

*Video Data Systems'*

***REMOTE ACCESS SOFTWARE  
for STAR-8***

***USER'S GUIDE***

*Installation*

*Computer Operation*



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Video Data Systems™  
40 Oser Avenue  
Hauppauge, NY 11788

(631) 231-4400  
Fax (631) 231-4405  
[www.videodatasystems.com](http://www.videodatasystems.com)

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## INTRODUCTION TO STAR-8

The STAR-8 is a low cost analog character generation system. It is capable of displaying a static page of information, or a single crawling line. The page message is limited to 11 rows of 28 characters each. After a power failure the unit will resume displaying whatever was last on display. Memory is battery backed up.

The purpose of the STAR-8 Editor software is to allow users to edit a text message for display on a connected STAR-8 character generator System. This software is part of the PCS800 editor package used on the 8xx family of Video Data Systems' products. Throughout this manual you may see references to PCS800 and STAR-8 software. All of these references refer to the same software.

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.

The software can be used to interface to one or more remote STAR-8 series character generators.

The STAR-8 character generators are downstream linear keyers that insert a text message into incoming video as either a crawl or fixed page. The software installs on an IBM compatible PC and allows the user to create pages and crawl messages, manage the STAR-8 series dynamic functions and completely control the remote character generator.

### System Requirements and Connections

System wiring is simple. The single rack-mountable STAR-8 unit takes an incoming video signal and sends it out with keyed text to any destination for each of its 8 channels.

There is an optional stereo audio interface card that can be installed which will switch between normal channel audio and SAGE ENDEC supplied emergency alert audio signals.

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 the software 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 STAR-8 right away.

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

## 1.0 INSTALLATION AND CONNECTION

The STAR-8 connects up to 8 video/stereo audio channels to a Sage ENDEC emergency alert system. Upon commands from the ENDEC the STAR-8 will insert EAS emergency messages as a crawl overlay keyed into the incoming video signal. When the ENDEC provides a contact closure to the STAR-8 the audio supplied from the ENDEC is connected to all channel's audio output

For rack mounting there must be a 1 rack unit space available in the equipment rack.

The STAR-8 is powered from a 115v AC outlet.

### 1.1 VIDEO CONNECTIONS

All video connections are made using BNC connectors. There are 16 BNC connectors on the rear panel of the STAR-8. Each connector is labeled as Video IN and Video OUT for a specific channel. Note that in the absence of power, the internal relays are not energized and a connection is provided between the Video IN and Video OUT for each channel. When the relay is energized the input video is terminated in 75 ohms. The output video signal back porch is clamped to zero and is source terminated and capable of driving a single 75 ohm terminated cable.

### 1.2 CONTROL CONNECTIONS

There is a single 4 terminal connector block for connecting the contact closure from the Sage ENDEC to the STAR-8. The STAR-8 provides a set of buffered contacts which follow the input contact closure. In this way additional STAR-8 units can be connected in series so that the contact closure of the Sage ENDEC is not overloaded.

The contact closure is applied to the 4 pin connector labeled:

Label	Function
CONTACT-G	from ENDEC or previous STAR-8
CONTACT-CT	from ENDEC or previous STAR-8
CONTACT-C0	to next STAR-8
CONTACT-C1	to next STAR-8

You connect the first STAR-8 to the pair of wires on the ENDEC labeled "Decoder Active" You connect the G and CT control input terminals of the second STAR-8 unit to the C0/C1 terminals of the first star 8 , etc. It does not matter which ENDEC wire is connected to the G or CT terminals, nor does it matter which wire of the C0/C1 pair connects to the second IN-G or IN-CT terminal.

### 1.3 DATA INPUT

The data source for the STAR-8 comes from the Sage ENDEC. A serial data cable is provided which will connect the port labeled SERIAL 2 to the port configured on the ENDEC as data output, typically COM2.

Signal for STAR-8	ENDEC pin (DB9S)	STAR-8 pin (DB9S)
RxD data input	3	2
TxD data output	2	3
Ground	5	5

See below for information on connecting multiple STAR-8 units.

#### 1.4 AUDIO CONNECTIONS

All audio connections are made by means of screw terminals on the rear of the STAR-8. There is a single 5 terminal connector block for connecting a source of (balanced) stereo audio to the STAR-8. Audio input is applied to a high input impedance (>20k ohms) distribution amplifier so that each of the 8 output channels is driven independently. There are four 18 terminal connector blocks for connecting the balanced stereo audio input and output leads for each of the 8 channels.

Audio connections are made from the ENDEC "Speaker Line Out" and "Audio Common" terminals (which is unbalanced) to the STAR-8 audio input for the left channel. Currently the right channel is unused for EAS. You should use shielded twisted pair wire for all audio connections. In all cases the shield wire goes to a ground terminal. Make sure you note the polarity of the balanced signal. When connecting an unbalanced input, such as from the ENDEC, to the STAR-8 always connect the audio signal lead to the STAR-8 + (plus) input terminal and ground the - (minus) input terminal. When connecting a balanced output of the STAR-8 to an unbalanced load do NOT connect the - (minus) output, use the +(plus) output and ground. Each output amplifier is capable of driving a single 600 ohm balanced load.

You should supply a 600 ohm (standard value is 620 ohms) resistor to terminate the audio input line to the STAR-8. Terminations should be supplied as needed from the STAR-8 outputs to your final audio output.

Connections for the audio channels:

Channels 1,3,5,7		
Signal	IN	OUT
L+	13	11
L-	12	10
R+	18	16
R-	17	15
GND	14	

Channels 2,4,6,8		
Signal	IN	OUT
L+	4	2
L-	3	1
R+	9	7
R-	8	6
GND	5	

## 2.0 COMPUTER OPERATION OF STAR-8

The STAR-8 is operated remotely via a user-supplied computer, or a Video Data Systems Communications Processor, running Video Data Systems' STAR-8 editor software. The computer communicates either directly to the STAR-8 through a supplied serial cable interface (as described in the Installation procedure) or by an external (optional) modem.

**Before computer operation of the STAR-8 is possible, the program must be installed and run.  
Then communication between the computer and the STAR-8 can be established.**

### 2.1 Installing the STAR-8 Software

The STAR-8 software must be installed on the user-supplied computer that will be used to operate the STAR-8 remotely. It is pre-installed on a Video Data Systems Communications Processor. Note that the STAR-8 software is sometimes referred to as PCS800 software. This is not an error. Video Data Systems uses the same software to communicate with both devices. When you first connect to your character generator, the software determines what type of unit is being connected and supplies the proper functionality.

If you have a previous version of the software on your computer then you must first uninstall the old software before installing the later version. To uninstall existing software (Windows 95/98):

1. Click on the Start button on the windows task bar.
2. Click on Settings
3. Click on Control Panel
4. Click on Add/Remove Programs
5. Scroll the list of programs and find the original copy of PCS 800
6. Click on PCS 800
7. Click on Add/Remove and then click on YES to remove the old program.

The current version of the software is supplied on three floppy disks or a CD rom.

1. Place disk 1 in the computer floppy drive, or the CD in your CD rom drive.
2. Click on the Windows Start menu.

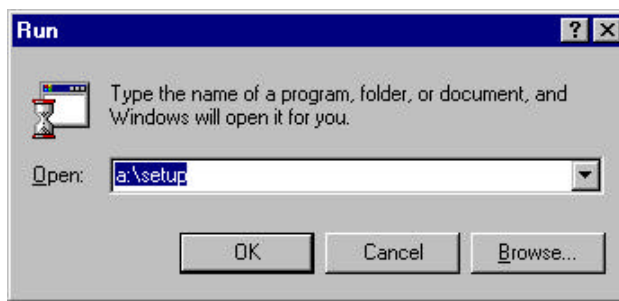
The Start menu window comes up with all its choices.

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 Yes or press Enter to accept the Software License Agreement.

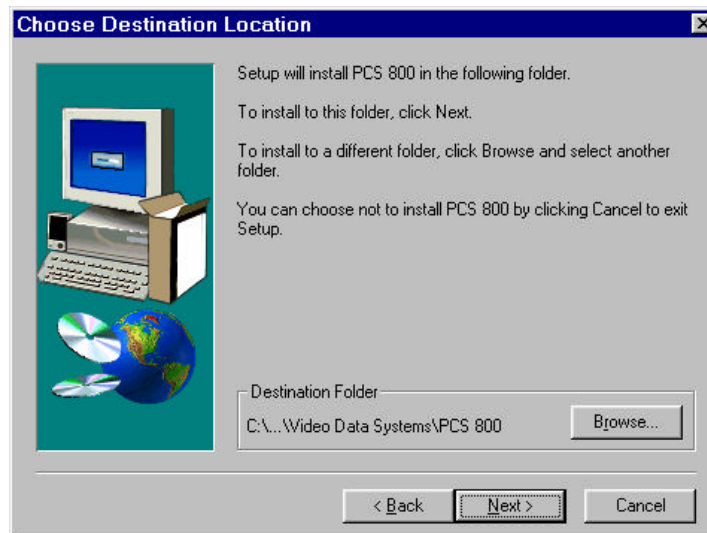
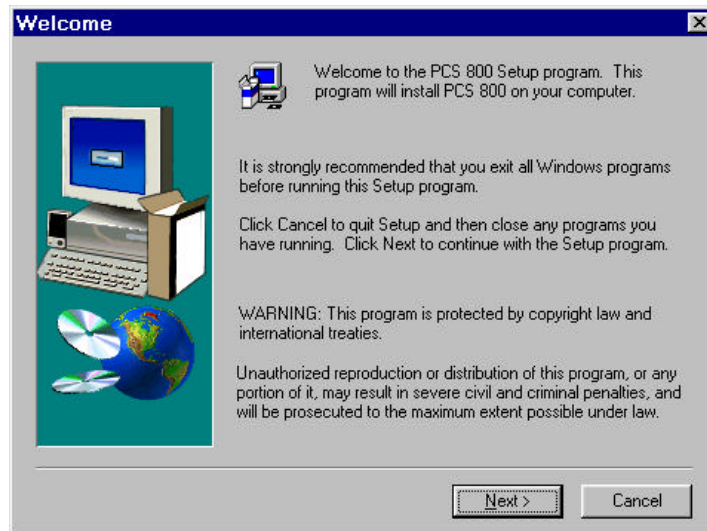
The Choose Destination Location window comes up.

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 **Browse...** 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 Yes to get back to the Choose Destination Location window.



10. Click Next 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 its 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 PCS800 icon that runs the program on the Windows desktop.

## 2.2 Running The Program

The 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, you must insert the accompanying hardware key in your PC or Communications Processor printer port. If the hardware key is in place, and it is not recognized by the software then make sure you plugged it into the printer port, not the Comm port. The Comm port has holes. The printer port has pins.

If the editor does not start properly and you are running under Windows NT or Windows 2000 then you might need a special driver for the hardware key. This driver is supplied on the installation disk or CD in a compressed format. To extract the driver, place your installation disk or CD in the appropriate drive, click on Start, then Run and then Browse. Look for the program *sysdrv.exe* and click on it. Then click on OK in the RUN box. This will extract the files necessary to install the driver. After you have successfully extracted the files, then run *setup.exe* from the destination directory you specified for the extraction process. You will only have to do this procedure once.

If the problem persists, please contact technical support at (631) 231-4400 or via e-mail to [tech@videodatasystems.com](mailto:tech@videodatasystems.com).

### 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 Mouse      Clicking with the left mouse button on any menu bar item selects the drop-down 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 menu bar      Some functions are also selectable with keystrokes on the keyboard. Every Keyboard 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.

*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 STAR-8 unit 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

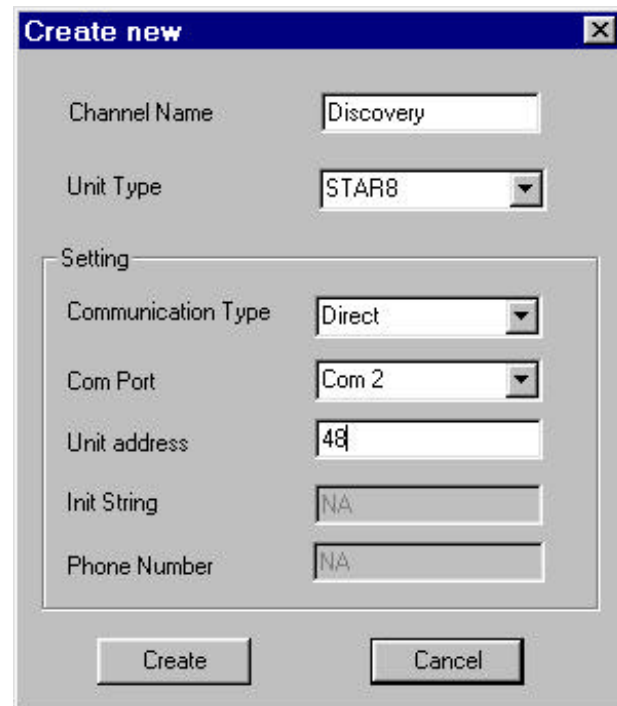


dialog box. You must set up the parameters for the serial port connection to the remote STAR-8 character generator.

Click on Create and you will see the following:

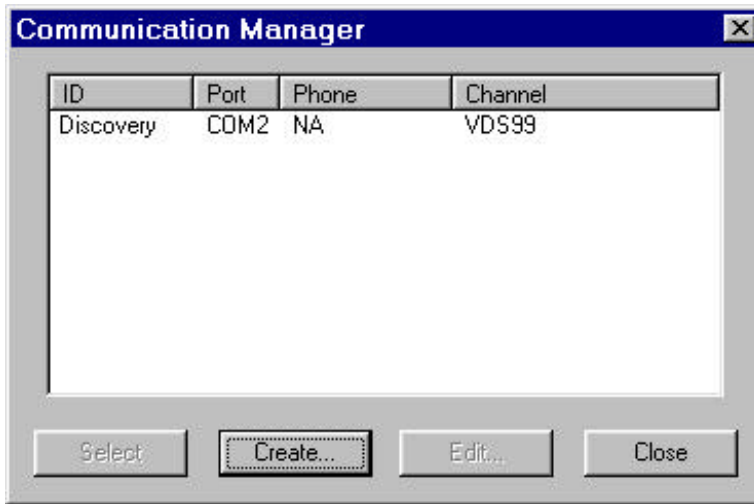
In the Channel Name box you can enter any one word (no spaces allowed) text name that will be more convenient for you to know which character generator this connection designates, for example: "Discovery"

The Unit Type should be selected from the list as STAR-8. If you are connected via a cable from your PC to the STAR-8 then the Communication Type is Direct. You then select the Com Port from the supplied list that your STAR-8 data cable is connected to. You must then enter the base address of the 8 channels in the STAR-8 into the Unit address box. You will be given this information when your system is shipped. If you have more than one chassis connected to the Com Port, then you need to identify the base channel address for the chassis you are setting up. 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

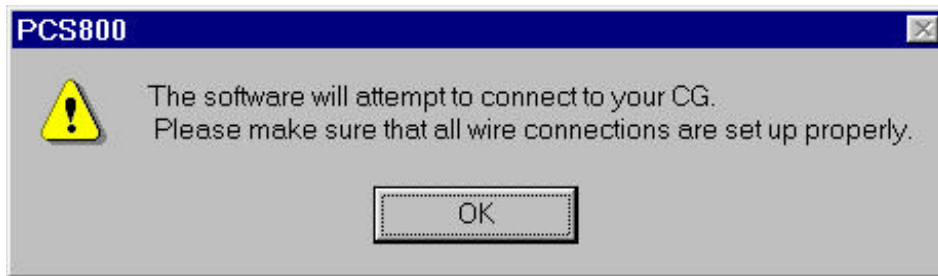


box shown. Then enter the phone number, including any access and area codes in the Phone Number box. When all parameters have been entered, click the Create button.

The channel selection box will now show:



The first time that you attempt to connect to the unit you open the channel selector and click on the ID of the channel you want to connect to. You will then see the message:



You will see a message informing you that the program is trying to verify that the communications channel you just set up is really there.



If you haven't connected all your wires and turned on your STAR-8, 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



You must have the connection made so that the software can obtain certain parameters from the character generator that it requires for proper operation.

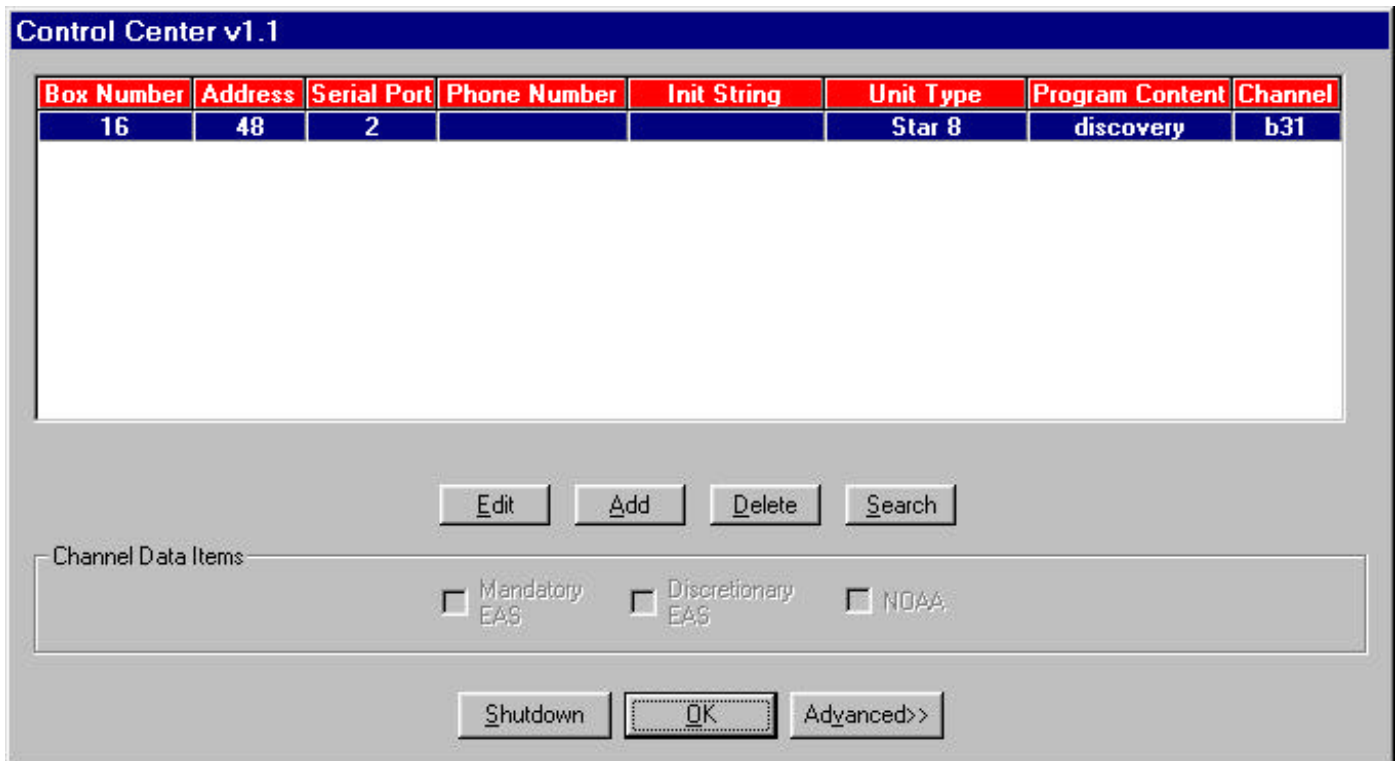
If you did not have the unit connected at this time, then the first time you make a connection the software must get information about the connected channel, you will see the following message:



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.

Since there are 8 independent video channels in each STAR-8 unit you must now set up 7 more channels. The set up procedure for additional channels is slightly different from the procedure for the first channel. From the file menu you click on Channel Select, and then click on the Create button. You will see the following:



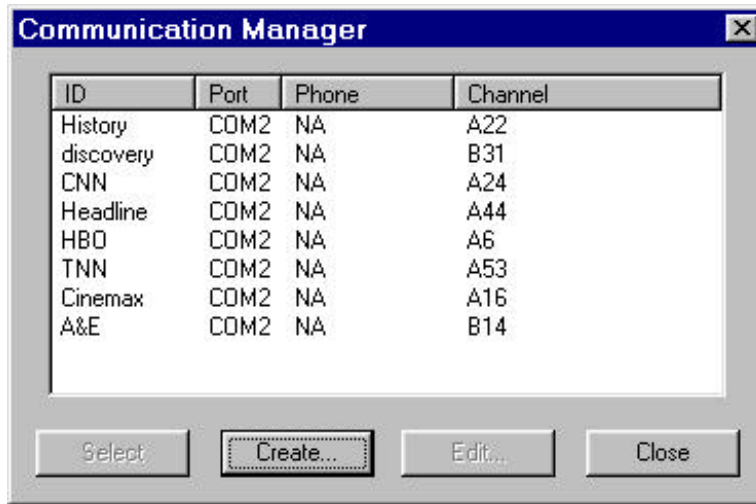
Next, click on the Add button for each of the 7 additional seven channels you are adding.

The example is filled in for the second channel based on the first channel having an address of 48. You would fill in the remaining additional channels with addresses 50, 51, 52, 53, 54 and 55. All channels must have the same box number.

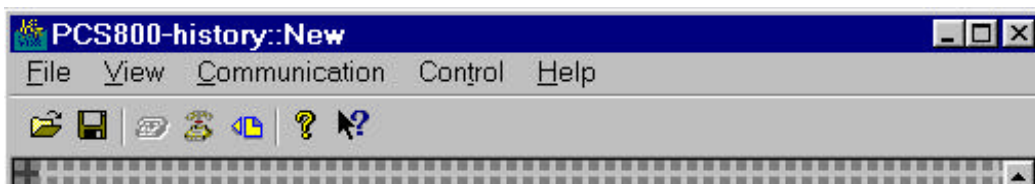
When you are finished you will see the following in the 'Control Center' channel listing. Now you can click on OK and the next time you do a channel selection you will see the following. To connect more than one STAR-8 unit to your computer see section 9.0 Connecting Additional Units

Box Number	Address	Serial Port	Phone Number	Init String	Unit Type	Program Content	Channel
16	48	2			Star 8	discovery	B31
16	49	2			Star 8	History	A22
16	50	2			Star 8	CNN	A24
16	51	2			Star 8	Headline	A44
16	52	2			Star 8	HBO	A6
16	53	2			Star 8	TNN	A53
16	54	2			Star 8	Cinemax	A16
16	55	2			Star 8	A&E	B14

You may now select a specific channel to communicate with by clicking on the ID column, and then click the Select button.



After you have selected a channel to communicate with, the original Menu bar at the top of the display will be replaced by the following:

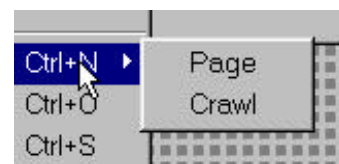


This new menu bar enables you to get to all control and editing functions. Notice that the name of the channel you are editing appears on the top of the menu bar.

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

**3.2 New**

This function 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.



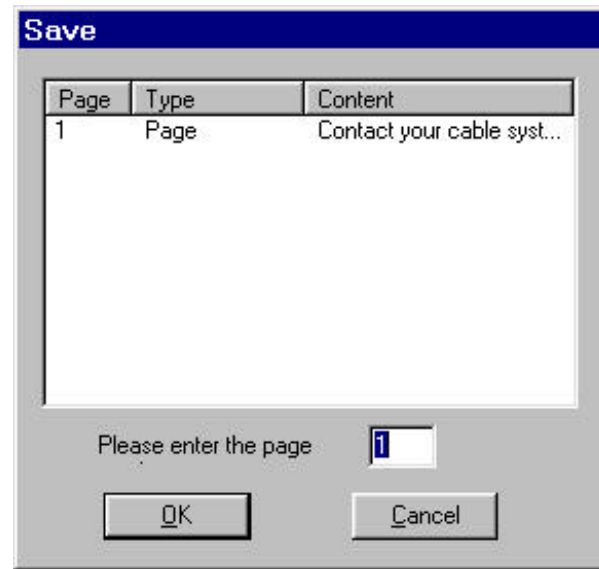


### 3.3 Open

This menu function will let you select the existing page (if any) for editing. This page is always called Page 1. You will see some text from the first line of the page..

### 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 you edited. The entry in the page number box will always be 1. You will be asked if you want to overwrite the original page with the edited page.



### 3.5 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 Keyboard Editing functions

### 4.1 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. There are better ways to get around the screen 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 line.*

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 these buttons you can always position the cursor over an area that you have previously typed into. To fill in incomplete lines, you must position the cursor to the last character typed on that line and then space out to the desired position.

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 Overtyping 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.

#### 4.2 Typing Mode (Insert/ OverType Key)

There are two modes in which typing is done with the system, the Insert Mode and the Overtyping 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. When the row is filled to capacity, you will not be able to enter additional text on that row. In the Insert Mode, typing a character will never destroy another character.

In the Overtyping 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 move to the next line. There is a status line on the bottom of the screen with a box that tells you whether you are in Insert (INS) or Overtyping (OVR) mode.

#### 4.3 STANDARD CHARACTER SET

Each character is displayed in a 12 pixel by 20 scan line box. The screen area outside the character display limits of 12 pixels x 28 characters = 336 pixels and 11 rows by 20 scan lines = 220 scan lines is always the supplied video signal. All characters are horizontally within the 80 percent safe title area. In the vertical direction the 11 text rows occupy 82.5 percent of the vertical raster.

The character set is 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				
-	?	:	'	=	.	/	+						

Note that the bulk of the standard ascii symbols are *not* supported by the STAR-8

## 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, Connect, Disconnect, Send, 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. On the right of the status line boxes display the state of various edit functions such as OVERTYPE or INSERT.

## 6.0 Communication Menu

To control the STAR-8 directly from the computer, or Communications Processor, communication between the two devices must first be established using the Communication Menu.

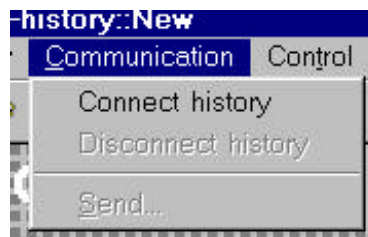
### 6.1 Connect

**To establish direct computer communication:**

1. Click on Communication 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 STAR-8 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. If your connection is via a modem, then the remote telephone number will be dialed automatically.

### 6.2 Disconnect

Disconnecting computer control of STAR-8 is done in the Communication Menu.

**To disconnect computer communication:**

Click on Communication 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 STAR-8 is currently connected to the computer and the connection can be broken by clicking on **Disconnect**.

1. Click on **Disconnect**.  
A window appears for verification.
2. Click on Yes or press Enter if Yes is highlighted.  
Disconnection is complete.

### 6.3 Send

If you are connected to a STAR-8 channel you can send the message you just edited, after saving it. In this way you can edit your channel off-line and then send all information at once.

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

## 7.0 Control

### 7.1 Display Control

The next menu item is Control. This menu allows you to control the connected STAR-8 in real time. These functions will only be available if you are connected to a STAR-8.

The functions available are:

#### 7.1.1 Page

Pressing this button will place the last page that was transmitted to this channel onto the screen in the page format. The page will remain on screen until it is physically removed.

#### 7.1.2 Crawl

Pressing this button will cause the last message that was transmitted to this channel to begin crawling. The parameters of Position, Speed and number of repetition times will apply. Note that you may also change Position and Speed during a crawl by selecting a different value for these parameters. You control the position by moving the slider up or down. The top most position of the text of the crawling line is limited to scan line 39.

#### 7.1.3 Speed

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.

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

When using the standard font set you can calculate the approximate time duration required for a crawl message to enter from the right and exit the last character from the left. With 28 characters per line, the system crawls at 19 characters per second at the fastest speed.

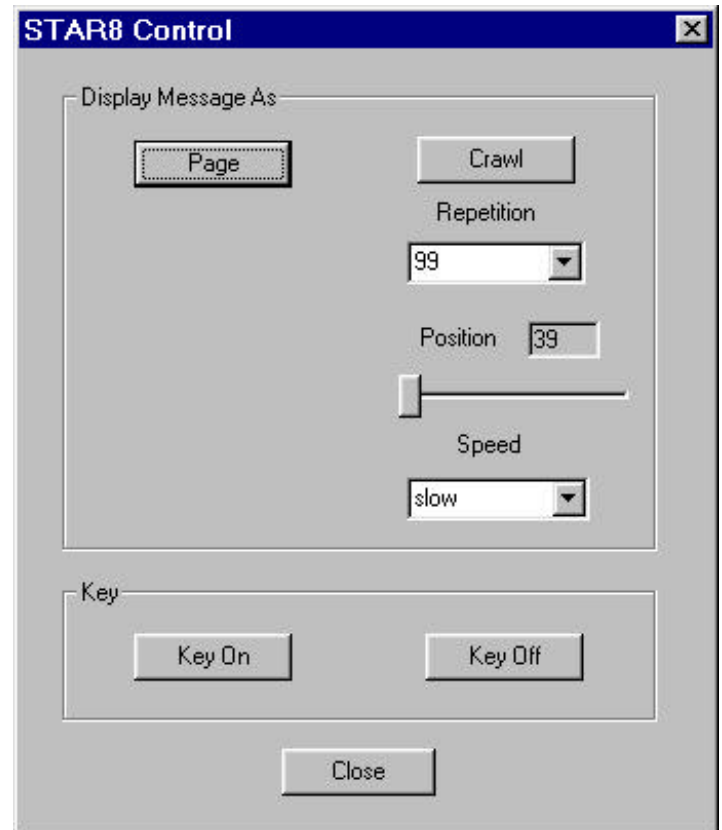
The medium speed is 2x the fastest speed, the slow speed is 4x the fastest speed.

Add the number of characters per line to the number of characters in the message and divide by 19. If you were crawling a message of 100 characters at the fastest speed it would take  $((28 + 100) / 19 =)$  6.7 seconds from the time the first character entered the right until the last character exited the left.

#### 7.1.4 Key On and Off

The *Key On and Off* Buttons allow you to pass external video through the character generator. The Key On button allows the character information to appear overlaid onto the incoming video, and the Key Off button shows the external video only.

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

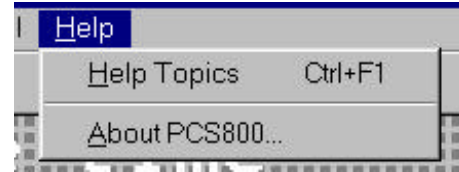


### 7.1.5 Hangup

This menu option will only be available if you selected a modem as your communications device to the remote STAR-8. Clicking on Hangup will disconnect the modem.

## 8.0 Help

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



### 8.1 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.

### 8.2 About PCS800

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

## 9.0 Connecting Additional Units

As discussed above we had a single STAR-8 unit connected to the PC running this software. 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/RS422 type communication. To do this, you would connect the SERIAL-2 port on all STAR-8 units to a COM port on your PC. The cable connections are as follows:

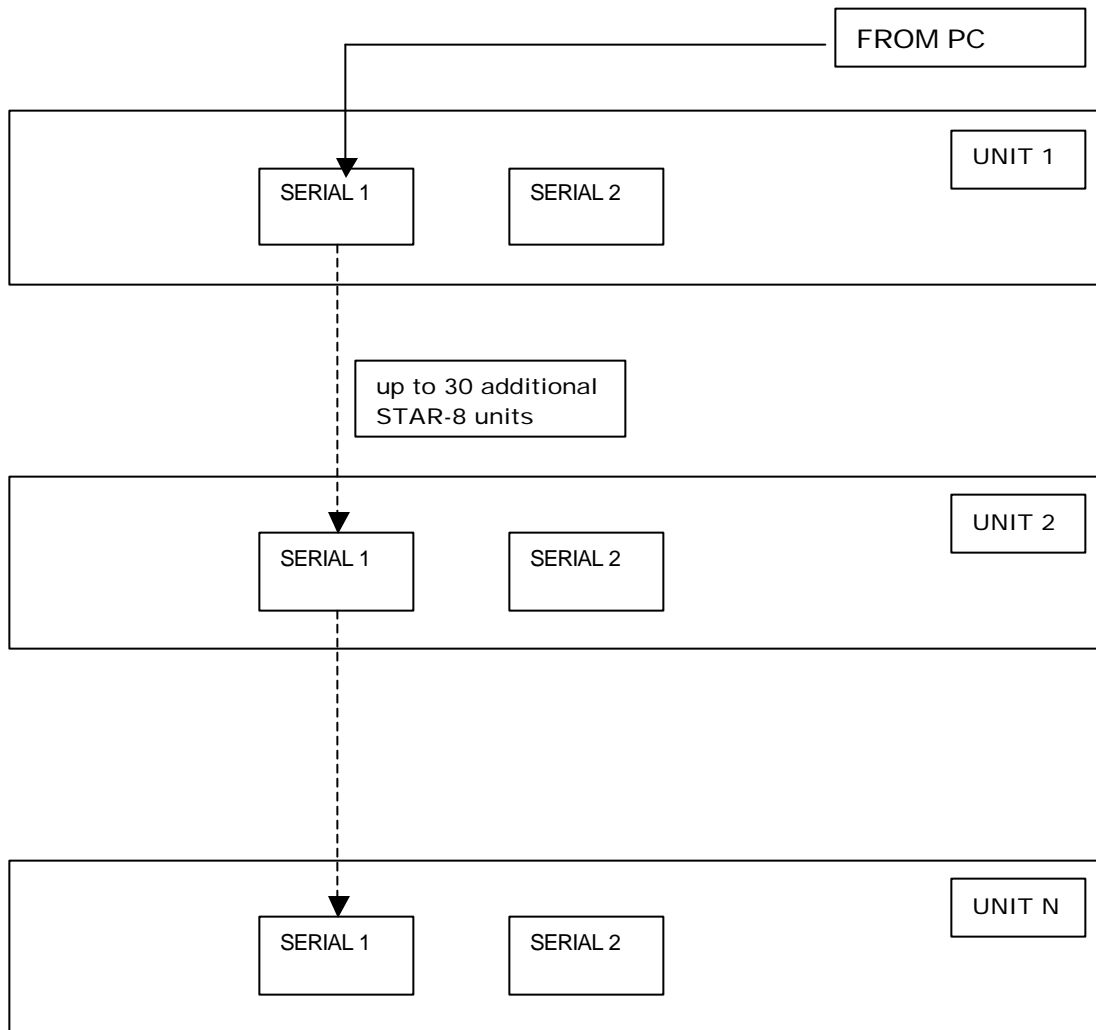
PC		Slave(s)	
transmit +	?	receive +	8
transmit -	?	receive -	9
receive +	?	transmit +	6
receive -	?	transmit -	7
ground	?	ground	5

Note that the pin connections at the PC cable are not shown. You must consult the manual for the specific RS485/RS422 4 wire output that you are using.

When using this wiring configuration you must place a 120 ohm 1/8 watt resistor at the last slave connector across pins 8 and 9 (receive data). You must also place a 120 ohm 1/8 watt resistor at the PC connector across it's receive pins. You may connect all slave units together by means of a daisy chained ribbon cable. The connector to the PC unit will have to be hard wired to effect the crossover connections.

The wiring diagram for such a configuration is shown below.

9.1 PC to multiple units using RS422/RS485 connection

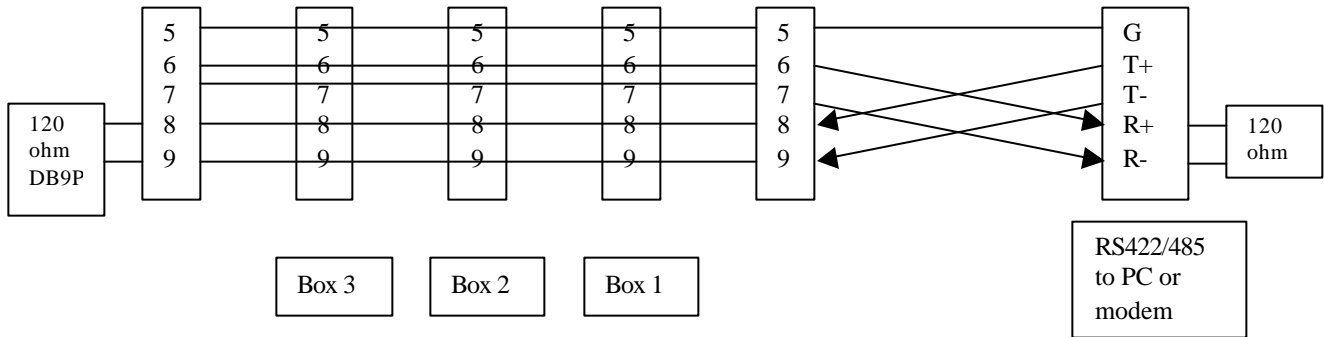


Above is a block diagram of how multiple STAR-8 units can be connected to a single modem or PC serial port . See below for a wiring diagram of this connection.



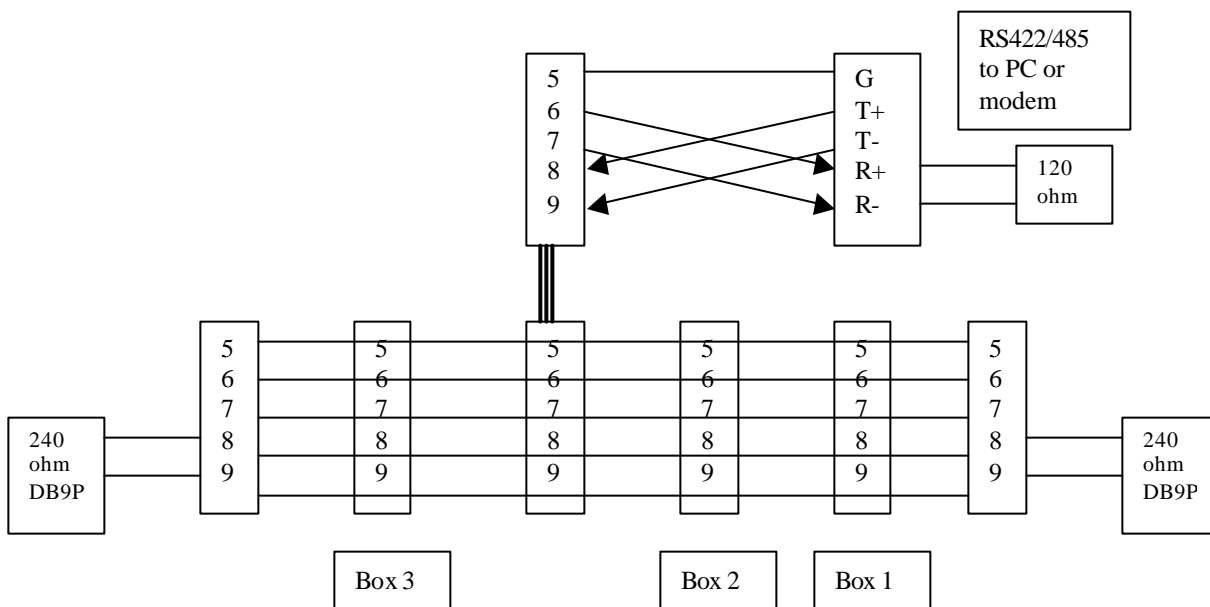
**9.2 Wiring diagram for multiple units**

When using the RS485/RS422 connection method to interconnect multiple STAR-8 units to your Communications Processor, computer or modem, you can make one daisy chain cable for ALL units including the computer. The computer or modem is the source of data with the proper RS485/RS422 adapter. Make up the ribbon cable with DB9-S connectors. Use 2 extra connectors on the ribbon cable. One extra connector will be used to terminate the data lines with a specially wired plug, the other extra connector will be used to connect to your PC or modem. Then make up a standard DB9-P connector with a 120 ohm resistor connected between pins 8 and 9. That connector will be installed at the unused DB9-P of the ribbon at the end of the chain. Make up a null modem type cable with



standard solder type DB9-P connectors on both ends. In this cable connect the wires as shown above crossing the transmit and receive pairs. Note that the pin numbers on the PC or modem side are not shown. You will have to obtain them from the manual that comes with your RS485/RS422 adapter. Install a 120 ohm resistor between the pins R+ and R- of the connector that will be connected to the RS485/RS422 adapter on your PC or modem..

If you must connect to the computer or modem unit somewhere in the middle of the chain, then you should use the null modem type cable described above between the cable position designated for the computer and the computer unit. Note that when you provide the computer at a mid point connection then you should provide two terminating DB9P connectors, one at each end of the ribbon cable, each one with a 240 ohm termination resistor across pins 8 and 9. This is in addition to the termination resistor at the computer receive terminals.



### 9.3 Configuring PC for multiple units

To add units to your channel selection menu, 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 after a few seconds you will see the table which represents your current configuration. To manage your channel list you will be using a program called Control Center

**Control Center v1.1**

Box Number	Address	Serial Port	Phone Number	Init String	Unit Type	Program Content	Channel
16	48	2			Star 8	Discovery	B31
16	49	2			Star 8	History	A22
16	50	2			Star 8	CNN	A24
16	51	2			Star 8	Headline	A44
16	52	2			Star 8	HBO	A6
16	53	2			Star 8	TNN	A53
16	54	2			Star 8	Cinemax	A16
16	55	2			Star 8	A&E	B14

Channel Data Items

Mandatory EAS
  Discretionary EAS
  NOAA

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

The procedure is as follows:

- 1) Fill in Box Number with another number other than your original number,
- 2) Fill in Address with the base address of that particular box. Note that all addresses in the box are derived from the base address. Each channel address is incremented by 1 starting at the base address. The factory will make sure that none of your units in a multiple unit installation will overlap addresses.
- 3) Select the Unit Type. In this application the unit Type is always STAR-8.
- 4) Select the connection. The Connection can be either Serial or Modem. Serial means a direct wire connection to your Communications Processor or PC. If you are using the RS232 method of communications then you must specify a *unique* serial port for each hard wire connected unit. If you are using the RS422/RS485 method of communications then you will specify the *same* serial port for all units. When connecting units over a modem use the Serial Port with the port number of the modem and 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.
- 5) Enter the Identification Information. This 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.

When you are finished creating your new connection then click on OK. Your new channel selection box will then look like:

**Control Center v1.1**

Box Number	Address	Serial Port	Phone Number	Init String	Unit Type	Program Content	Chann
16	55	2			Star 8	A&E	B14
17	31	2			Star 8	CNBC	A45
17	32	2			Star 8	HGTV	A51
17	33	2			Star 8	Cartoon	A50
17	34	2			Star 8	HomeShop	B4
17	35	2			Star 8	BET	A56
17	36	2			Star 8	E!	A39
17	37	2			Star 8	PBS	A11
17	38	2			Star 8	FX	A13

Channel Data Items:

Mandatory EAS
  Discretionary EAS
  NOAA

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 messages for the channel until you have established at least one connection.

You can edit the settings for a particular channel by clicking on the Edit button. You will see the same screen as when you created the channel except all fields will be filled in with the current data. Make any changes you desire and then click on OK. The changes will appear in the Control Center dialog screen.

To delete a channel, select the channel to be deleted by clicking anywhere on it's line in the list. Then click on Delete. Once deleted you will not be able to retrieve the previous information. You will have to recreate the channel. Note that deleting the entry from this table does not delete the data files associated with the channel.

The Search, Shutdown and Advanced functions are not applicable to this product.

To exit this function click on OK.

#### 9.4 Creating multiple remote channels on a single modem

You can connect many STAR-8 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 STAR-8 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:

**Control Center v1.1**

Box Number	Address	Serial Port	Phone Number	Init String	Unit Type	Program Content	Chann
18	9	1	2345678		Star 8	COMACCESS	A80
18	10	1	2345678		Star 8	PUBLIC	A81
18	11	1	2345678		Star 8	HIGHSCHOOL	A82
18	12	1	2345678		Star 8	IS5	A83
18	13	1	2345678		Star 8	JHS4	A85
16	48	2			Star 8	Discovery	B31
16	49	2			Star 8	History	A22
16	50	2			Star 8	CNN	A24
16	51	2			Star 8	Headline	A44

Channel Data Items

Mandatory EAS
  Discretionary EAS
  NOAA

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.

## 10.0 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 on SERIAL-1 at the same time. The desired setup must be specified at the time of order.

### 10.1 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)

## 10.2 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 STAR-8)
7 = TXD LO
8 = RXD HI (receive data to STAR-8)
9 = RXD LO
5 = Ground

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. For short distances, less than about 50 feet, you can use ribbon cable to connect RS485/RS422 units. For longer lengths cabling should be with twisted pairs. The maximum distance that you can reasonably expect is about 1000 feet although 4000 feet is specified under ideal conditions.

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.