82 inches)
Depth	30 Channel	615mm (24.5 inches)
	60 Channel	615mm (24.5 inches)
	90 Channel	675mm (26.5 inches)
	Gold	735mm (27.8 inches)
Height	30 Channel	125mm (5.0 inches)
	60 Channel	125mm (5.0 inches)
	90 Channel	125mm (5.0 inches)
	Gold	305mm (12 inches)
Weight	30 Channel	22 Kg. (49 lbs)
	60 Channel	39 Kg. (86 lbs)
	90 Channel	65 Kg. (144 lbs)
	Gold	95Kg. (210 lbs)

Mains Input

Voltage	100, 120, 220 and 240 Volts A.C. (Selectable).	
Frequency	50 - 60Hz. only.	
Max. Power	30 Channel	100 Watts.
	60 Channel	350 Watts.
	90 Channel	500 Watts.
	Gold	530 Watts.
Fuse Rating	30 Channel (100, 120 Volt)	2.5 Amps.
	(220, 240 Volt)	1.25 Amps.
	60 Channel (100, 120 Volt)	3.15 Amps.
	(220, 240 Volt)	2.5 Amps.
	90 Channel (100, 120 Volt)	5.0 Amps.
	(220, 240 Volt)	3.15 Amps.
Connector	XM CON LNE-32	
Mates with	XM CON LNE-11C	(Supplied c/w 2.5M cable)

Control Output

Voltage	0 - +10 Volts D.C.	
Current	10 mA (milliAmps) Maximum.	
Connector	Socapex SLEF 337 P	
Mates With	Socapex SLFMD 337 P	
Contacts	Channels 1 - 30	Pins 1 - 30.
	0 Volts (Common)	Pins 35, 36 and 37.

Cassette

Level	Input sensitivity	500mV (milliVolts)
	Output	500mV into 47K
Connector	5 Pin 180 degree professional DIN. Socket.	
Mates with	5 Pin 180 degree DIN. plug.	
Contacts	Output (left channel)	Pin 1.
	Input (left channel)	Pin 3.
	Common - Screen	Pin 2.
	Pins 4 and 5 are not internally connected.	

Auxiliary Input

Level	0 - +10 Volts maximum.	
	(must not exceed 12 Volts D.C.)	
Connector	Cannon 'D' Type DC-37-S	
Mates with	Cannon 'D' Type DC-37-P	
Contacts	Cue Fader 1	Pin 24.
	Cue Fader 2	Pin 5.
	Cue Fader 3	Pin 23.
	Cue Fader 4	Pin 4.
	Cue Fader 5	Pin 22.
	Cue Fader 6	Pin 3.
	Cue Fader 7	Pin 21.
	Cue Fader 8	Pin 2.
	Cue Fader 9	Pin 20.
	Cue Fader 10	Pin 1.
	Cue Fader 11	Pin 29.
	Cue Fader 12	Pin 10.
	Cue Fader 13	Pin 28.
	Cue Fader 14	Pin 9.
	Cue Fader 15	Pin 27.
	Cue Fader 16	Pin 8.
	Cue Fader 17	Pin 26.

Auxiliary Input

Cue Fader 18	Pin 7.
Cue Fader 19	Pin 25.
Cue Fader 20	Pin 6.
Cue Fader 21	Pin 34.
Cue Fader 22	Pin 15.
Cue Fader 23	Pin 33.
Cue Fader 24	Pin 14.
Cue Fader 25	Pin 32.
Cue Fader 26	Pin 13.
Cue Fader 27	Pin 31.
Cue Fader 28	Pin 12.
Cue Fader 29	Pin 30.
Cue Fader 30	Pin 11.
0 Volts (Common)	Pin 19.

- *Pins 16, 17, 18, 35, 36 and 37 not used.*

Link Connector

Connector	Cannon 'D' Type DD-50-S.
Mates with	Cannon 'D' Type DD-50-P

- *(Use only Celco Link Lead)*

RS232c Interface

Connector	Cannon 'D' type DB-25-S	
Mates with	Cannon 'D' type DB-25-P	
Contacts	Data Out	Pin 2.
	Data In	Pin 3.
	Common	Pin 7. (Not Mains earth)
	+5 Volts	Pin 20 (Do not use)
	All other Pins are not internally connected	

Printer

Connector	Cannon 'D' type	DB25 P
Mates with	Cannon	DB25 S
Contacts	Data Out	Pin 3
	Common	Pin 7 (Not Mains earth)
	Printer CTS	Pin 20

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1. RS232c Interface.

1.1. Baud Rate Setting.

There are four possible baud rate settings for a Celco 88 Range Control Baud, these are: 300, 1200, 4800 and 9600 baud.

All Celco 88 Control Boards are factory set to 1200 baud.

Should you require to change the baud rate you need only alter switches 5 and 6 of BIT Switch 1 located on the CPU card. The switch settings are shown below.

Baud Rate	Switch 5	Switch 6
300 Baud	On	On
1200 Baud	Off	On
4800 Baud	On	Off
9600 Baud	Off	Off

1.2. Software Protocol.

The RS232c Interface can be used to control most of the functions on the Board from a Computer, these are Group 1 commands. The computer can also request information from the Board on Cue Fader and Channel levels, key presses on the Board, and Cue, Chase and Time Fade information stored in the Board; these are Group 2 commands. Group 3 commands are for system control.

All information between the Board and Computer is in the form of 8 bit bytes without parity and with 1 stop and 1 start bit.

All numbers in hexadecimal are followed by an 'H'.

The command format is as follows:

1st Byte 00H	NULL	One or more nulls precede every command.
2nd Byte nnH		Where nn is the command code. (Bit 7 is set in all command codes.)
Subsequent Byte(s) 00-5680H		Bytes depending on the command.

1.3.   Group 1 Commands.

1.3.1.   Controlling the board.

Command code.	Data	Comment
(2nd Byte)		
80H	key code (see key code table.)	simulates the pressing of a switch on the board
81H	nnH	set cue fader 1 to level 00=off FFH=full on
82H-9EH	nnH	set cue faders 2-30 to level nn
9FH	nnH	set X master to level nn
A0H	nnH	set chase master to level nn
A1H-A2H	nnH	set up and down time faders to level from 0-60 (seconds or minutes depending on the status of the min buttons). nn is 0-FFH time set is (nn/4)-3 ie 0-60.
A3H	30 bytes	set channels 1-30 to levels sent (must be a block of 30 channel levels)
A4H-A5H	30 bytes	as above for channels 31-60 and 61-90 respectivley
A6H-B0H	not used	
B1H	5680H bytes	set all cue,time fade, chase and legend data for channels 1-30
B2H-B3H	5680H bytes	as above for sections 31-60 and 61-90

• *(See Note 1 for details of 5680H Bytes)*

B4H	1A10H bytes	data for extra 16 sequences in a GOLD section 1-30 (see note 2).
B5H-B6H	1A10H bytes	as above for sections 31-60 and 61-90
B7H		turn the cassette read and write leds off
B8H		set the cassette read led flashing
B9H	80 bytes	set the ascii string in the alpha display (ignore on 30)
BAH	nnH	set the RS232 to new speed nn = 1 for 9600, 2 for 31.25K and 0 for return to speed set on bitswitch
BBH	xxH,yyH,nnH,mmH	set Cue Fade Time. Page xx (1-15) Cue Fader yy (1-30) to up time nn and down time mm. nn and mm are as stored and include assigned sequences (see note 1).

1.4.   Group 2 Commands.

1.4.1.   Requesting data.

Command code.	Data Transmitted	Comments.
(2nd Byte)	(By the Board.)	
E0H	00H,A3H,30 bytes	request levels of channels 1-30 (excluding P1 channel flash buttons and output limits)
E1H-E2H	00H,A4H (A5H),30 bytes	as above for sections 31-60 and 61-90
E4H	00H,A6H,30 bytes or 00H,A6H,A9H	request levels of previews on channels 1-30 A9H sent if no previews active. 7F-80h = off, FFH = full on red. 00H = full on yellow.
E5H-E6H	00H,A7H (A8H),30 bytes	as above for sections 31-60 and 61-90
E7H	00H,B4H,1A10H Bytes	request data on extra sequences in a GOLD section 1-30 (see note 2).
E8H-E9H	00H,B5H(B6H),1A10H Bytes	as above for sections 31-60 and 61-90
EAH	00H,ABH,xx,yy,zz	request info on softoptions settings xx is: Bit 0 =1 dipless x fade on. Bit 1=1 page freeze on yy is the number of masters set on cue lock 00 is none 3H thru 1EH are valid. zz is the number of the selected sequence. In a gold the number is in the range 0-17H. bits 3 and 4 give the sequence block so that 00XXX is block A 01XXX is block B 10XXX is block C.
EBH-EEH	reserved for system use.	
EFH,xxH,yyH	00,BBH,xxH,yyH,nnH,mmH	get cue fade time. Page xx (1-15) cue fader yy (1-30) to up time nn and down time mm.nn and mm are as stored and include assigned sequences. See note 1.
F0H	not used	
F1H	00H,B1H,5680H Bytes	request data on cues, timefades,sequences and legends for section 1-30
F2H-F3H	00H,B2H(B3H),5680H Bytes	as above for sections 31-60 and 61-90

• *(See note 1 for details of 5680H Bytes)*

Command code.	Data Transmitted	Comments.
F4H	00H,F4H,abH	request size of board and speed of cpu clock b= 1 for 30, 2 for 60, 3 for 90 and 4 for GOLD a= 0 for 4Mhz ,1 for 6Mhz
F5H	00H,AAH,xx,yy,zz	request to send clock time xx= hours in bcd, yy=mins in bcd and zz=secs in bcd ignored by 30 way
*F9H	00H,80H,xxH	xx = key code sent when a key is pressed (not flash buttons).
FAH	00,FAH,mmH,nnH	sofware version number mm, software revision nn.
*FBH	00H,81H,nnH 00H,82H,nnH 00H,A2H,nnH	levels of 30 cue masters, X master, sequence master and up and down time faders

- *All the above commands (with the exception of those marked *) are single shot commands. They send one set of data on reception of the request. The ones marked * are continually active and will send data whenever there is a change in the appropriate status of the board.*

1.5.   Group 3 Commands.

1.5.1.   System control commands.

Command code.	Comments.
FCH	Allow transmision (off on reset)
FDH	disable transmision
FEH	reset all transmit functions and clear buffer
FFH	reset the board to power up state 00 FFH sent when desk cpus reset

- *Where Data is sent by the Board in response to a Group 2 command you will notice that the second byte is the same as the command code in the coresponding Group 1 command. This allows the computer to simply 'record' the operation of the board (or the data) and 'play' it back without having to change any of the codes.*

Table 1 Key codes   RS232c Interface.

1.6.   Table 1 Key codes

Each Control Switch (not FlashButton) on the Board has its own code. These are listed below. Remember some Switches have a toggle function and so the Board must be set into a known state before starting a sequence of commands. Use the reset command (FFH) for this.

Code.	Key.	
10H	Chase 1	
11H	Chase 2	
12H	Chase 3	
13H	Chase 4	
14H	Chase 5	
15H	Chase 6	
16H	Chase 7	
17H	Chase 8	
18H	Reverse	
19H	Bounce	
1AH	Insert	
1BH	Delete	
1CH	Step	
1DH	Stop	
1EH	Stop at end	
1FH		
20h	Auto fade on/off	
21H	Time mode select	Clock control.
22H	Timer stop/start	Clock control.
23H	Timer reset	Clock control.
24H	X master load	
25H	Up minutes	
26H	Down minutes	
27H	-	
28H	Store channel step in chase	
29H	Store master step in chase	
2AH	Enter	
2BH	Modify	
2CH	Store end of chase	
2DH	-	
2EH	Cassette read	
2FH	Cassette write	
30H-3EH	Cue pages 1-15	
3FH	-	

1.7.   Note 1

The Cue, Chase, Time Fade and Display data is stored in each 30 Channel section of the Board and is sent and recived in 5680H byte blocks. One block for each 30 Channel section.

The structure of these blocks is as follows:

Byte 1 to Byte 38FFH

450 Cue Memories each of 32 bytes.
The first 30 bytes of each Cue represent the levels for 30 Channels in the order 1-30. 00H=min, FFH=max
Bytes 31 and 32 are the Up and Down Fade Times
Each Fade Time byte is coded as follows.
0-63H = 0-99 seconds
64H-7FH   not used
80H-C0H = 0-6.4 Minutes
C1H-D8H = Assigned sequences Block A Sequence 1 thru Block C Sequence 8.
C1H-FBH = 6.5-9.9 Minutes.

Byte 3900H to Byte 46FFH

Eight chases of 99 steps, totaling 191H bytes each.
The first byte of each Chase contains the number, in BCD, of the Chase length +1. The next 18CH bytes represent 99 steps, the last 4 bytes are not used. Each step consists of 4 bytes. In order the first 30 bits represent the 30 Channels (or masters) 1=ON 0=OFF. The 32nd bit (bit 7 of byte 4) controls if the Step is a Cue or Channel step, 1=Cues 0=channels.

Byte 4700H to Byte 5680H

15 Pages of Display data, each Page consisting of 30 eight character legends, making a total of F0H bytes per Page. All legends are in ASCII upper case only. The legends are in order from character 1 master 1.
A legend of "_____" (eight underline characters) donates a blank (no memory stored) Cue.

1.8.   Note 2.

Gold sequence blocks B and C Data.

The data block is 1A10H bytes long and represents 16 sequences each 99 steps long.

Each sequence is 191H bytes long. The first byte of each Chase contains the number, in BCD, of the Chase length +1. The next 18CH bytes represent 99 steps, the last 4 bytes are not used. Each step

consists of 4 bytes. In order the first 30 bits represent the 30 Channels (or masters) 1=ON 0=OFF. The 32nd bit (bit 7 of byte 4) controls if the Step is a Cue or Channel step, 1=Cues 0=channels.

1.9.   Table 2 – Qwerty Key Codes

Table 2 – Qwerty Key Codes   RS232c Interface.

Codes sent without a 00H header and below 80H will be treated as ASCII codes

for the alpha-numeric displays. Codes below 1FH will be interpreted as follows:

01H	= system control command
02H	= system control command
03H	= control C first code in clear command
04H	= dippless crossfade on command
05H	= dippless crossfade off command
06H	= page freeze on
07H	= page freeze off
08H	= left a window cursor command
09H	= right a window cursor command
0AH	= right a character cursor command
0BH	= left a character cursor command
0CH	= cue lock on first code (followed by ascii numbers 3-29)
0DH	= store cue step command
0EH	= cue lock off command
0FH	= cursor home command
10H	= first code page control command followed by a number 5-15 in ASCII
11H	= display off command
12H	= sequence block A command
13H	= first code sequence control command followed by a number 5-8 in ASCII.
14H	= sequence block C command
15H	= up time key code from qwerty kbd followed by any number of ASCII numbers, decimal point + or - codes.
16H	= down time key code from qwerty kbd (as above).
17H	= print from DSI command (only used in DSI)
18H	= display on command
19H	= align sequence key code
1AH	= sequence block B command
1BH	= code for insert cue key
1CH	= code for delete a cue key

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