PCS800
REMOTE ACCESS SOFTWARE

USER'S GUIDE

Installation

Computer Operation

Revision 2.1
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INTRODUCTION TO PCS800

The purpose of the PCS800 Editor software is to allow users to edit pages and queues (lists of pages that sequence automatically) for operation of a connected 830AE or840AE character generator System, without having to take the system off-line. Operation with the 830AE series is identical except that the 830AE does not accept a video input signal, i.e. the 830AE operates as a stand alone unit with it's own internal sync generator.

This software is used for remote access, which implies that there are two machines involved, the Character Generator (referred to as the CG) and the Windows software (referred to as the Editor). The CG does the actual work of producing the display and hence it is connected to your video equipment. The Editor is used to control the CG, therefore it can be connected to the CG in a variety of ways and does not need to be connected at all times. A serial connection between your CG and PC must exist to control your CG through this software. The serial connection can be either a direct connection using the provided serial cable, or a remote connection using modems.

There are two main components that make the display possible, the **Queue** and the **Pages**. The **Pages** are the text that you want to display. The **Queue** defines the order in which the **Pages** are displayed and how long each page is displayed before the next Page is displayed. The Queue can be on or off.

NOTE: Do not use the F1 key to get help! The F1 key is used to change the background colors!

Also, a complete system reset, wiping out all memory, is obtained by sending 6 consecutive ! (exclamation mark) characters, so unless you want to reset the system, please refrain from using those characters in a page or a crawl as part of your text. If you send 6 consecutive # (number sign) characters, you will give the system a soft reset.

The PCS800 software can be used to interface to one or more remote 840AE series character generators.

The 840AE series of character generators are memory-based downstream linear keyers that insert text messages into incoming video. The PCS800 installs on an IBM compatible PC and allows the user to create pages and crawl messages, manage the 840AE series dynamic functions and completely control the remote character generator.

System Requirements and Connections

System wiring is simple. The single rack-mountable 840AE unit takes an incoming video signal and sends it out with keyed text to any destination.

A second video output -- for monitoring only -- can go to a monitor for selected previews.

All other connections are for the various external control possibilities.

For computer operation, minimum PC configuration requirements include:
>   ??   486/66 or higher Intel compatible processor
>   ??   Video display card capable of at least 16 bits per pixel (High Color)
>   ??   Windows 95 or higher, Windows NT

The Manual

This manual details PCS800 installation and operation.

The logic of the manual follows the flow of information needed to install and then operate the system. As such, it begins with installation information.

The complete computer operation instructions -- given step by step, operation by operation -- will allow any user to begin using PCS800 right away.

These sections begin with the software installation. Initializing computer communication follows.

1.0 INSTALLATION AND CONNECTION

The 840AE is rack mountable in one standard rack unit.

Video wiring includes video connections that bring incoming video to the unit, a video out that sends the video out with the text inserted, and a second video out for monitoring only.

The signals for queue on/off control is from either an external contact closure device or a TTL source to the CT terminal strip on the rear of the unit.

The Serial 1 connector on the rear of the unit connects the unit to a user-supplied PC for extensive software control. The second serial connector is used for an optional weather instrument package interface.

1.1 Video Connections

Video In   Connect the incoming video to this input. This must be the source video
                  over which the 840AE will insert its information. If no video input is provided,
                  the 840AE will provide it's own sync and color..

Video Out   Connect this output of the 840AE to the destination that must receive the
                  video.

> *In the event that power to the 840AE is interrupted, the looped VIDEO IN and VIDEO OUT connectors will pass the incoming video through the unit without affecting the signal.*

Monitor   This monitor-only output can be connected to a video monitor to preview
                  the current character generator information. This video is available regardless of
                  whether the 840AE key is on or off. This connection is optional and does not
                  affect the unit's operation.

1.2 Contact Closure Connections

Either TTL connections or dry contact relays can be used to connect an external contact closure device to the unit for starting and stopping the queue. In either case the connections are the same.

CT Terminal   Wire the two connections from this terminal to the closure device that will control the unit's queue state. For TTL connection, connect the TTL ground to the G terminal.

                  When the contact is closed, the queue is on. Physically, when the jumper is
                  plugged in, the queue is on. External control will close it electronically.

When the contact is open, the queue is off. Physically, when the jumper is removed, the key is off. External control will open it electronically.

18-Position   On the unit's rear panel is an 18-position terminal block. The first twelve positions of this terminal block (A - L) are TTL level output lines used to control external devices

1.3 Serial Connectors

Serial 1   Use the supplied communications cable to connect Serial 1 to the serial port on the computer that will control the 800 via Video Data System's PCS800 software package.

Serial 2   Optional interface for external weather instrument package

1.4 Temp Connector

If the optional Temperature-only Weather Package is ordered, the system will display temperature information on screen when a layout is composed and scheduled.

There is an 8-pin mini-DIN connector on the rear panel that connects to the temperature transducer. This transducer is typically located outdoors and sends the outdoor temperature reading to the unit. Temperature range is from -40 to +127 degrees Fahrenheit. Centigrade and Fahrenheit can be displayed (simultaneously if desired).

2.0 COMPUTER OPERATION OF 840AE

The 840AE is operated remotely via a user-supplied computer running Video Data Systems' PCS800 software. The computer communicates either directly to the 840AE through a supplied serial cable interface (as described in the Installation procedure) or by an external (optional) modem.

> **Before computer operation of the 840AE is possible, the PCS800 program must be installed and run.**
> **Then communication between the computer and the 840AE can be established.**

2.1 Installing the PCS800 Software

The PCS800 software is installed on the user-supplied computer that will be used to operate the 840AE remotely.

The current version of PCS800 is supplied on three floppy disks.

1. Place disk 1 in the computer floppy drive.

2. Click on the Windows Start menu.

    The Start menu window comes up with all its choices.

3. Click on Run...

    The Run window comes on screen.

4. Assuming the floppy drive is drive a, type a:\setup into the entry box.

5. Click on OK or press Enter.
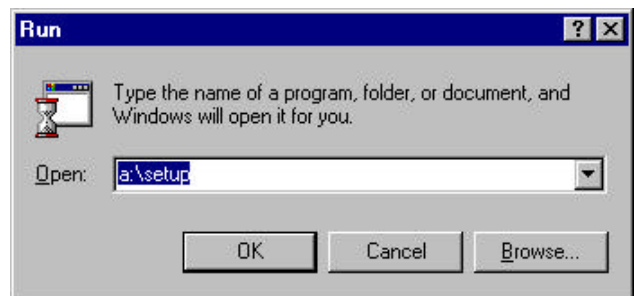
    The installation procedure begins and boots up to the Welcome window.

6. Read the Welcome information and verify that conditions are correct for installation.

7. Click Next or press Enter to continue the installation.

    The Software License Agreement screen comes up.

    To continue installing the software, the terms of the agreement must be accepted.
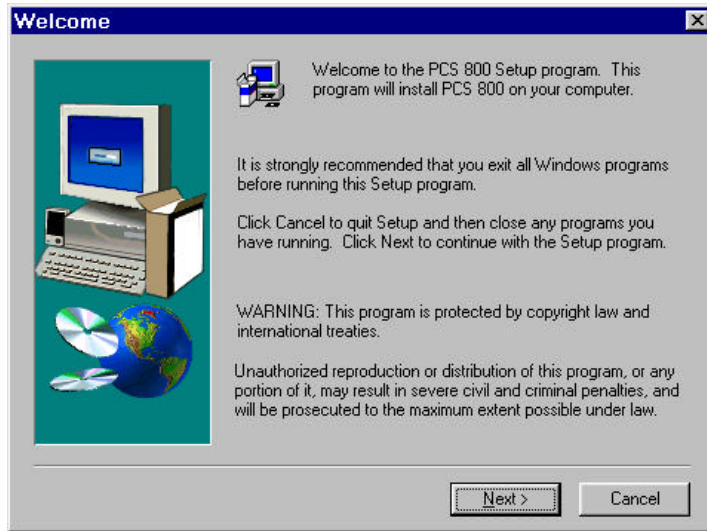
8. Click <u>Y</u>es or press Enter to accept the Software License Agreement.

    The Choose Destination Location window comes up.

9. Specify the directory where the PCS800 Software should be installed.

    The default directory is c:\Program Files\Video Data Systems\PCS800.

    To specify a different directory, click the B<u>r</u>owse… button and either type in the desired directory name in the box that comes up or navigate to the directory.
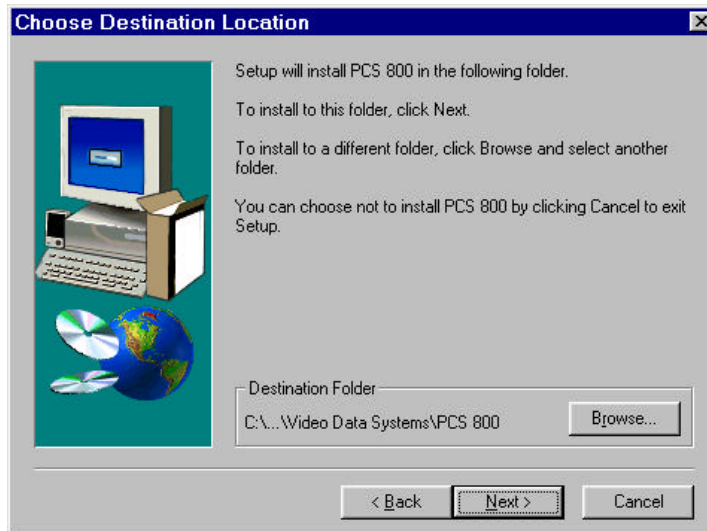
    If a directory is specified that doesn't exist, a prompt window will ask if the directory should be created. Click <u>Y</u>es to get back to the Choose Destination Location window.

10. Click <u>N</u>ext to continue the installation.

The installation program creates three subdirectories to PCS800 and begins copying files to the specified hard drive.

Program files are stored in the subdirectory called bin.   Each channel that you configure your PCS800 software for will create a new subdirectory for it's data.

11. When prompted throughout the installation, insert the correct floppy disks into the drive and click OK or press Enter.

When installation is completed, the Setup Complete window comes up.

12. Click Finish to complete the installation process.

The installation program will close down and bring up the Windows desktop.

The installation will have created a VDS PCSo00 icon that runs the program on the Windows desktop.

2.2 Running The PCS800 Program

The PCS800 program is run from the windows main desktop.

To run the program:

Double click on the VDS PCS800 icon.

The program can also be run from the Start Menu in Programs by selecting the VDS PCS800 program choice.

The PCS800 edit screen which consists of a blue background, will come up. If the edit window has horizontal or vertical scroll bars click the windows Expand icon in the upper right corner of the program window to make it the maximum size possible in your system.   If there are no scroll bars visible in the PCS800 window then you will be able to see a full screen of 840AE text on your PC monitor.

Before you start the Editor, please insert the accompanying hardware key in the printer port. If the hardware key is in place, and it is not recognized by the software make sure you plugged it into the printer port, not the Comm port. The Comm port has holes. The printer port has pins. Run "a:\drivers\setup" to install the proper drivers (make sure the Installation disk is in the A: drive). The program detects which version of Windows?   you are running and installs the correct drivers.

If the problem persists, please contact technical support at (631) 231-4400.

2.3 Menu Functions

Along the top of the program window is the menu bar that is accessed to operate the program. Each menu bar selection brings up a drop-down menu with its function choices.

Menu Selection with the Mouse and Keyboard

Using the   Clicking with the left mouse button on any menu bar item selects the drop-down
Mouse   menu that gives the various function choices. Selections in the drop-down menu
             are then made by clicking on what is desired. All selections in the program can
             be made with the mouse if desired.

But using the mouse is by no means the only way to make selections.

Using the   Some functions are also selectable with keystrokes on the keyboard. Every
Keyboard   menu bar item name has one character underlined. Holding down the Alt key and
             pressing the underlined character in the name will access the menu.

             For instance: To access the File menu, hold Alt down and press the f key. The
                             File menu's drop-down menu will come up just as if File were
                             clicked on with the mouse.

             Once a drop-down menu is on screen, any function in the menu that has an
             underlined character can be accessed by simply pressing that letter key.

             For instance: To access the Open function in the File menu's drop-down
                             menu, press O. The selection will be made just as if Open were
                             clicked on with the mouse.

             In addition, notice that the Open function has Ctrl+O called out to the right of it
             on the drop-down menu. That means those keystrokes are the keyboard
             equivalent to using the menu to access the function.

                             Pressing Ctrl+O at any time will access the Open function right
                             from the program screen without using the menus at all.

                             There are a few keyboard equivalent functions in this program, and
                             there are several standard ones in most every windows program.
                             Many users find them to be faster and easier than using a mouse.

             Finally, very often an expected response is automatically highlighted, such as OK.
             The highlighting means that pressing Enter will select that choice without using
             the mouse or any other key.

For simplicity's sake, selection operations described in this manual will be based on using the mouse. But operators should use any selection method with which they feel comfortable.

When you start the program you will see the following menu bar:

The purpose of the functions available here is to allow you to select the 840AE that you want to create/edit data for. You may have more than one unit that can be connected to your PC. These menu functions allow you to manage multiple units.

3.0 File Menu

3.1 Channel Selector
This function is used primarily to select the unit that you want to control

3.1.1 Creating a channel

The first time you click on Channel Selector you will be presented with the following blank

dialog box. You must set up the parameters for the serial port connection to the remote 840AE character generator. Click on Create and you will see the following:

In the Channel Name box you can enter any one word (no spaces allowed) text name that will be more convenient for you to know which character generator this connection designates, for example: "Cafeteria"

The Unit Type should remain as CG. If you are connected via a cable from your PC to the 840AE then the Communication Type is Direct. You then select the Com Port that your PC cable is connected to. If you have one 840AE unit connected then leave the Unit Address at 128. If you have more than one unit connected to the Com Port, then you need to identify the channel address for the unit you are setting up. You will be given this information when a multiple unit system is shipped. If you are connecting by means of a modem then select Modem in the Communication Type box. You must still determine the Com Port your modem is connected to and the unit address as above. This program will automatically search your Windows registry for the correct initialization string for your modem, and whenever you attempt a modem connection that string will be used. If your modem requires a special initialization string, enter it in the box shown. Your new initialization string will be sent to the modem AFTER the initialization string found in the registry has been used.

Then enter the phone number, including any access and area codes in the Phone Number box. When all parameters have been entered, click the Create button. You will see a message informing you that the program is trying to verify that the communications channel you just set up really is there. If you haven't connected all your wires and turned on your 840AE, then you should do so before clicking Create. If you have not established the connection and you click Create, the software will keep attempting to test the connection for about 30 seconds. You will then see a message

Error Message

⚠ Connection with remote CG was not established.
Please check all the cabling before trying it again.

[OK]
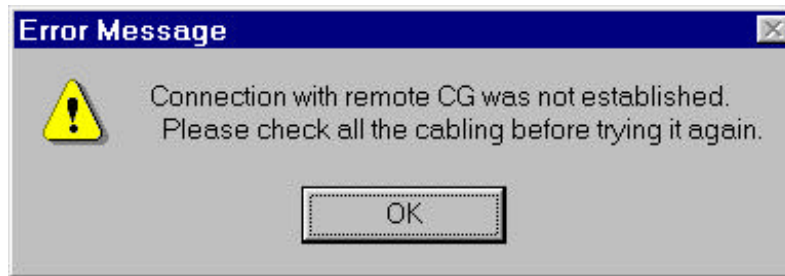
You must have the connection made so that the software can obtain certain parameters from the character generator that it requires for proper operation. Once you have established a connection then you can use the software without having your character generator connected

When a proper connection is found, you will get a message indicating that all is well and the channel will appear in the connection table. In order to make this channel the current one for editing you must click your mouse on the Channel ID. The first time you connect you select this channel you will see the message:

PCS800

⚠ Since this channel has never accessed before, the app should verify this channel profile.

[OK]

Clicking OK then lets the software interrogate the remote character generator and get the data contents, if any, into the computers memory. This synchronizes the computer with any data that might have been changed by another user in that particular character generator.

Subsequent connections made to that channel will show this message:

Video Data System

? The data in your computer may be old.
It is recommended that you connect to the remote CG and get all the latest information.
Would you like to connect now?

[Yes]   [No]
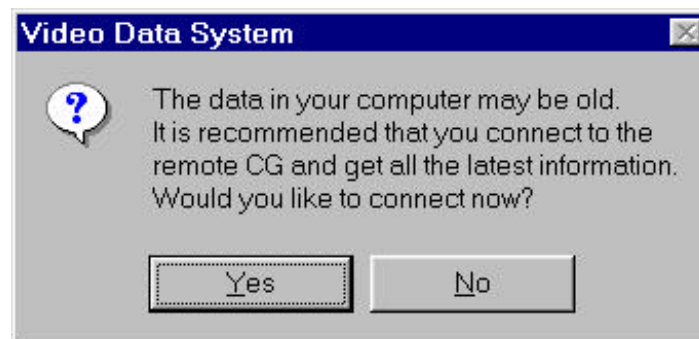
Click Yes or No depending on what you wish to do.

You are now ready to edit or control your remote character generator

To connect more than one 840AE to your computer see 13.0 Connecting Additional Units

The original Menu bar at the top of the display will be replaced by the following:
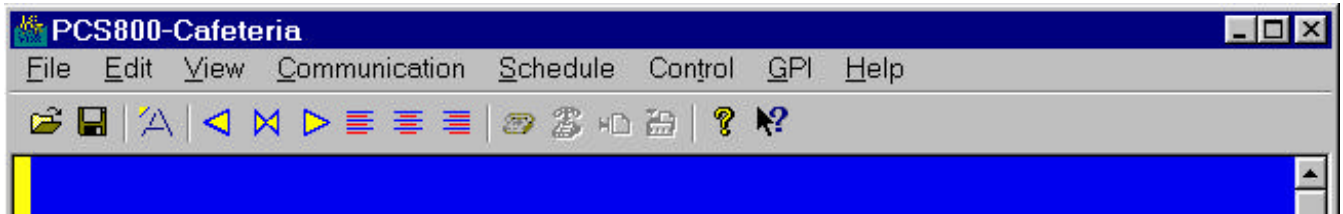
This new menu bar enables you to get to all control and editing functions. Notice that the name of the channel you are editing appears on the top of the menu bar.

The File menu now relates to how information is managed for the selected channel.
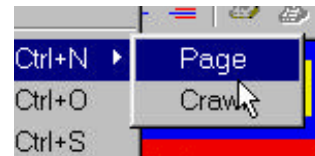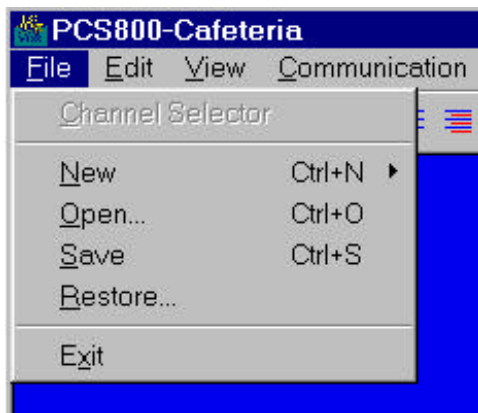
3.2 New

will create a new blank page on your edit screen. There are two choices for a new page. You can create the page as a normal page of multiple consecutive lines on the screen or as a single line crawl message. When you create new page your edit screen is set to the following default parameters:

Font	1
Background Color	Bright Blue (Color 10)
Character Color	Bright Yellow (Color 15)
Upper Additional Spaces	0
Lower Additional Spaces	0

Of course, the defaults will not be what is wanted all the time. The system gives the user the flexibility to create customized screens of information to suit specific needs. The choices used for customizing what is built are always available with a few keystrokes.

3.3 Open

This menu function will let you select an existing page from the pool of pages stored on your computer for editing. You will see a list of your current pages and some text from the first line of the page.. Select the page you want to edit by clicking your mouse on the page number or
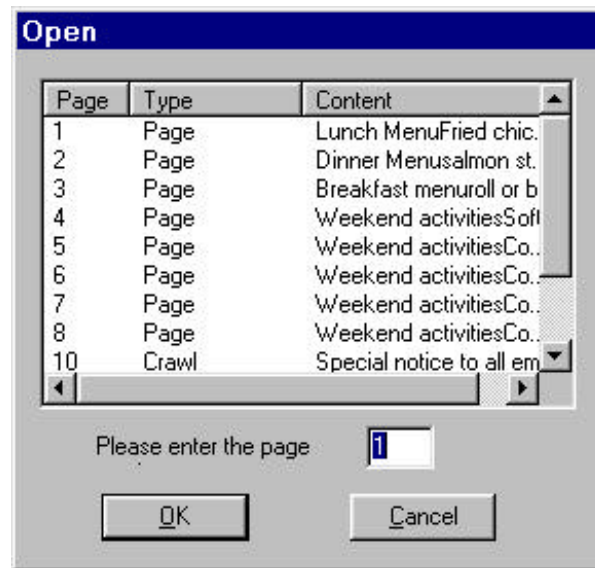
manually typing a number in the box. Clicking OK will place that page on the edit screen. See also 4.8.3 Getting to the page desired, below

3.4 Save

This menu function will show the same dialog box as the Open menu except now you will be able to save the page either in the same position as when you edited it, or as a new page. The default entry in the page number box will be the page number you just edited. If the page exists you will be asked if you want to overwrite the original page with the edited page. If you do save the new page then you will be asked about Scheduling the page.

When pages are created and stored in the system each page can have its own start time and expiration time.

Start time is defined as the first time that the page is valid for display and expiration time is the last time that the page is valid for display. This range of time is applicable to the page only when it is being displayed as part of a running queue or when it is scheduled as a single page display in the real time events list. The time distance between the start and expiration time can be a maximum of one month. For example, if the start time is specified as 10:00 AM on the 12th of the current month, then the expiration time can be no later than 9:59 AM on the 11th of the next month. If the current real time is outside of the range of the specified start and expiration time,

then the page will not be displayed. If you do not establish both a start and expiration time for a page, then that page will always be displayed.

You specify these times when you save a page. For example, create a text page and then click on the menu bar FILE SAVE and then enter a page number for the current page and click the OK box, you will see the following dialog:
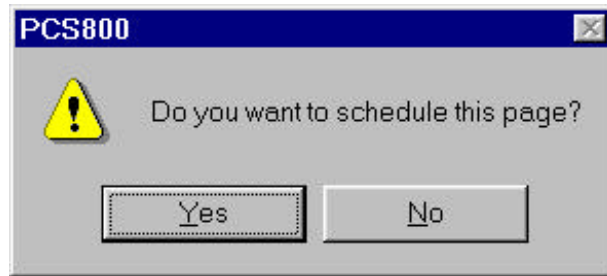
Click YES and then click Schedule Page in the following dialog:
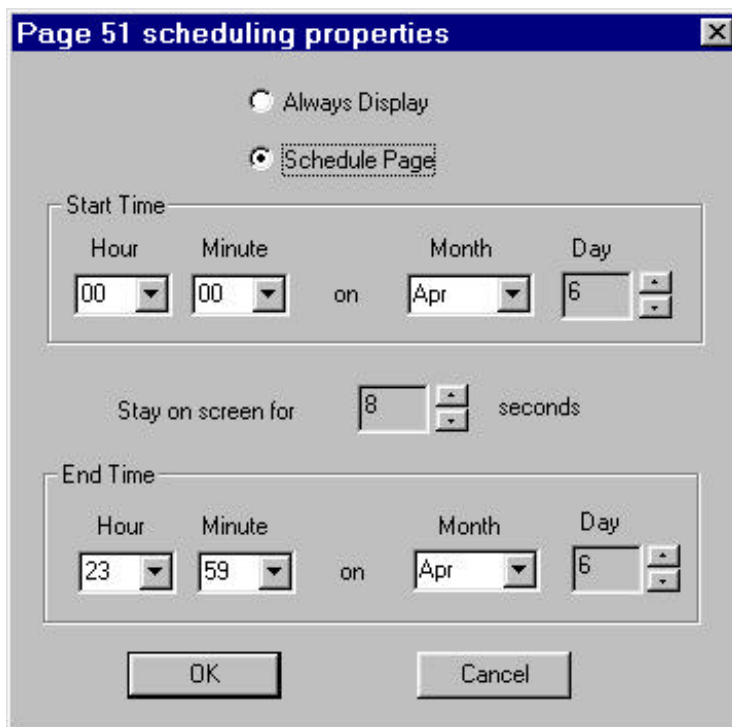
Note that the default entries filled in the boxes make the page valid for the current day. Fill in the boxes with the appropriate times for Start Time and End Time. You will not be allowed to set the Month/Day combination to an invalid time. The earliest Start date can be today and the latest End Date can be one month from today. The names of the months are for reference only.

You may also select the dwell time that will be associated with this page when it is placed into the message display queue.

When you have established the desired times click on OK. If you should enter an invalid time range you will see the following message. Clicking OK will return you to the prior dialog box where you can make the appropriate changes.

If your schedule entry was correct then clicking OK will show the following message which indicates that your page has been placed into the next available queue entry position and the specified time window has been associated with the page:
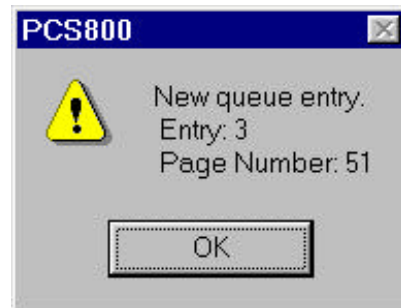
Note that by saving a page more than once you will place that page into a new queue entry each time you save it. You can remove these entries by editing the queue with the menu selection Schedule Queue.

3.5 Restore

This function will allow you to recover a page that you overwrote when you retrieved information from a connected character generator. For example, if you had information in your computer for a channel, and then you connected to that channel and retrieved pages because another operator changed the contents of the pages at the remote unit, you can restore the original contents of what you had on your computer with this function. You can restore one page, all pages, the original queue, the original events list, or all of the above.
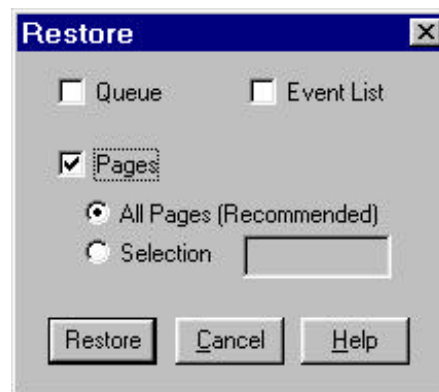
3.6 Exit

Selecting this choice closes the program. It is equivalent to clicking on the close icon in the upper right of the menu bar.

4.0 Edit Menu

In addition to typing characters from your keyboard, you also have certain text formatting functions available in the editor. Generally you will use the Edit menu to access these functions. This menu item from the menu bar will show the following sub-menu items:
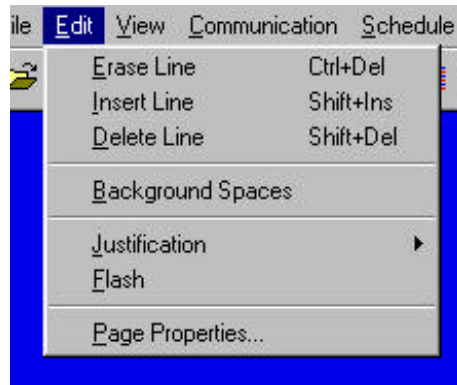
4.1 Erase Line

This menu command erases the line at the current cursor position. As a result the cursor will be on the empty current line. Pressing **Ctrl Delete** is a shortcut to do the same function

4.2 Insert Line

This menu command inserts a line at the current cursor position. The text on the current line will show up on the next line. Pressing **Shift Insert** is a shortcut to do the same function. If the cursor is in the middle of a row and **Shift Insert** is pressed, all text from the cursor position to the end of the row is brought down to a new row beginning at the new row's left margin. All rows of text below are moved down to make room for the new row.

When this is done repeatedly, there will be a point at which the maximum number of rows is reached and the button will have no further effect.

It is also possible that some rows will move down below the visible bottom level of the screen but still be considered valid rows. This could happen if the rows are very high. The rows out of sight below the screen can be brought up by deleting rows above them.

4.3 Delete Line

This menu command will delete the text on the current cursor positioned line. All rows below move up as a result. Pressing **Shift Delete** is a shortcut to do the same function. **Ctrl Delete** will delete all text from the cursor position to the right margin.

Other basic editing functions are available from your PC keyboard and are similar to most word processors. These functions include cursor motion using the arrow keys, Home and End. The Page Up and Page Down keys will step through the pages in memory.

4.4 Background Spaces

Background space is defined in the 840AE as the amount of color background above and below a character in any given row. The amount of color background above a character in a row is the upper background space and the amount below a character in a row is the lower background space.
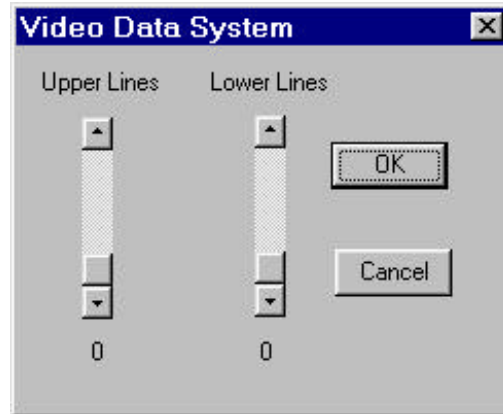
You can move the sliders to select the desired spacing. This function increases / decreases the upper or lower portion of the current cursor positioned line. All the subsequent text rows will have the same spacing unless you change it for that specific row. You can also use the F7 key on your keyboard to increase the upper background spaces, the SHIFT and F7 key to decrease the upper background spaces and CTRL and F7 keys to cancel any upper background spaces. Similarly use the F8 key for the lower background spaces.   The current value of the number of additional lines will appear below the slider in the dialog box.

Since the color of the upper/lower background is the last color used on a row, if a new color is specified at the beginning of the next row, that next row will be a different color than the one above. This can be done to alternate row colors, giving the message color separators for each row.

4.5 Justification

This command has the following sub commands:

Left justify line:	Align the current line left.
Center line:	Align the current line center.
Right justify line:	Align the current line right.
Left justify page:	Align the whole text in the current page left.
Center page:	Align the whole text in the current page center.
Right justify page:	Align the whole text in the current page right.

4.6 Flash

This menu is a toggle menu, so if there is a check mark then the flash is currently on. Otherwise, the flash is off. **FLASH** is actually an ON/OFF toggle for the flash function based on cursor position. Each time **FLASH** is pressed, everything after the cursor flashes if it hadn't been or stops if it had been. Please note that the actual edit screen will *not* indicate that characters are flashing. However, if you have enabled View CG Editor Status, then when you move the cursor to the position before beginning of the word that you enabled the flash command for you will see the words 'flash ON' in the 3rd from left box on the editor status line. When you position the cursor to the end of the flashing text you will see the words 'flash OFF'

4.6.1 Flash Example

One way to make flash operation clear is to construct an example.

A basic operation for flash is *to make only one selected word on the screen flash.*

To do this:

1. Position the cursor at the beginning of the word that must flash.

2. Click on <u>E</u>dit <u>F</u>lash.

When this page is displayed on an 840AE all characters beginning at the cursor position to the end of the screen will begin flashing, which includes much more than the desired effect. But that's okay, the process isn't completed yet. Notice that the indicator in the

| Ready | INSERT | flash ON | Off Line | Page Mode | 1,28 |
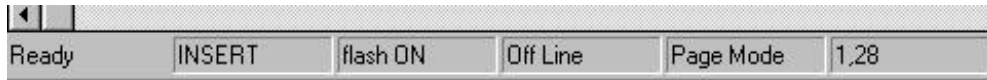
status row shows 'flash ON' in the third box from the left. When you move the screen cursor to the left of the word where you inserted the flash on command you will see this indication.

3. Move the cursor to the beginning of the word following the one that is supposed to be flashing.

4. Click on <u>**E**</u>**dit** <u>**F**</u>**lash**.

When this page is displayed on an 840AE everything from the cursor position to the end of the screen stops flashing. That leaves only the original word flashing. Notice that the indicator in the status row shows 'flash OFF' in the third box from the left.   When you move the screen cursor to the right of the word where you inserted the flash off command you will see this indication.

Ready	INSERT	flash OFF	Off Line	Page Mode	1.36

4.7 Page Properties

The next menu item determines the appearance of your editing desktop as well as the page that you will be editing.
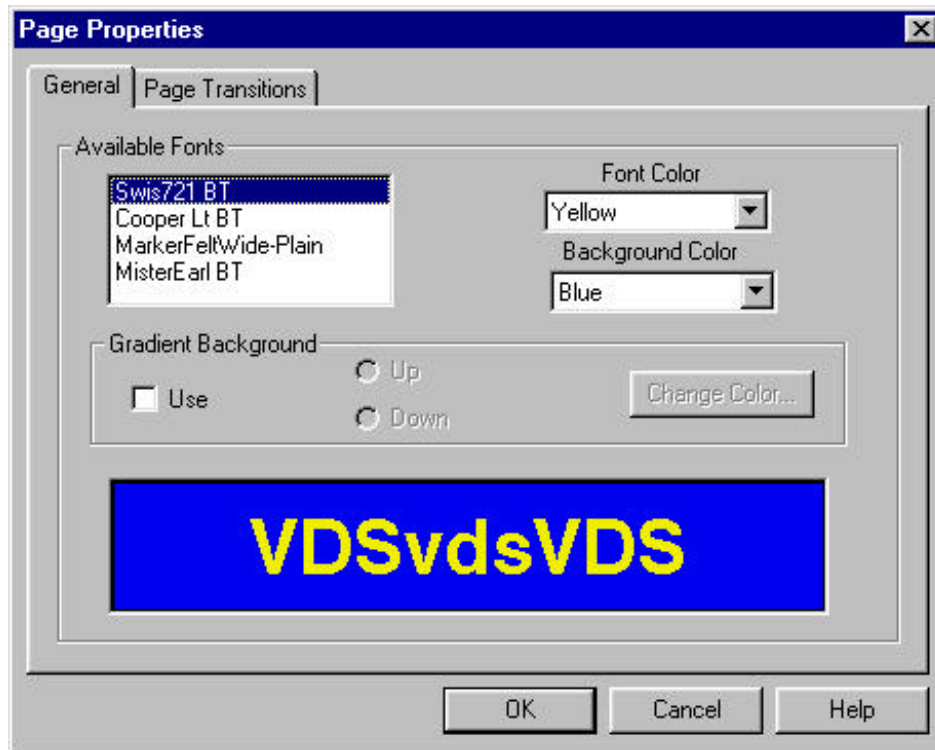
This menu allows you to change background and character color, font, and select special gradient backgrounds. You will see the following dialog box after selecting View Properties:

You can also set page properties from the tool bar by clicking on the icon with the large letter A, the font and transition selector.

4.7.1 Fonts

There are four internal fonts, or type styles, in the standard system configuration. Three are proportionally spaced and one is fixed pitch.

The fonts are different sizes and heights. Therefore, each will allow a different number of characters per average line of text and each will adjust the row spacing to suit its character height. When more than one font is selected on a row, the tallest font determines the row spacing.

Font 1 is the default and is a Geneva style. That means it is a basic type style with no swirling edges or fancy curves. It allows about 28 characters per average line of text.

Font 2 is a Clarendon style font. That means it is a fancier font with some swirling edges and curves. It allows about 28 characters per line.

Font 3 is a heavy marker style font. It is thick and broad and comes only in upper case letters. It allows about 17 characters per line.

Font 4 is a small fixed pitch font and allows exactly 41 characters per line.

Font changes can be made as often as on a character by character basis.

The names of the fonts installed in your character generator appear in the Available Fonts box. You select which font you want to be used for new text that you type at the cursor position. You can also step through all available fonts by using the F3 key on your keyboard. Pressing CTRL and F3 will restore the default font. The selection is *active from the current cursor position until another font change selection is made*. So if no other selection is made, the currently selected font will remain in effect for the rest of the page.

4.7.2 Colors

You have a choice of 16 different colors for font and background. One of the 'color' choices is external video. You can change color for each character. You can set background color for a word(s) or the full screen. Background color can only change when a space is being displayed. If you are not using a gradient background you can step through the background colors by using the F1 key on your keyboard. You can step through the character colors by using the F2 key on your keyboard. The color choices in the sequence are:

1. Black	9. No Bkgnd - Incoming Video Only
2. Blue	10. Bright Blue (Default Color)
3. Red	11. Bright Red
4. Magenta	12. Bright Magenta
5. Green	13. Bright Green
6. Cyan	14. Bright Cyan
7. Dull Yellow	15. Bright Yellow
8. Gray	16. White

If the character color selected is the same as the current background color, typed   characters may not be visible on screen. Borderless characters will simply blend in with the background, much like the proverbial white cat in a snowstorm. Only characters typed with a black border will be seen, but they will appear empty since their interior matches the background.

If you choose External Video as your color, then the incoming video signal is used.   When used as the background the external video signal is represented by a cross hatched pattern on your desktop display.

If you select the Gradient Background then keying over external video is not functional, however if you have supplied a video input, the video output is gen-locked to the video input.

4.7.3 Gradient background

A gradient background is a page background whose color is gradually darker from top to bottom or bottom to top. Using this background on your page, the message appearing on the display will look sleeker and more attractive. Gradient backgrounds remain on screen until they are changed. Once a gradient is installed, it will be used as the external video color when external video is specified as the color of a character or background. Remember, the most pleasing displays to watch are the least busy. It is recommended that you change the background color or gradient as little as possible. You do not have to install a gradient on every page. Install the desired gradient on the first page of your list of messages that will appear on screen, and then use external video for the background color on subsequent pages. This will speed up the rendering of pages onto the display.

If the "Use gradient" option is checked on the above dialog box then the preview window shows the sample text on top of the reddish gradient background.

The user can "Change Color…" to some other color. The color you choose becomes the 'brightest' color that the gradient background will place either on top or bottom.

You can also change the orientation of gradient background such as "Down" for brightness decreasing from top to bottom, and "Up" for brightness decreasing from bottom to top.

Click on "OK" when the proper selections have been made, and you will see the attributes chosen applied to the page presentation.

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4.7.4 Transitions

From the properties box you can click on the tab marked transitions.
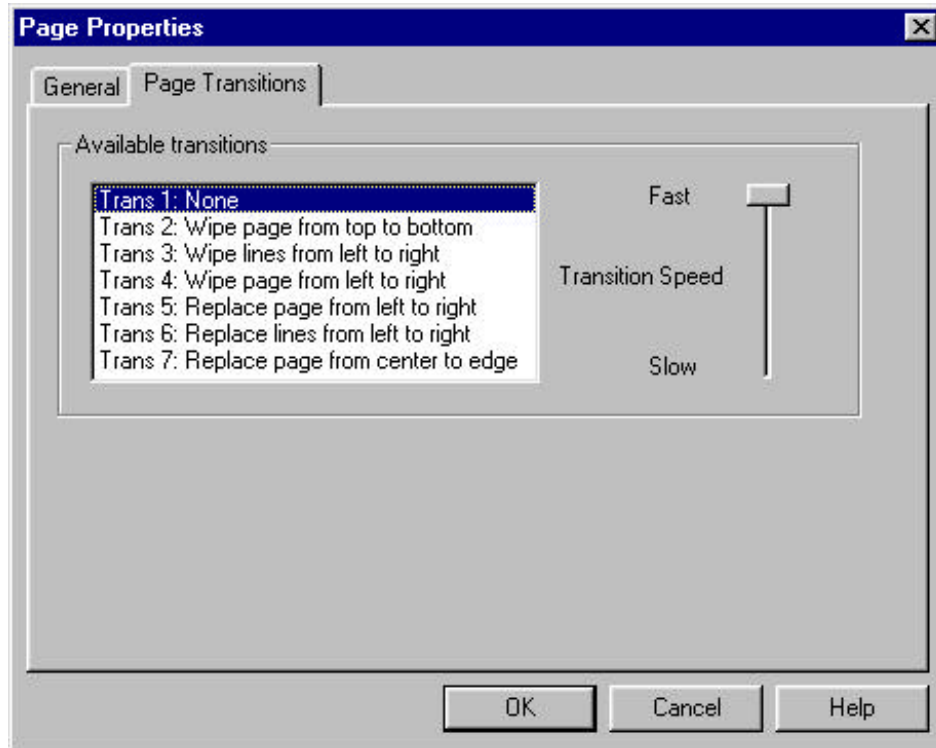
This function allows the user to change the ways that text writes on and off from the display screen. There are 7 different transitions in the unit.

You can specify one of the following transition modes:

1) The default transition is 'no' transition, i.e. text and background of the original page are replaced as quickly as possible with data from the new page.

2) Wipe the current page, from top to bottom, to the default background as defined on top of the first scan line of the first text row. When the screen is cleared of character data then wipe on the new information from top to bottom. If the background is constant between pages then the text only will wipe off and then on. If you change backgrounds between pages, then the full page background will change abruptly when the text of the first page is completely wiped off and before the text of the second page wipes on.

3) Remove the current text of the page from left to right, and then top to bottom. Replace removed text with the current background. When the screen is cleared then print out new text from left to right, top to bottom. This works best with small values of transition speed, i.e. faster transition time. The background of the new page will be placed on the display one row at a time as new text appears. A new page gradient background is placed on screen before as the original

text is removed.   The color backgrounds of a new text page with fixed color backgrounds will appear as the rows is placed on screen. Thus when transitioning between pages with fixed color backgrounds the old color background remains on screen until the new text row is placed on screen.

4) Wipe all rows of text from the screen from left to right to the background color. When the screen is cleared then display all new text from left to right. This transition is only valid when the background is the same for both old and new pages.

5) Same as 4 above, except that new text immediately overwrites old text, from left to right This transition is only valid when the background is the same for both old and new pages.

6) Replace all rows of text on the screen starting at the center and working outwards towards the left and right edge simultaneously. This transition is only valid when the background is the same for both old and new pages.

7) Replace all rows of text simultaneously on the screen starting at both the left and right edge and working in towards the center. This transition is only valid when the background is the same for both old and new pages.

When creating pages that will be used with transitions it is suggested that for best appearance you have a minimum of differences in background between pages. If you have an excessive number of color or font changes then due to the way in which the character generator processes colors for scan lines and characters you will more than likely see unwanted side effects while the transition completes. Ideally, the background for all pages should be the same. The transitions were designed for text only. For best transition appearance the font and inter row spacing for rows should not be changed between pages.

The transition speed may be selected by moving the slider. The time required for a transition is added to the pages dwell time specified when you insert a page in the queue. Always review the transition settings on a functioning unit. Some transitions will take a very long time at the slower settings.
Note that the transition for the current page will take effect only if the current page appears through the queue mechanism. If the following page contains a different transition, then the transition from the current to the next page will follow the next page's transition rule.

4.8 Keyboard Editing functions

4.8.1 Cursor movement

Getting around a screen efficiently is a somewhat overlooked skill. Everybody knows that pressing and holding a cursor arrow button will move the cursor in a desired direction and eventually it will get to the place intended. Eventually isn't really good enough. There are better

ways to get around the screen built the editor. Getting to know them takes little time now and saves a great deal of time later -- not to mention a great deal of frustration.

The cursor control buttons are among the two small button clusters centered between the alphanumeric keypad and the larger cluster on the right side of the keyboard. They include the **Home** and **End** buttons, and, of course, the cursor direction arrow buttons.

Pressing the **Home** button *always moves the cursor to the upper left corner of the current screen* -- the home position. This is standard computer screen terminology.

The home position is a good reference point for any number of situations and it is good to know that it is always available at the touch of the **Home** button.

Pressing the **End** button at any time will *move the cursor immediately to the next character position after the last thing typed on the current line*

The cursor direction arrow buttons move the cursor in the direction of the arrow: right, left, up or down.

Using the up and down arrows is an efficient way of getting to higher or lower rows of text. A quick push of these buttons moves one row and holding them down sets the cursor in constant motion until the buttons are released.

One quick push of the right or left arrow buttons move the cursor one character position. Holding them down sets the cursor in constant motion until the button is released. And that's why people tend to use these buttons to take the cursor across a row of text from one word to several words away from where the cursor rests, or even worse, from one end of the row to the other.

The **Space Bar** and **Backspace** button should not be left out of the discussion of cursor movement since they are used often when typing and editing.

Obviously, the **Space Bar** is used to space between words when typing. But it works differently depending on the typing mode that is active

In Character Insert Mode, the **Space Bar** causes the cursor to push all characters to the right as it moves, creating a space at the cursor position.

In Overtype Mode, **Space Bar** makes the cursor wipe a character off the screen as it moves right, which makes it a destructive cursor movement in that mode.

Backspace is right above the **Enter** button and has an arrow on it pointing to the left. Do not confuse it with the left arrow button in the cursor direction arrow cluster, it works very differently (and has a longer stem on its arrow).

Backspace is always a destructive cursor movement button, which means it *destroys any character that is in the way as it moves the cursor backwards.* Quite different than the left arrow button that simply moves the cursor left leaving everything alone.

Only use **Backspace** when characters to the left of the cursor must be wiped off the screen.

You can also use the mouse to position the cursor anywhere on the screen by placing the mouse arrow where you want the cursor and then clicking the left mouse button.

4.8.2 Typing Mode (Insert/ OverType Key)

There are two modes in which typing is done with the system, the Insert Mode and the Overtype Mode. They are selected with the **Insert** key.

In the Insert Mode, which is the default, each character typed is inserted in a row at the cursor position and all following characters move to the right to make room for it. In this mode the cursor flashes more slowly than in the Overtype mode. When the row is filled to capacity, the row will spill over to the next row moving all subsequent rows down.

In the Insert Mode, typing a character will never destroy another character.

In the Overtype Mode, each character typed is placed at the cursor position. If there already is a character there, that character will be overwritten by the new one. This is a destructive typing mode.

In either mode, when the cursor reaches the right margin it will create a new blank line and move to the next line.

It should be noted that there are two kinds of "spaces". The **Space Bar** inserts a space character that is the width of the number 0 of the currently selected font. Moving to the right with the right arrow key beyond already existing text inserts a narrow space typically equal to 1/3 the width of a **Space Bar** character. The relative width of this narrow space thus depends on the font.

4.8.3 Getting to the page desired

Messages or screens of information are created on any of the pages available in the system. These pages always exist, whether any information has been typed into them or not. As a result, it is possible to step through or call up to the screen any page in the system at any time.

There are several ways to get a desired page on screen for message creation or editing. In addition to the File Open functions discussed above pressing **Page Up** calls the next *numerically higher* page to the screen. So if the current page is 1 and the desired page is 3, pressing **Page Up** twice gets page 3 on screen. Pressing **Page Down** calls the next *numerically lower* page to the screen. So if the current page is 3 and the desired page is 1, pressing **Page Down** twice gets page 1 on screen.

Either one of the page movement functions is a reasonable way to get to a desired page providing that it is within a short range away from the current page. If the current page is very far from the page that must be called up -- say the current page is 11 and the page that must be called up is 52 -- then **Page Up** is a very inefficient way to get to page 52. You should use File Open.

4.8.4 STANDARD CHARACTER SET

Unless otherwise specified all fonts provide the character set as illustrated below:

```
A   B   C   D   E   F   G   H   I   J   K   L
M   N   O   P   Q   R   S   T   U   V   W   X   Y   Z
a   b   c   d   e   f   g   h   i   j   k   l
m   n   o   p   q   r   s   t   u   v   w   x   y   z
1   2   3   4   5   6   7   8   9   0
(   )   -   $   ?   ?   /   %   :   ;   !   '   "
#   &   =   >   <   *   +   [   ]   @   .   ,
```

Standard character set

All symbols are standard except for the degree symbol which is obtained with the SHIFT 6 key from the keyboard. Display of the (^) symbol is replaced with the degree symbol. In order to display the @ character on your text page, *only when a queue is running,* you must enter the token sequence %/ into your text. You will *not* see the @ character on your edit screen.

5.0 View Menu

This menu allows you to set up the appearance of the screen:

This menu is used to remove or put on screen the Toolbar and
Statusbar. If the selection has a checkmark, it is active and on
screen. Clicking the selection cycles it on and off.
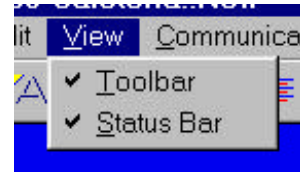
5.1 Toolbar

The Toolbar includes the icons below the menu selections that are shortcuts to some menu
functions. From left to right they include Open, Save, View Properties, Justify line left, center,
right, Justify Page left, center right, Connect, Disconnect, Send, Retrieve, About and Help. Their
names appear if the mouse pointer is held over them for a moment. (About gives the version and
copyright date for the loaded software.)

5.2 Statusbar

The Statusbar resides on the bottom of the screen and displays descriptions of selected menu
functions when they are pointed to by the mouse or the editor status.   When the user types
characters on the desktop, the editor status shows up. There are several boxes on the status bar.
The first box will display the word READY until you recall a page from the computers memory.

At that time READY will be replaced by that page number. You will now always see that last
page number that you recalled from the computers memory in this box. The next box displays
the text insertion mode as OVERTYPE or INSERT. The third box displays either the character
that the cursor is currently positioned over, or the hidden command that the cursor is positioned
over. The fourth box displays the connection status, the fifth box displays either Page Mode or
Crawl Mode depending upon which type of message you are currently editing. The sixth box
displays the current position of the cursor with the text row number first and then the relative
horizontal position of the cursor from the left margin.

6.0 Communication Menu

To control the 840AE directly from the computer, communication between the two devices must first be established using the <u>C</u>ommunication Menu.

6.1 Connect
To establish direct computer communication:

1. Click on <u>C</u>ommunication Menu.

    A drop-down menu comes up with one of the two connection choices active – Connect or Disconnect. Note that the name of the channel is supplied in the menu.

    If Connect is active in the menu, it means that the computer is not currently connected to the 840AE and a connection can be established by clicking on Connect.

2. Click on Connect. You will see a message telling you that the software is attempting to connect to the character generator. When the connection is successful, you will receive confirmation about the connection. The connection will be made according to the instructions you gave when you originally set up the channel. I.e. if your connection is via a modem, then the remote telephone number will be dialed automatically.

6.2 Disconnect

Disconnecting computer control of 840AE is done in the <u>C</u>ommunication Menu.

To disconnect computer communication:

1. Click on <u>C</u>ommunication Menu as discussed above.

    A drop-down menu comes up with one of two choices active – Connect or Disconnect.

    If Disconnect is dark, it means that the 840AE is currently connected to the computer and the connection can be broken by clicking on Disconnect.

2. Click on Disconnect.

A window appears for verification.

3. Click on Yes or press Enter if Yes is highlighted.

    Disconnection is complete.

6.3 Send

You can send all or part of the data that is stored in your PC memory for any 840AE unit you may have in your system. In this way you can edit your channel off-line and then send all information at once.

From the Communications menu select Send. You will see the following dialog box:

Check the boxes pertaining to the items that you want to send to the connected unit.

When you select time, the clock of the remote unit is synchronized to the time clock in the PC. The parameters of GMT offset and goal time (if used) are also sent with time.

For pages you can select a certain range of pages or a comma delimited list of pages. E.g. 1,4,5,12 or 5-20

Any item that is not checked will remain as is in the connected 840AE. Note that pages that you do not update are not erased.

Then click "Send" to send the information.

The user will notice a series of progress indicators are activated while the information is being sent to the unit.

When the transmission has finished all the progress indicators will be gone from the main desktop and the editor will be active again.

Note that information in the remote unit will be replaced by the new information that you send.

6.4 Retrieve

If multiple personnel or multiple computers have access to an 840AE, then the contents of the PC's local storage should be updated frequently. Hence, the user should update the local PC when any new connection is made. Using this menu choice the PC can retrieve all information in the remote unit which might have been updated by others.

Select "Retrieve" under the "Communication" menu and a box similar to the Send dialog box will appear.

Select the display elements you want to update in your local PC For pages you can select a range of pages or a comma delimited list of pages. Then click on "Retrieve" to initiate the retrieval of the information.

You will notice a series of progress indicators will be activated while the transmission between the PC and the unit is taking place.

When the transmission has finished all the progress indicators will be gone from the main desktop and the desktop will be active again.

7.0 Schedule

The schedule menu provides functions to set the queue and the
events list:
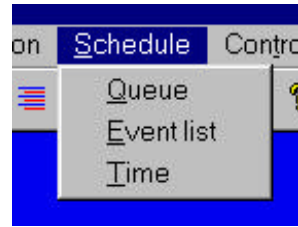
7.1 Queue

A queue is a sequence of pages that will display on the screen automatically. There are two
queues in the system. One is the page queue and the other is the crawl queue. The page queue
determines which pages will appear and the order they will appear. The crawl queue determines
which messages will crawl and the order they will appear. There is no synchronism between the
crawl and page queues other than that they both start at the same time. By using the "Queue"
dialog box, the user can easily navigate through the contents of both queues.

Select "Queue" from the "Schedule" menu, and if you have not yet stored any pages in the
system the following blank dialog box will appear.
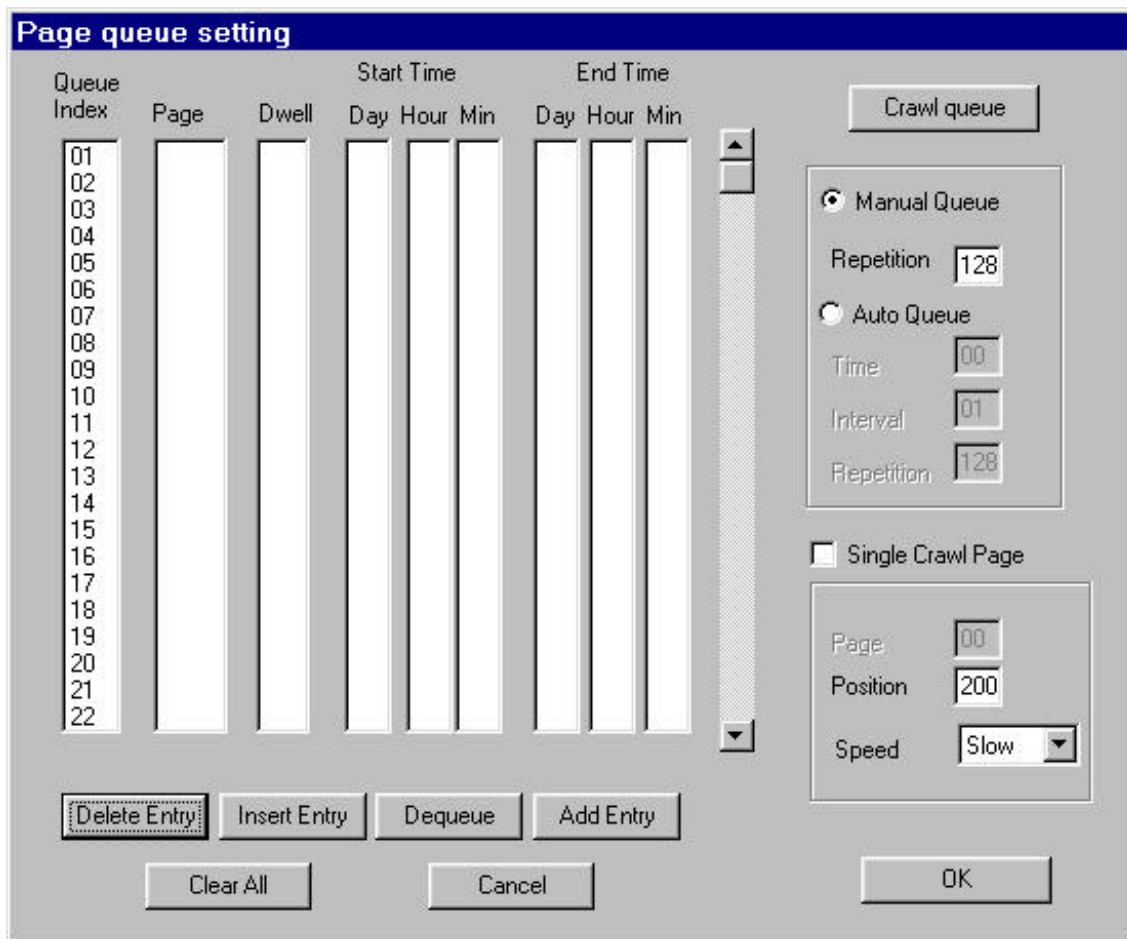
The title bar indicates that you are viewing the contents of the Page queue. To see the contents of the "Crawl Queue", click on the "Crawl queue" button. Note that the dwell time for crawl queue entries can not be specified.

The meaning of the various fields is as follows:

Queue Index – The sequential reference for each queue entry. A queue can have up to 99 entries.

Page – The page, or message, number that will appear for this queue entry. A page can appear more than once in the Queue. Each occurrence can have a different dwell time.

Dwell – Number of seconds that the page will remain on screen.

Start time – The earliest time that the page will appear as part of the queue This parameter is not changeable in this dialog

End time – The time after which this page will not appear in the queue. The start and end time fields are reference only. Their contents were established when you saved the page after editing.

Manual queue / Auto queue – There are two types of queue, Manual and Auto. A manual queue is started by the user or from the events list controller. You can set the number of times that the queue will repeat by making an entry in the 'repetition' box. Any number of 128 or greater results in the queue continually running and not stopping except manually.

The Auto queue is set by the user to automatically start at a certain minute after the hour, run for a fixed number of cycles and then repeat after a fixed time interval. For instance if the user specifies "Time" to 10, "Interval" to 3, and "repetition" to 1, then the queue will run one complete cycle at the following minutes of the hour: 10, 13, 16, 19…52, 55, 58. Note that the queue will not start at the next hour until the 10th minute. Note that it must take less than the specified interval minutes for the queue to complete for this function to perform properly.

Single crawl page – check this box if you have not established a crawl message queue and you wish to crawl a single message on the screen while the pages are sequencing.

Page – If you select a single page crawl, then enter the number of the page that you wish to crawl while the queue is running.

Position – Whether you are running a crawl queue or a single page queue the position on the screen for a crawl is defined by the scan line number where the top of the crawl will appear. Scan lines may not mean much to some people, but just remember that the top of the screen is line 0 and the bottom is about line 250. So basically, the higher the line number, the closer to the bottom of the screen.

When preparing a text page on which a crawl will appear, be careful not to leave any text at or below the position on the screen where the crawl will appear or it will not be seen since the crawl position defines the last portion of the screen where text can appear.

To specify a different scan line number, type it in the position box. A good line choice is 208, which positions the crawl near the bottom of the screen. The minimum acceptable scan line value for a crawl is line 160.

The system only wants numbers divisible by eight. The CG840AE will change your number selection to the lowest number divisible by eight. Don't pay too much attention to this and just work in round numbers. An invalid number, such as one too large, will be rejected and the original number will be retained.

Speed - Whether you are running a crawl queue or a single page queue there are three speeds at which a crawl can run: Slow, Medium and Fast. The best speed to use is Medium. Speed changes can be made while the crawl is running to see how the speeds work with the message. See section 8.1.3 Crawl for how to do this in real time

The last crawl speed selected remains in effect even if power is interrupted.

When using the standard font set you can calculate the actual time duration required for a crawl message to enter from the right and exit the last character from the left:

Font 1 averages 32 characters per line, crawls at 22 characters per second at fastest speed
Font 2 averages 28 characters per line, crawls at 19 characters per second at fastest speed.
Font 3 averages 18 characters per line, crawls at 12 characters per second at fastest speed.
Font 4 provides 40 characters per line, crawls at 28 characters per second at fastest speed.

The medium speed is 2x the fastest speed, the slow speed is 4x the fastest speed.

Add the number of characters per line for the font used to the number of characters in the message and divide by the number of characters per second for that speed. If you were crawling a message of 100 characters using font 4 at the fastest speed it would take $((40 + 100) / 28 =)$ 5 seconds from the time the first character entered the right until the last character exited the left. Note that the first 3 fonts are proportionally spaced and therefore the above calculation is a close approximation to the time. For font 4, which is fixed pitch, the calculation is exact.

Delete – clicking on this button will delete the highlighted entry and move up all following entries one position.

Insert – will move all queue entries from the currently highlighted entry down one and hold the place for this entry by entering the first page. You can then edit this entry as desired. When the queue runs all entries appear on the display in the same sequence as in this queue list.

Dequeue – will find all occurrences of the highlighted page and delete them from the queue list. This is different from delete entry because dequeue takes out every instance of that particular page #, where delete entry only removes that entry.

Add Entry – will add a queue entry at the end of the list. You can then edit this entry as desired.

Clear All – will reset the queue list to empty.

You may also specify if the crawl function is to operate while the page queue is sequencing. There are two possibilities. You can have a single message crawl during the entire queue operation, or you can allow the crawl message queue to function. If you click your mouse on single page crawl, then you can enter the page (message) number that is to crawl. Otherwise all entries in the crawl queue will appear. You can select which scan line (based on a field of 262) position the top of the crawl message will appear at. as well as one of three crawl speeds.

You may edit any queue entry by clicking your mouse on the Page or Dwell parameter field for the entry you wish to change. Then type in the new values. To make an additional queue entry you must first click on Add or Insert Entry and then edit the 'default' entry that appears.

7.2 Real Time Events List Management

You may set up a list of events that are to be acted upon in real time. You may have up to 99 events in the list. Events can be specified to occur at a specific day of the week, hour and minute. You may specify an event to occur on every day of the week. You may specify an event to occur at any hour of the day.   The events list is inspected every minute to determine which events must take place. More than one event can occur at a given time. Such events will be acted upon in the order in which they appear in the list. Once you exit this dialog box, the resulting list will be sorted by day and time.

You access the events list from the Schedule Event list menu
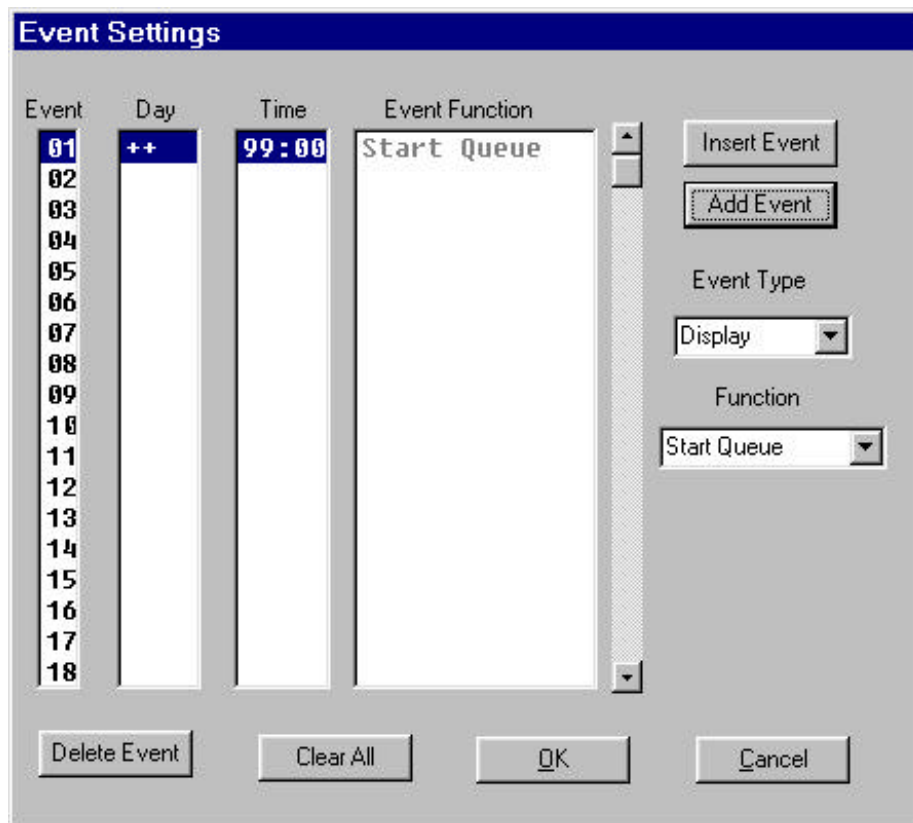
Event – This column represents indexes into the event list. Note that the index for an event may be changed later by this software, since the software will place each event in chronological order.

Day – This column represents days in a week, so the user can specify the day for a given event. Note that if the user selects "++", then it means every day. To select the day of week for an event click your mouse pointer on the Day column for the desired event, then select the day of week from the drop down list.

Time – This column represents hours and minutes for the scheduling of the given event. Hour should be in military format. If the hour is set to 99 it means the event repeats each hour. All

events will activate at the 00 second of the indicated minute. To select the hour of the day for an event, click your mouse pointer on the Time column for the desired event and then type in the hour and minute required.

Event Function – The user can not modify this column directly. Whenever the user selects an item from the list "Function" this column will update automatically.

Insert, Add, and Delete – "Add" will add an event into the list, "Insert" will insert an event into the list, and "Delete" will delete the selected event. Since the list gets sorted by time the functions of Add and Insert perform identically.

Clear All – This will remove all events from the list.

When you click on Add Event you will be shown two choices of Event Type, either a Display or GPI event. A display event is one that effects the video screen display. A GPI event is one that controls an external device by means of the GPI interface. The GPI interface will be discussed below.
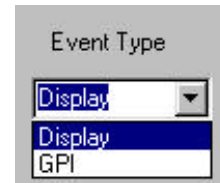
The following events will take place at the time that you place in the events list::

Start Queue – to initiate queue operation
End Queue – to terminate queue operation
Start Auto Queue – to initiate Auto Queue operation
Clear Text – to clear all text from the screen. The default background (blue) is placed on screen.
Key On – to key the CG output into the supplied video input
Key Off – to remove the CG output from the supplied video input.

The following events require you to specify information in addition to the time that the event occurs:

Page – to place a specific page on display for a specific duration. You can display pages 1 to 99 from the memory and the maximum dwell time can be 99 seconds.   If your system has more than 99 pages of memory you must use the queue functions to display pages 100 and above. If you specify a dwell time of 0 then the page will never timeout. Thus if you wanted to display a page for longer than 99 seconds you would use the Page command with a time of 0 and then specify the Clear Text command at the time you want the display to be cleared. The selected item is only displayed if the parameters of START TIME and EXPIRATION TIME are valid.

Crawl – to crawl a specific message for a specific number of times. You can crawl messages1 to 99 from the memory and the maximum repeats can be 99.   If your system has more than 99 pages of memory you must use the crawl queue functions to crawl pages 100 and above. If you specify a repeat time of 0 then the message will only stop crawling with a QUEUE OFF or Clear Text command. The selected item is only displayed if the parameters of START TIME and EXPIRATION TIME are valid.

7.3 Time

There is an accurate real time clock built into the 840AE. You can display various time related parameters on any text page in the system when a queue is running. The way to do this is discussed below in the section Tokens.

Whenever the user sends queue or event list information to the CG, the internal clock in the unit is automatically synchronized with the time in the host PC. Thus the user doesn't have to set the internal clock of the unit explicitly as long as the time setting in the host PC is accurate. However, if that is not the case the user can change time settings in the unit to be more accurate. On the menu bar click on Schedule Time and you will see the following dialog box:

This dialog box allows you to set the time to military or standard format, set the difference in GMT time, set a goal time.

Standard and Military – will display the time hour as standard (11:00 PM) or military (23:00). This setting is only applicable when the user uses time tokens in pages.

Difference from GMT – GMT is Greenwich Mean Time. Difference from GMT is the difference in hours between Greenwich, England and where you are. To see GMT hours you would use the token %t, and to show the GMT date you would use the token %u.

Goal time – The goal time option provides the user with a countdown clock. In order to use a countdown clock on a page, you would need to set the goal time first. See section 11.2 Time Countdowns, below.

When you have set the time parameters you desire, click on OK. These parameters are remembered in your PC and are transmitted to the 840AE when you Send data to the 840AE and have checked the Time box.
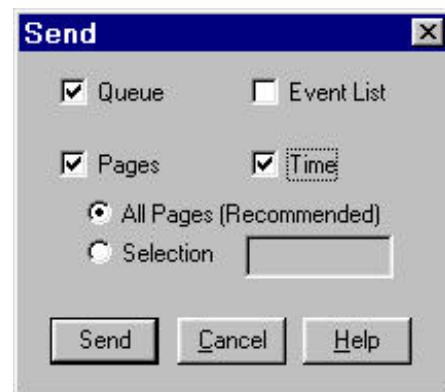
8.0 Control

8.1 Display Control

The next menu item is Control. This menu allows you to control the
connected 840AE in real time. These functions will only be available if
you are connected to an 840AE.

The Display Control selection will show the following buttons:

The functions available are

8.1.1 Key On and Off

- The *Key On and Off* Buttons allow you to
pass external video through the character
generator. To use external video, simply
create a page using the external video color
as a background color, save the page and
place it within the queue, then, when you
run the queue, you will see the external
video. The Key On button allows the
character information to appear overlayed
onto the incoming video, and the Key Off
button shows the external video only**.**

8.1.2 Queue

- select which queue mode you wish to
operate. Once you click on Step the queue
is placed into a manual mode.

8.1.3 Crawl

- set the crawl speed, or abort the crawl

8.1.4 Page

Previous, Next, Force - The *Previous* and
Next buttons allow you to step through the
pages you have created. **NOTE**: This is
different from the Queue Step button
because the pages that you create may or may not be in the queue. The Previous and Next lets
you step though ALL pages you have created, where the Queue Step will only let you see pages
that are in the queue. The *Force* key allows you to force a certain page on the Display screen
that you might want to see.
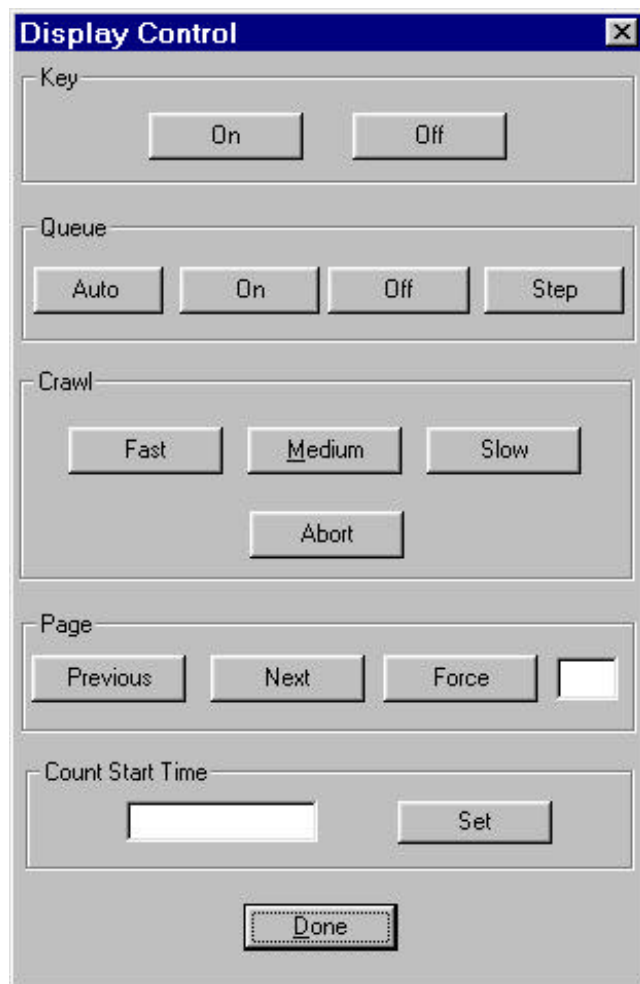
8.1.5 Count Set Time

You set a time in this box in the format of hh:mm:ss. This time can be used by the countdown timer display, see 7.3 Time, and 11.2 Time Countdowns. The time that you set is the number of hours, minutes, and seconds until the count down timer reaches 00:00:00. This is not the same as the goal time discussed in 11.2 Time Countdowns. This number of hours minutes and seconds until termination is sent to the connected CG840AE when you click on the set button. If you currently have a queue running, and a page with any of the tokens %a %b or %c then those tokens will be replaced with the remaining hours minutes and seconds until this time reaches 00:00:00.

When you are finished with real time control functions, click on Done

8.2 Display Mode

This function selects whether characters will be black or colored, and whether or not characters will have black borders.

All characters on a screen will immediately change to the new character style selection.
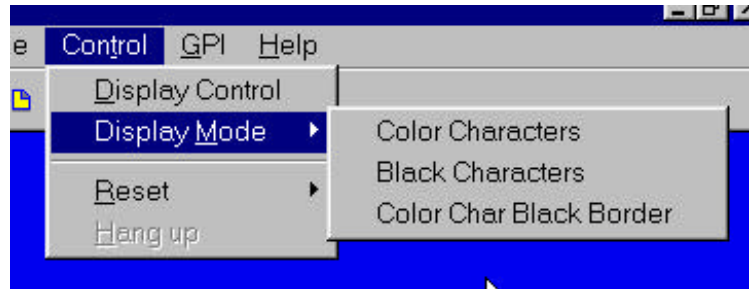
Whichever style is active is active on a system-wide basis. That means not only for the whole current page, but for anything on any page until another style change is made.

Border is not a parameter that is stored with a page. It is a status that is based on the current selection. So when any page is recalled to the screen, its characters immediately take on the currently active border selection. Select the desired style with your mouse. Color characters with a black border is the system default.

8.3 Reset

The Reset menu gives you the following choices:

8.3.1 Soft
– resets the CG without losing memory
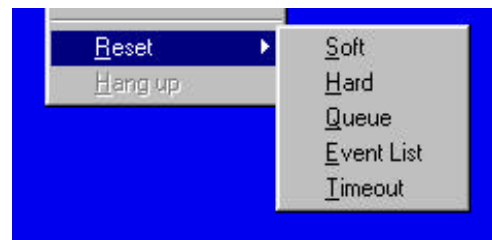
8.3.2 Hard
– resets the CG and wipes out memory.

8.3.3 Queue
 – resets the queues that the character generator has, or is running. Note that the queue settings, which are stored in your local PC will not be affected by this operation. Thus, you can restore the previous queue settings by sending queue information to the unit even if you wiped out queue settings accidentally.

8.3.4 Event List

– resets event list settings in character generator. Similar to the queue, the settings in your PC will not be affected by this operation.

8.3.5 Timeout

- resets the start time and expiration time settings of all the pages. Similar to the queue, the settings in your PC will not be affected by this operation.

8.3.6 Hangup

This menu option will only be available if you selected a modem as your communications device to the remote 840AE. Clicking on Hangup will disconnect the modem.

9.0 GPI (General Purpose Interface)

External devices can be controlled using GPI (General Purpose Interface) commands. The GPI is wired to up to 12 external devices that can respond to these commands. There is a single GPI input which is used to control the queue start/stop function.

9.1 GPI input

There is no menu function associated with the GPI input function.

The CT contact closure on the back of the 840AEcontrols the queue state – on or off. The external controller acts as the agent to open or close the closure, whether it is through a button push or other means.

When the controller issues the command to the 840AE that closes the CT contact closure on the back of the 840AE, the queue is turned on.

When the controller issues the command to the 840AE that opens the CT contact closure on the back of the 840AE, the queue is turned off.

The GPI menu gives you the following choices:
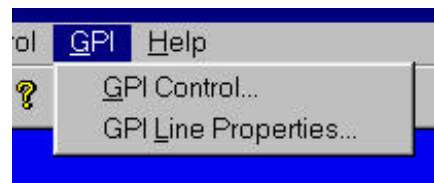
9.2 GPI Control

Selecting GPI Control allows you to set the state of any of the 12 GPI output lines

Port – allows you to control 4 GPI outputs at one time.   The 12 GPI lines are configured as 3 ports of 4 lines each. See discussion below on GPI. Select the port (from 1 – 3) and then set the desired state of the lines. To pull a line high, equivalent to an open contact, the circle must be filled in. To pull a line low, equivalent to a closed contact, leave the circle blank.

Line – allows you to control a single GPI line. Basically, Start to set the line to a low (equivalent to a closed contact) and Stop to stop the line high (equivalent to an open contact). When "Pulse" is selected the pre-selected pulse width will be applied
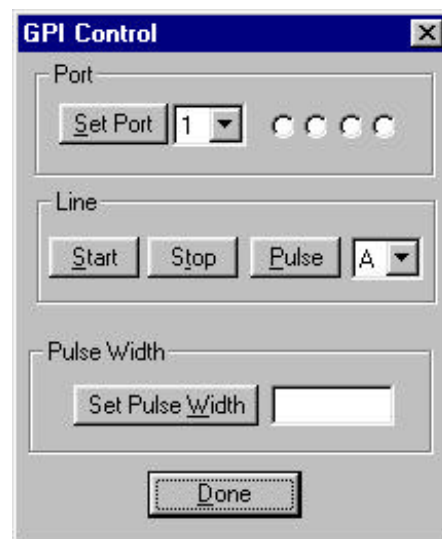
to the selected line A pulse is defined as taking the line to the opposite state that it is currently in for the duration of the pulse width

Pulse Width – allows you to set the pulse width. The pulse width defaults to 16 video field times equivalent to about 260 milliseconds. It may be set to any value from 1 to 254 video field times. Pulse width is remembered by the 840AE even if power is interrupted.

When you are finished with this dialog box, click "Close".

9.3 GPI Line Properties

There are 12 interface control lines available on the System 840AE identified as control lines A thru L. This menu function will allow you to conveniently label each GPI line with it's intended function. Each of these control lines can be set to deliver either a constant level or a pulse.

The following example is meant to illustrate a typical control application for the events controller capabilities of the System 830AE and 840AE character generators.

The example shown controls a Video cassette player (VCR) using three of the control lines. We wish to cause the VCR to start, stop and rewind at specific times of the day. The VCR used is a Panasonic AG1300 series which is interfaced to the 840AE by means of a TEC electronics interface box.   The 840AE supplies 3 pulse lines to the interface box. Each VCR requires it's own interface box.

Before you start you must make the following decisions as to how you will wire up the connections from the System 840AE to the VCR.

First you must choose which three lines you wish to use. For this example we will use the A line for START, B line for STOP and the C line for REWIND.

Before connecting to the System 840AE be sure that the VCR can accept TTL level signals. If you are not sure, or you do not know what TTL level means, contact your dealer or Video Data Systems.

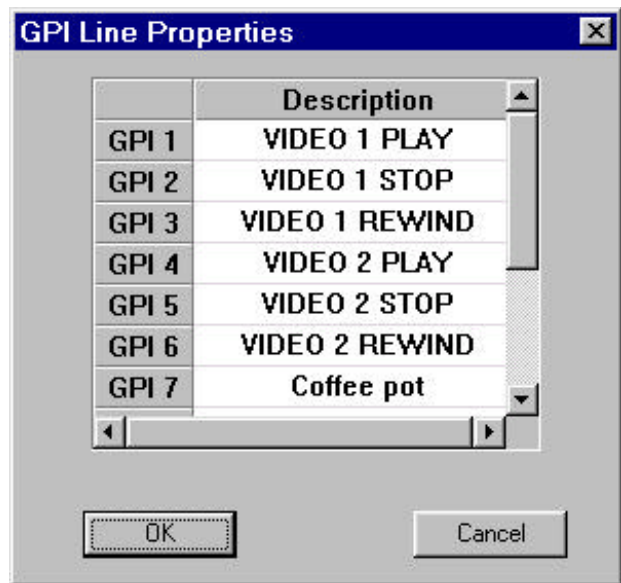You must know the location of the control lines of your VCR.

Typically a VCR requires the pulsing of the control line from a high level to a low level for a period of 500 milliseconds (1/2 second) in order to perform the indicated function.

You will then see a list of all the GPI lines and if you have not changed the factory defaults you will see that the lines are allocated to control 4 tape decks, one line for each function of play, stop and rewind.

GPI Line Properties

	Description
GPI 1	VIDEO1 PLAY
GPI 2	VIDEO1 STOP
GPI 3	VIDEO1 REWIND
GPI 4	VIDEO2 PLAY
GPI 5	VIDEO2 STOP
GPI 6	VIDEO2 REWIND
GPI 7	VIDEO3 PLAY

OK   Cancel

If you wish to change the allocations of the GPI lines, then click your mouse on the Description column of the line you wish to change and edit the text in the box. When you are finished editing the text press the ENTER key on your keyboard and the text will be changed in the systems files. This text will then appear on the events list when you schedule a GPI function. For example:

GPI Line Properties

	Description
GPI 1	VIDEO 1 PLAY
GPI 2	VIDEO 1 STOP
GPI 3	VIDEO 1 REWIND
GPI 4	VIDEO 2 PLAY
GPI 5	VIDEO 2 STOP
GPI 6	VIDEO 2 REWIND
GPI 7	Coffee pot

OK   Cancel

The first thing you must do is establish that the control lines are initialized to their off state. In the case where the line must pulse from HIGH to LOW then the OFF state is HIGH.

The system reset condition is for all control lines to be placed in the HIGH state. Power on restores the lines to their state before power was removed.

Once you have established which control lines are going to be used to control the VCR you can then begin to lay out your real time events list.

9.4 Sample GPI application

For purposes of discussion let us assume that you wish to start your VCR every day at 9:00 am, and 1:pm. The tape that you are playing has a duration of 30 minutes and you have a switcher that is used to switch the tape video output onto your output channel. The switcher and VCR require a pulse to perform each control function. The rewind time for the tape is known to be always less than 1 minute.

Your events list would look like:
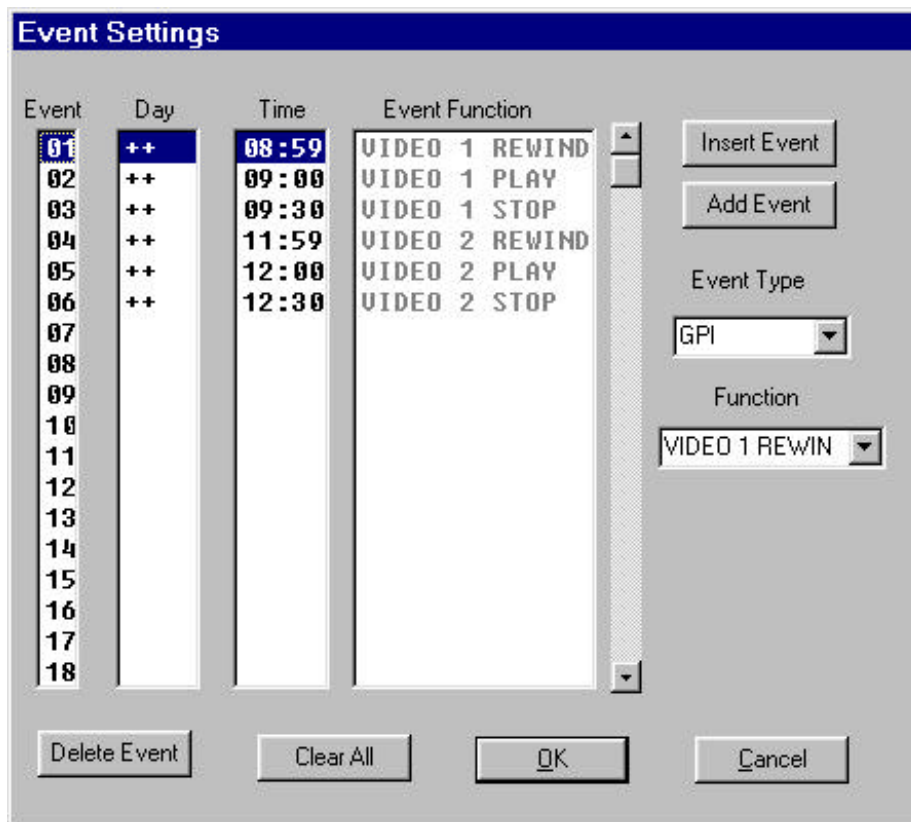
Lines 1 and 4 show that we are pulsing the rewind line one minute before we want the tape to play.

Lines 2 and 5 show that we tell the player to start on time
Lines 3 and 6 show that we stop the tape deck.

When editing your events list you click on the ADD Event button to create a new event. The newly created event will be placed at the bottom of the list and will be given the default function of Start Queue at any day, every hour on the hour. You must then edit this event to the function that you desire. Click on the Day entry for this event and you will see a list of days of the week or the ++ 'wild card' that indicates every day. After selecting the day, then click on Time and enter the hour and minute in the format of hh:mm. You must type the colon to separate hours and minutes. Hours are always expressed in 24 hour clock, 00 represents midnight, and 99 is the 'wild card' to designate every hour. You can then select the specific function that you want performed at that time. You can enter items in the list in random time order. The next time that you enter the list all items will be displayed time sorted by day of week, hour, and minute.

The GPI output signals are pre-arranged into groups of 3 in order to create the START, STOP and REWIND control pulses for the tape deck controllers. The Panasonic AG1300 tape deck accepts a video input signal which will appear at it's video output when the tape is not playing. As soon as the tape plays then the video contents of the tape appear on the video output. Thus, you can connect one or more tape decks in series and have the desired video on the final output line when a tape is playing. Obviously, you only want to play one tape at a time. The following diagram depicts 3 tape players connected to a single CG840AE GPI.
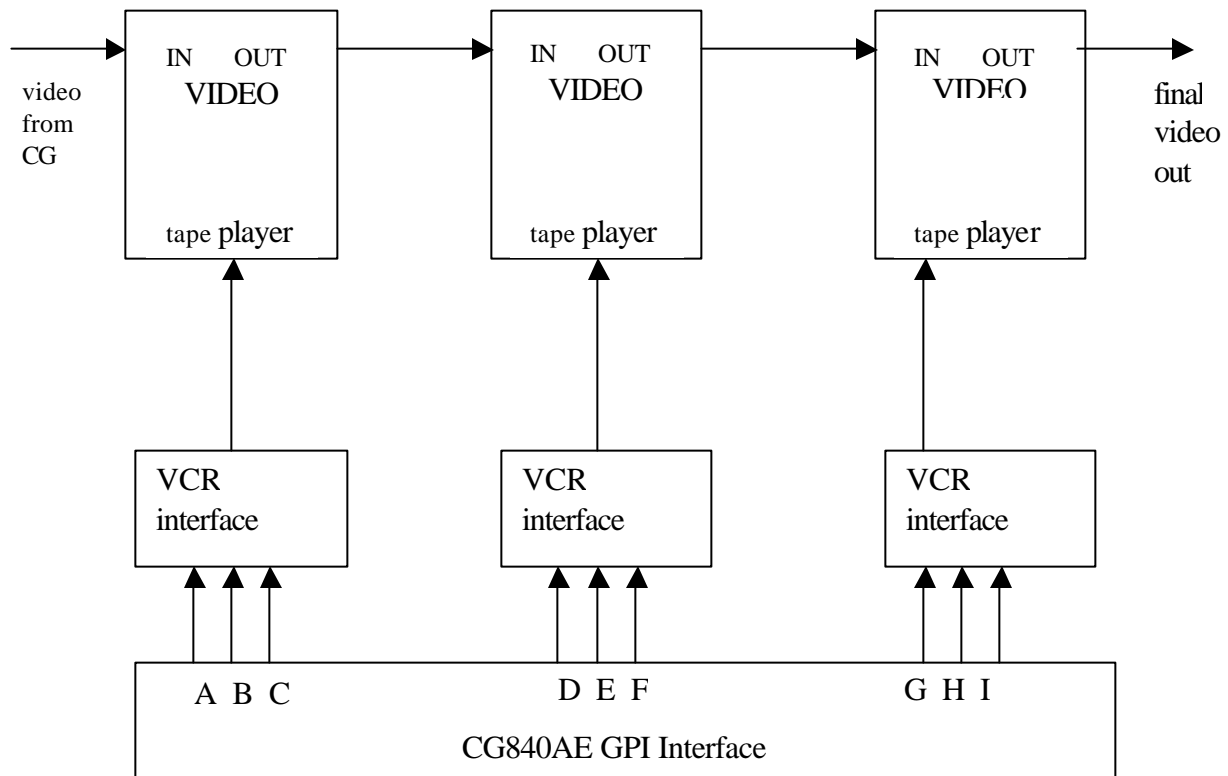
10.0 Help

This menu gives you access to the on line help manual as well as information about certain editor functions:
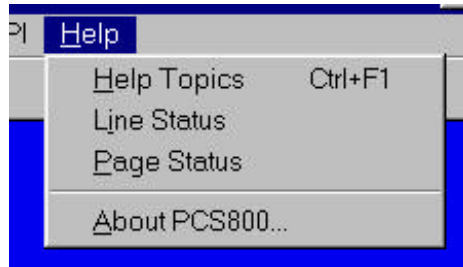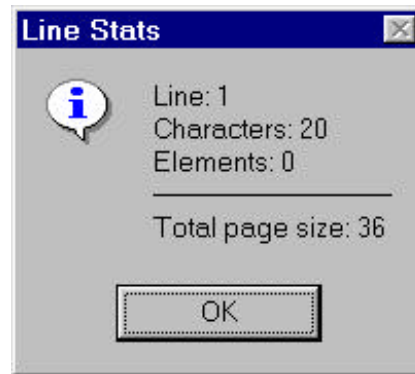
10.1 Help Topics

Access to the on-line help system in the program is given through this selection. Help is essentially this manual available on the system itself.

10.2 Line Status

Clicking on this item will show you the editor status, where the cursor is positioned and how much data is on the current page.

10.3 Page Status

This window gives you a complete list of all pages that are available for your system, and how many characters are stored on each page. You also see a running total of the memory used by your pages. This is useful to determine if a page is currently being used.
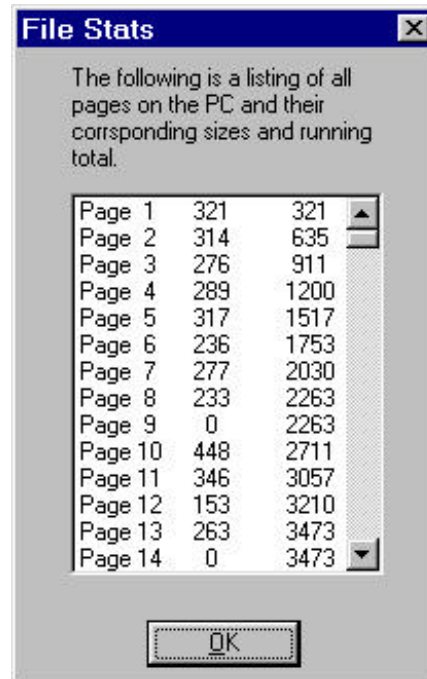
10.4 About PCS800

This window gives the loaded program's software version, our company name and the software's copyright date.

11.0 TOKENS INTERPRETED WHEN RUNNING QUEUE

The series 800 Character Generators are able to display variable information from internal or external sources. Date, time and/or weather instrument information are some examples.

This information will appear at any location in a page or crawl where a symbol or "token" is placed that corresponds to the appropriate type of display information

A token consists of the character % followed by a character. When the queue is running and a token is encountered on a page, the token is replaced by the desired parameter. For example, if the %h token is on a page, then the characters %h are replace by the current hour as read from the real time clock. When editing the page you will always see the %h. Case is relevant when using tokens.

That means that *whenever the page is on screen for composition or editing, the time and date, or any other tokenized parameter, will not appear -- just the tokens will appear.*

When the queue containing the message with time and date specified is run, the time and date, and any other tokenized parameter, will be displayed.

11.1 Displaying Time And Date

The current time and date can be displayed anywhere on screen as part of a message page.

Creating the desired time and date information is a simple matter of using the needed combination of tokens. The tokens and what they display are:

%x	Two-Digit Year (e.g.. 98)
%y	Full Year (e.g.. 1998)
%l	Month Name Abbreviated
%d	Date of Month
%w	Day of Week Abbreviated
%h	Hour of Day
%t	GMT Hours
%m	Minutes
%s	Seconds

For example: If you would like to display the time of day on your video screen you would type the "%H:%M" token string on any or all pages you want the time to appear. The time will appear in the **EXACT LOCATION** the token string is located and of course, will only appear if the tokened pages are in the display queue. Notice we added the colon between the %H - hour token and the %M - minute token as to make sense of time display.

Notice that spacing and additional characters are important. Space between token elements the same way as spacing is desired between the displayed elements. And insert commas and colons where they should appear in the display.

When using the GMT time setting for hours, the difference between local time and GMT can be set with the Schedule Time menu.

11.2 Time Countdowns

The goal of a time-of-day countdown is the time that is being counted to. The difference between that time and the current time of day is the countdown value at any given time during the countdown. When the goal is reached, the display will reach 00:00:00.

You specify the countdown goal in the Schedule Time menu. The goal must be specified in 24-hour clock time, hours, minutes and seconds.

The countdown display on screen can include the difference between the goal time and the time of day in hours, minutes and seconds, or any combination of those elements.

To display the desired countdown elements on screen, the following tokens are   used:

> %a   Difference between goal time and current time in hours

> %b   Difference between goal time and current time in minutes

> %c   Difference between goal time and current time in seconds

You can specify the goal time on the page, use the token

> %ghh:mm:ss

in that exact format.

The %ghh:mm:ss token can be used to specify different goal times on different pages, so that the %a, %b, %c tokens appearing on those pages will display different countdowns.

Note that the tokens %a %b and %c are also used to display the remaining time set by the count down timer, see 8.1.5 Count Set Time above. You may only use one of these functions at a time.

11.3 Special characters

The token %/ will display the @ symbol only when a queue is running. There is no other way to display the @ symbol on your CG840AE.

11.4 Controlling GPI

In addition to controlling the GPI through the schedule of events and through the GPI Control menu, you can set each GPI line, or port (group of 4 lines), to be dependent on the page currently on display. To do this you would insert tokens into the page. When that page is displayed by a running queue the tokens will be interpreted and the corresponding GPI action will take place.

The following are the relevant tokens:

%(?   brings line ? to TTL ground, equivalent to a START
%)?   brings line ? to TTL high, equivalent to a STOP
%*?   pulses line ? to opposite state for previously set pulse width time

%1h   Sets port 1 to hex value h
%2h   Sets port 2 to hex value h
%3h   Sets port 3 to hex value h

11.5 Controlling keyer

You can determine the state of the key in the 840AE with tokens on a page. In this way you can select a time period within a running queue in which you do not wish to key characters over your incoming video. You would use the following tokens:

%:   turn on program key
%k   turn off program key

12.0 Weather Package Operation

A System 840 unit with The Weather Package installed displays various selected current weather conditions on screen as part of a message page. This is a common feature of billboards displayed on cable television channels that broadcast time, date and weather information on a regular basis. The weather information is relayed to the System 840 from a weather sensing unit.

Like the System 840 functions that are used to display time and date information through the use of tokens when composing the message pages, weather information is also accessed through the use of tokens.

When a message including weather information is composed, the place on the page where the weather information is wanted is indicated by the placement of tokens -- special characters that tell the system where to generate the desired information when the page is displayed as part of a queue.

That means that *whenever the page is on screen for composition or editing, the weather information will not appear -- just the tokens will appear.*

When the queue containing the message with the weather information specified is run, the weather information will be displayed where indicated by the token placement.

12.1 Weather tokens

Specifying the desired weather information is a simple matter of using the needed tokens. The tokens and what they display are:

%4	Temperature (in Fahrenheit)
%5	Wind Chill (in Fahrenheit)
%6	Maximum Temperature for Current Day
%7	Minimum Temperature for Current Day
%8	Heating Degree Days Accumulated to Date
%9	Cooling Degree Days Accumulated to Date
%i	Rainfall for Current Day
%j	Rainfall Accumulated to Date
%n	Barometric Pressure (in Inches of Mercury)
%o	Relative Humidity
%p	Wind Direction
%q	Wind Speed (in MPH)

All parameters relating to a current day, such as maximum and minimum temperature, and rainfall, are automatically reset each midnight.

All parameters accumulated to date, such as heating degree days, cooling degree days and rainfall, will continue to accumulate until reset at the weather sensor unit according to the manufacturer's instructions.

The various wind direction possibilities are displayed as:

N	S	E	W
NE	SE	ESE	WSW
NNE	SSE	ENE	WNW
NW	SW		
NNW	SSW		

An example of tokens for a message displaying temperature, wind chill, and wind direction and speed would be:

Temperature:	%4 F
Wind Chill:	%5 F
Wind:	%p %q MPH

Putting on screen:

Temperature:	22 F
Wind Chill:	11 F
Wind:	NE 15 MPH

Notice that spacing and additional characters are important. Space between token elements the same way as spacing is desired between the displayed elements. And if commas and colons are used, they should appear in the display as they should appear on the message page with the parameters.

12.2 The Weather Sensor

All the various weather parameters that can be displayed are generated by the Weatherwise WI-1000 Weatherstation by VDS. The actual weather sensor is manufactured by Rainwise.

Operation and installation information for the sensor is provided by Rainwise with its unit. Correct installation is the responsibility of the user. Note that proper mounting and grounding of the unit is very important. All warranties for the weather sensor are the responsibility of Rainwise.

The sensor's information is also displayed on a Rainwise display panel through the use of a selector switch. In addition to the weather parameters, it also displays the time of day. This time of day setting is for the Rainwise system only and does not affect the System 800 at all.

The sensor's weather information is sent to the System 840 through a serial data cable connected from the rear of the Rainwise panel to the System 840 serial input.

When a queue is initiated that includes weather information, the weather sensor information is read and retained in the System 840's memory. As the queue continues, the weather sensor

information is reread each minute and the System 840 memory is updated with the new information.

12.3 Weather data cable

The data cable on the weather display panel is wired as follows:

```
System          Weather display
DB9P                  DB9S
2-----from weather---2
3-----to weather-----3
5-----ground---------8
          RTS--------4   jumper
          CTS--------5    4 to 5
          DTR--------6   jumper
          DSR--------9   6 to 9
```
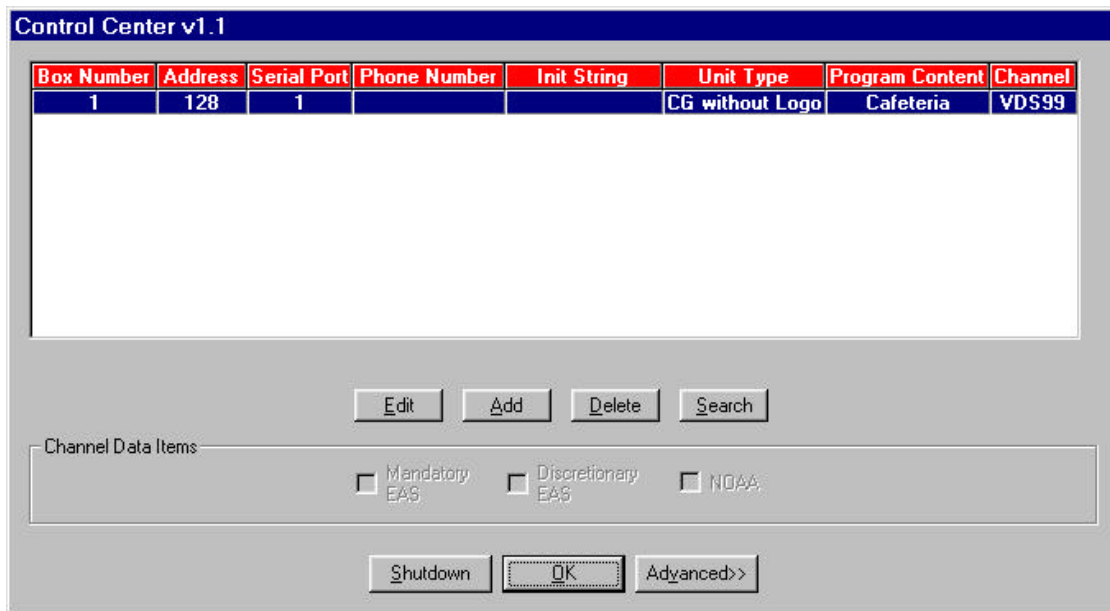
Weather data interface

Serial data for the weather system is connected to the SERIAL 2 port connector.

13.0 Connecting Additional Units

As discussed above we had a single 840AE unit connected to the PC running this software. In order to manage additional units you can set up unique directories to manage the pages and details for each additional unit. Additional units that are hard wired can each be connected to a different serial port on your computer or they can share a communications bus from a single serial port using a 4 wire RS485 type communication. Please contact the factory for information on setting up multiple units on a single PC serial port. Multiple units can be connected to a single modem port with each unit having a unique access telephone number.

To add units, if you currently have a unit selected you must deselect it first. Then go to the File menu and click on Channel Selector, then click on Create and you will see the following table:

To add a new channel, click your mouse on Add and you will see the following dialog box:


If you are adding additional hard wired units then you must always fill in Box Number with 1, Address with 128. The unit Type is always CG. The Connection is always Serial. You must specify a *unique* serial port for each hard wire connected unit. The Identification Information is for reference only. The Program Content field is limited to 12 characters and cannot contain spaces. The Channel field is limited to 5 characters and cannot contain spaces.

If you are adding units to a 4 wire RS485 connection, then the Box Number field is still filled in with 1, however the Address field must be filled in with the numerical address supplied by the factory for each box. The Serial Port field for all Addresses connected must of course be the same. Other fields are filled in as above.

When connecting units over a modem, the Box Number is still filled in with 1, the Address with 128, the Serial Port with the port number of the modem and you check the Modem button. Then you will be allowed to enter a telephone number for the remote answer device. This number must be entered exactly as required to dial the phone e.g. include any outside line access code, long distance access and area code if necessary. There can be no spaces in this field. This program will automatically search your Windows registry for the correct initialization string for your modem, and whenever you attempt a modem connection that string will be used. If your modem requires an initialization string, then you enter it in the Init String box. The init string is limited to 32 characters including spaces.

You can have more than one channel using the same modem port, however, each connection must have a unique phone number.

When you are finished creating your new connection then click on OK.
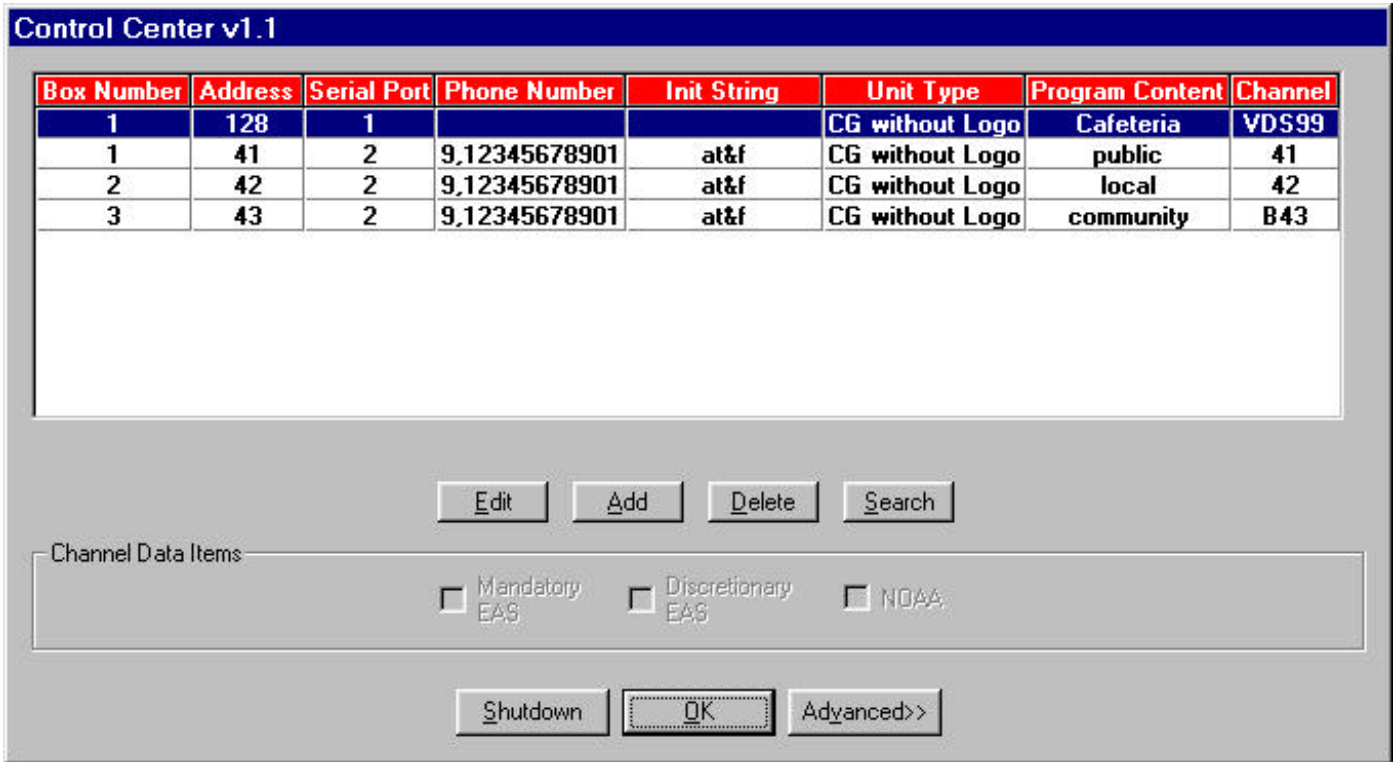Your new channel selection box will then look like:
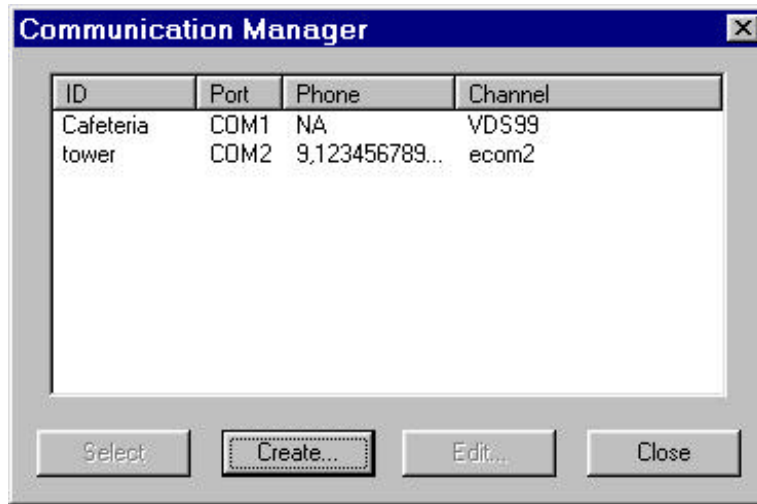
The first time that you attempt to make the newly created channel active you will be prompted to connect to the unit so that the software can ascertain the capabilities of the channel. Note that this first connection is mandatory for proper functioning of the system. You will NOT be able to create pages for the channel until you have established at least one connection.

Creating multiple remote channels on a single modem

You can connect many CG840AE character generators to a single communications link even if they are remotely connected by a modem. To do this, you must have all channels configured as 4 wire RS485. Each CG840AE must have a unique address. When properly addressed by the communications software, only one unit will be electrically connected to your PCS software.

To do this you would create channels as above, except that each channel at the same remote modem will have the identical phone number but a different channel number:

Box Number	Address	Serial Port	Phone Number	Init String	Unit Type	Program Content	Channel
1	128	1			CG without Logo	Cafeteria	VDS99
1	41	2	9,12345678901	at&f	CG without Logo	public	41
2	42	2	9,12345678901	at&f	CG without Logo	local	42
3	43	2	9,12345678901	at&f	CG without Logo	community	B43

Control Center v1.1

Edit   Add   Delete   Search

Channel Data Items

☐ Mandatory EAS   ☐ Discretionary EAS   ☐ NOAA

Shutdown   OK   Advanced>>

When you wish to select one of these channels to connect to, you would use the Channel Select menu as before. If the channel that you select is connected to the same telephone dial out number, then when you Connect the PCS software will issue the proper commands to tell the desired channel to receive data. The channel you were previously connected to will no longer respond to data transmissions. Note that in order to actually hang up the phone line you must either select a channel connected to another communications port on your PC or click on the Hangup selection in the Control menu.

14.0 SERIAL CABLE CONNECTIONS

There are two serial input configurations. RS232 is the standard configuration, available on the connector SERIAL-1 and SERIAL-2. Optionally an RS485 multidrop, 4 wire interface can be provided on the connector SERIAL-1. Both RS232 and RS485 are NOT available at the same time. The desired setup must be specified at the time of order.

14.1 For RS232 connections:

To connect a unit supplied with a serial port connector to a PC with a 9 pin serial port connector use the following cable:

```
    DB9P (cg)          DB9S (pc)
    2 - - - - - - - - - - -3 (TXD from PC)
    3 - - - - - - - - - - - 2  (RXD to PC)
    5 - - - - - - - - - - - 5  (GND)
                 +-- 7  (CTS to PC)
                 +-- 8  (RTS from PC)
                 +-- 6  (DSR)
                 +-- 1  (DCD)
                 +-- 4  (DTR)
```

To connect to a PC with a 25 pin serial port connector use the following cable:

```
    DB9P  (cg)          DB25S (pc)
    2 - - - - - - - - - - -2  (TXD from PC)
    3 - - - - - - - - - - - 3  (RXD to PC)
    5 - - - - - - - - - - - 7  (GND)
                 +-- 5    (CTS to PC)
                 +-- 4    (RTS from PC)
                 +-- 6    (DSR)
                 +-- 8    (DCD)
                 +--20    (DTR)
```

14.2 For RS485/RS422 connections

The pins supported on the RS485 DB9S (both SERIAL-1 and SERIAL-2) connector are:

> 6 = TXD HI (transmit data from System 800)
> 7 = TXD LO
> 8 = RXD HI (receive data to System 800)
> 9 = RXD LO
> 5 = Ground
> all other pins *MUST* be left unconnected.

RS485 port connector pinouts

The transmit pair (pins 6 and 7) should be terminated in a 120 ohm resistor at the farthest receive location from the host device. The hosts receive pair should be terminated at the host with a 120 ohm resistor. Cabling should be with twisted pairs. The maximum number of units that can be connected is 30. If you are using an RS422/485 com port on your computer, then follow the manufacturers instructions for how to connect the transmit and receive pairs. Since most modems are RS232 you must use an RS232 to RS485/RS422 adapter in order to connect multiple units. Follow the manufacturers instructions for how to connect the transmit and receive pairs.