MULTIMEDIA
2MPRO
Software Program
User Manual

Software License Agreement

This Software was Written Specifically for use on predetermined signs and is not intended for general use. This software is licensed in agreement with all parties to be used in accordance with the specific uses only. Any attempt to use this software for other than specified herein constitutes a violation of this agreement. Use of this software indicates the acceptance of this license agreement.

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1) Introduction

2MPro is a software package that provides all the tools you will need to control your Multimedia LED display. Animations can be quickly created combining text and graphic frames to dynamically appear in your sign using one of the built in display effects. 2MPro also provides a scheduler so that each of your messages will appear only during the times and dates that you specify. Finally, once your content has been created, 2MPro provides you with the tools to communicate to and control your Multimedia sign.

Requirements

2MPro is intended for use on PC computers running Windows NT or Windows 2000 / 98 operating systems. The computer will require several megabytes of free hard disk space for the 2MPro software and more storage for the animations to be created. It is recommended the computer have a minimum of 128 MB of RAM. Also, the computer will require one unused serial port for communication to the sign via RS232, RS485 (with converter) or a modem if the sign is to be communicated to via phone line.

Installation

2MPro is provided on either a single CD or a series of floppy disks. Place the CD or the diskette labeled Disk #1 into the appropriate drive. Through Windows Explorer or the Windows Run function, start the program Setup.exe from the drive. You will see a Multimedia logo message appear while the setup is loading. The 2MPro installation screen will appear next. You will be asked to agree to our software licensing by selecting the Next button. The next screen will prompt you to enter the location to install the software to. We recommend leaving this at the default folder which by selecting the Next button. You may change this to any folder on your hard drive if you wish by selecting the Browse button and choosing a folder. Select the Next button for the next two screens and the Finish button to complete the installation. This will automatically copy the 2MPro software to your computer.

Starting 2MPro

To start 2MPro, select the Windows Start button and then hilite the Programs menu item. The list of programs will include 2MPro Sign Software.

This was automatically created for you during the installation. Point to the 2MPro entry and select it. This will bring up the main screen of the 2MPro software.

Setting the New Animation Options

The first time you launch the program you
will get a setup screen like the one shown.
This screen allows you to set the matrix and
available colors of the sign being
programmed. In order to set these fields
you must know the specifics of your signs.

*Note: Ensure this is set correctly for your
sign. Animations created with the wrong
settings will not work with your sign.
Consult the documentation that came with
your sign or call Multimedia if you are
uncertain how to set these.*

Width: Set the number of Pixels
that are across the width of the sign.

Height: Set the number of
Pixels that make up the height
of the sign.

Number of Colors: Set the number
of colors that your sign is capable
of displaying.

Note[1] – Colors available are subject to the type of sign you are
programming. You cannot display more colors than you sign can
produce.
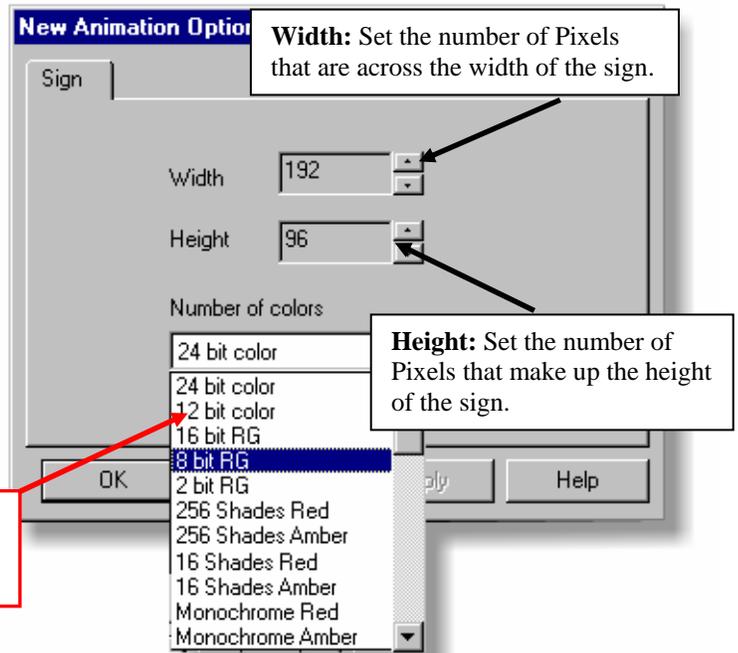
Once you have selected all of the settings, click on the
Ok button to apply the settings. If this is the only sign
you are programming with this software, the new setting
will become the default and you will not have to set this
again. If you are programming more than one sign that
have different settings, these can be changed at any time
by selecting, "New Animation Options" from the File
Menu. Once you have changed the settings, all new
animations will be created with the new settings.
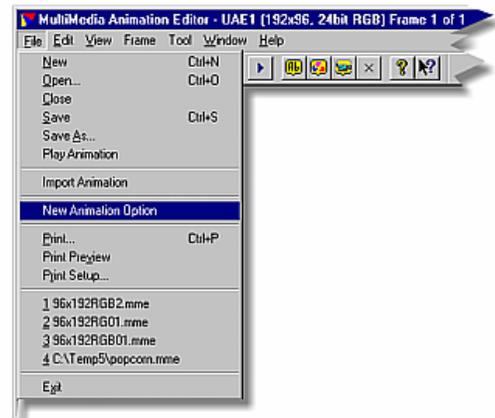
2MPro Main Screen

During the course of this manual, we will be referring to menus, tool bars, and icons which appear on the main screen of 2MPro. Below is a picture with a brief description of the major components of the user interface.
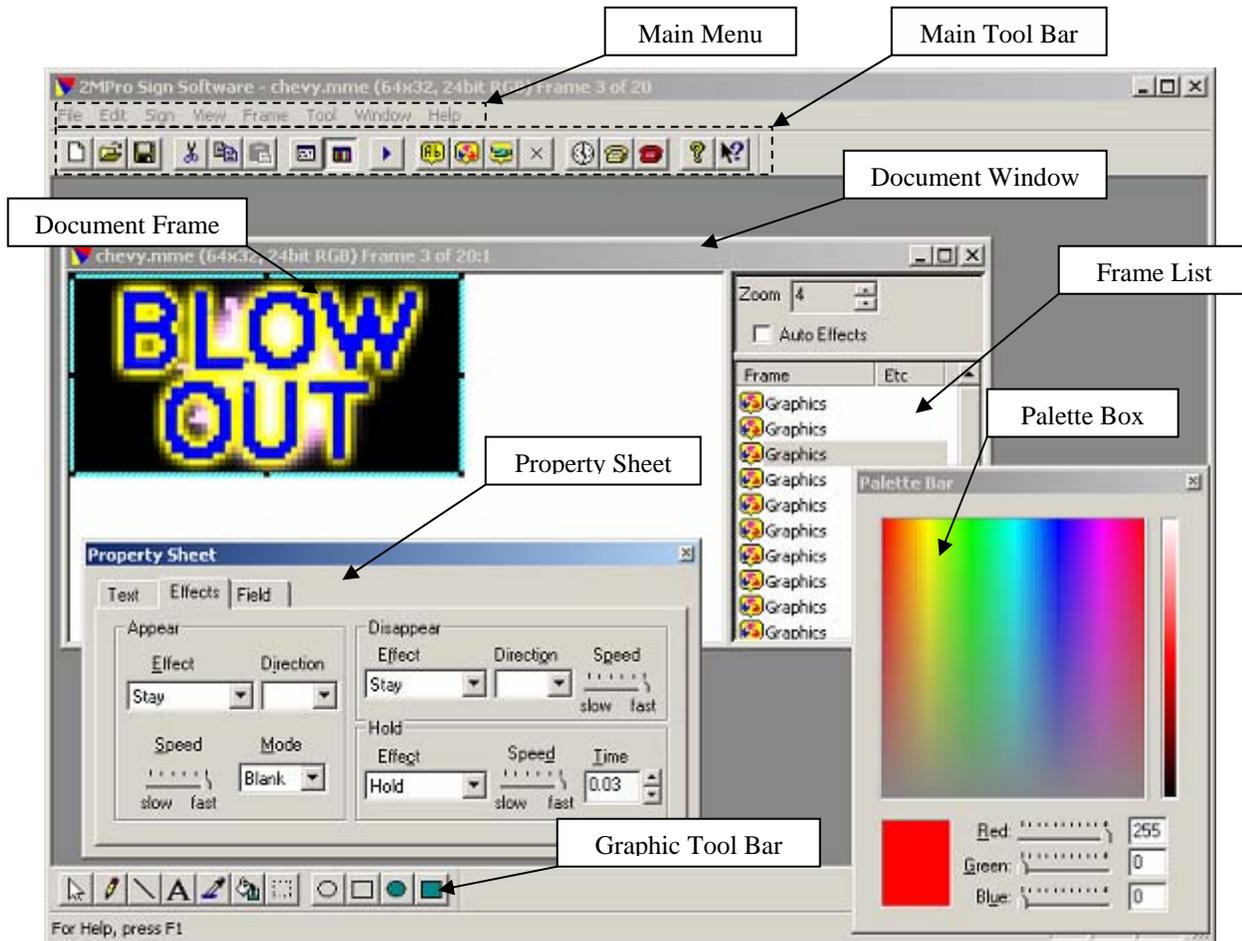
2) Animation Editing

In the introduction, we mentioned that 2MPro is an animation editor, a scheduler, and a communications program. We will first look at the animation editing tools. To create a new animation document, click on the New File icon or select New from the File Menu. A new document window with no frames will be created.

Creating a New Animation

A 2MPro animation consists of a series of frames. There are three basic type of frames - text, graphic, and inserted animations. This section will describe the creation of text frames.
To create a new text frame select the text frame icon from the main tool bar or from the Frame menu item select Insert – Text.
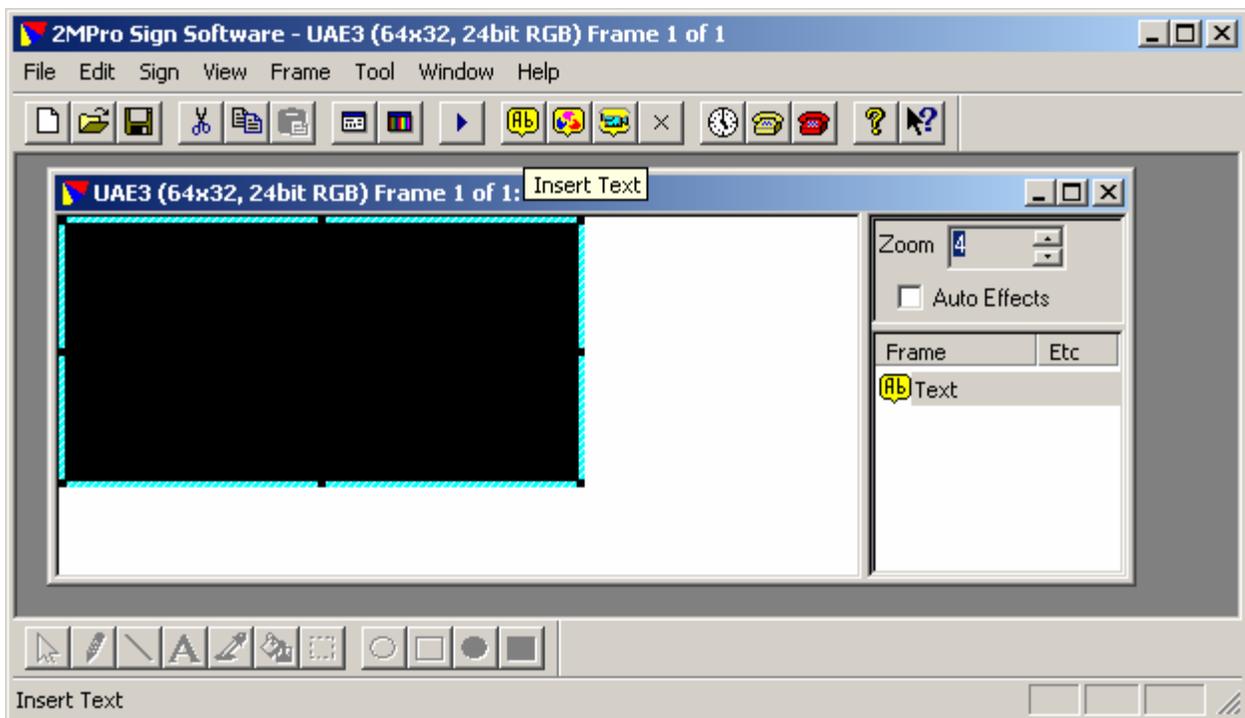
You now have an animation that consists of a single blank text frame. Notice that a text frame icon has been placed in the frame list view in the right side of the document. This list will update with frames as they are added or deleted to the animation. Also notice that the title bar of the document has changed to show Frame 1 of 1. There is also a zoom level control in the right side of the document window. This can be used to set the viewing size of the document frame.

Saving Your Animation Files
To store your animation, click on the Save icon in the Main Tool Bar or use File – Save from the Main Menu. If this is a new animation, you will be prompted to enter a name for the file. It is best to create a name which is descriptive of the animation content. 2MPro will automatically append the file extension .mme to your file name. All 2MPro animations will be stored with this extension.
2Mpro allows you to store animations anywhere on your drives but we suggest that you use a single folder to store your work.

Text Frames

So now let's enter some text in the frame. First, we need to open the Frame Properties Sheet. Click on the Properties icon or select Properties from the Frame Menu, or just double click anywhere on the document window to open the Frame Properties. You will notice there are three tabs at the top of the Property Sheet. Select the Text Tab if it is not already selected.

Select the Text Type
(From left to right)
- Normal Text
- Rich Text
- Travel
- Time
- Temperature
- Date
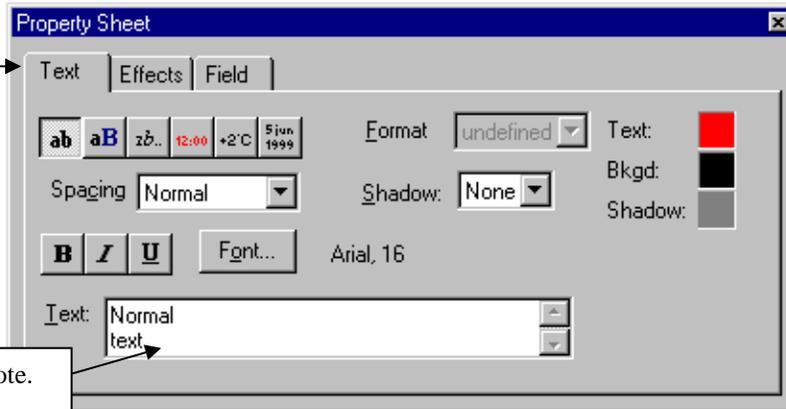
Type in your Text Message Here, see note.

Note: If you have selected   the frame type to be Time, Temperature or Date, the text field will not be available.

There are six different type of text frames available which are selected with the buttons just below the text tab. The default type is called Normal Text and is the most common format. The other formats will be explained a little later in this section.

Normal Text

Text is added to a normal text frame by typing in the text editing box of the text sheet. As you type, you will notice text being added to the frame data in your document. Also notice that this text is automatically centered within the frame both horizontally and vertically. The size and style of the text is determined by the font settings.

Setting the Font
To change the font, select the font button. The font selection box will now appear. All of the Windows fonts are available for use within your text frames. Choose a font, a font style, and the size from this box and select the OK button when done. The text in the document frame will change immediately to reflect the font change.

NOTE: Most of the Windows fonts do not work well with smaller sign sizes. 2MPro has also installed a group of fonts that provide a number of smaller fonts. Multimedia fonts are available in the font list and begin with the letters MM (eg. MM6x10, MM4x5)
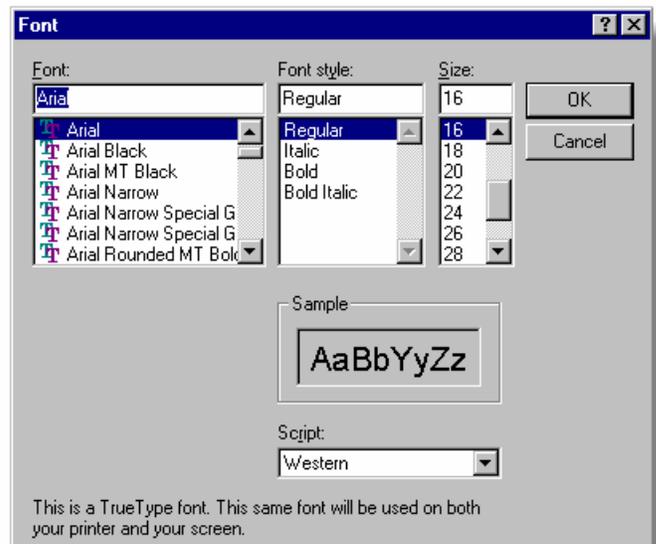
Text Colors

Colors can be added to a text frame for the actual text, the frame background, and a drop shadow. To set these colors select the Toggle Palette icon on the main tool bar. This will bring up the palette selection box. The look of this box will vary according to the color type of your sign. The palette box shown here is for a full color RGB display. Colors are chosen by either clicking on a color within the color array or by using the slider bars to select the intensities. Once a color is selected, you need to move the cursor back to the text sheet and click in the color box next to the text item you wish to color (text, background, shadow). The text shown in your document frame will change immediately with the new color selection.

Backgrounds and Shadows

Combining colors and shadows can help you create text messages that really stand out with an almost 3-D effect. Shadowing is applied to the text by using the drop down shadow control. Shadows can be set to display either left or right of the text. A rule of thumb for creating text frames with shadows is that the colors used should be a combination of a high intensity, a low intensity, and black.

Text Spacing

When adding text to the edit box, multiple lines of text can be added by hitting the Enter key to create a new line. The text in the frame will automatically space and center the text within the frame. All of the text you wish to add may not fit within the frame. You have the choice of either adjusting the font settings or creating a second frame to hold some of the information.

There is a control box in the text sheet labeled Spacing. This can be set to either Normal or Compressed. This setting controls the amount of spacing between each line of text in the frame. The Normal setting spaces each line according to the setting inherent in the font itself. You may want to set this to Compressed to allow you to fit more text on the frame. The amount of compression that occurs is dependant on the font and font size you are using.

Rich Text

Rich text is a text type that allows you to combine various fonts and colors within a single frame. Select a Rich Text frame by pressing the Rich Text type button Rich text is entered into a frame in the same method as Normal text, by typing into the text editing box. The text will appear with the current font and color settings. Now, you can change these settings for part of the text by clicking and dragging your cursor over the text to hilite it. Changing the font settings or colors will now change only the text which is hilited. This example shows a rich text frame that uses different colors and fonts on two lines of text.

Travel Text

Travel is a text frame that allows you to display a long string of text with a single frame. It does this by scrolling all the text across the sign from right to left. Travel text frames are limited to a single line of text and therefore the text edit box will not allow you to enter multiple lines. The frame view in your document window will display the text as left justified and will not display all of the text you have typed. However, when the animation is simulated or played on the sign, your entire text string will scroll across the display.

NOTE: There is a limitation to the amount of text you can enter into a travel frame. A message box will alert you if you have attempted to type in more text than is allowed.

Time, Temperature, Date

These text frames display "real time" information on your sign meaning that the information will change. Time frames of course display the current time of day. This time is set according to the time on your computer so this must be set correctly for it to be accurate on your sign. The format control in the text sheet will allow you to set the time to be either twelve or twenty-four hour format.
 Date frames operate similarly and the information is also derived from you computers calendar. The format control on date frames allow you to select between D/M/Y and M/D/Y formats.
 Temperature frames allow you to display the current temperature at your sign. Your Multimedia sign should be equipped with a temperature sensor, this is what allows you to display the correct readings. However, the computer you are running 2MPro on has no sensor and therefore you will always see the temperature default to 0 degrees Celsius or 32 degrees Fahrenheit. Celsius and Fahrenheit types are set from the format control.
Fonts and colors for all of these text types are set the same way as for the other text types.

NOTE: The signs are not capable of displaying time/temperature/date frames using all of the Windows fonts. It instead will attempt to use a font that it can display which is a similar size. Therefore these frames may not appear exactly on the sign as they do in 2MPro.

Using Display Effects

We have shown you how to create text frames in order to get your message displayed on your sign. Now we need to add motion to your frames in order to attract attention to your message. This is done with the use of display effects. Select the Effects tab on your Frame Property Sheet to bring up the Effects Page. This page is divided into three areas; Appear, Disappear, and Hold Effects. Appear effects determine how the frame will appear onto the sign. Once the frame has appeared, you can apply a hold effect for the duration of the frame, and a disappear effect can be applied to set how the frame will leave the sign.
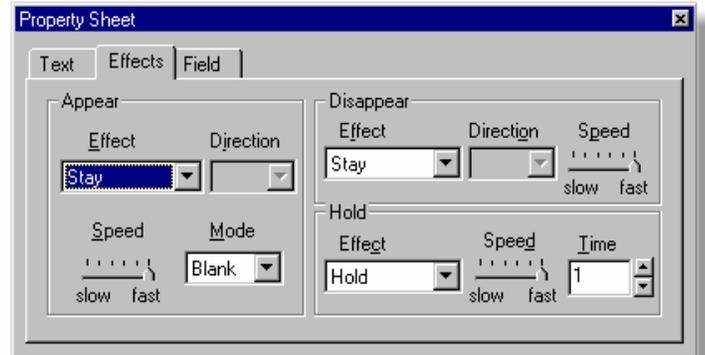
NOTE: We recommend not using disappear effects other than Stay except for the last frame in an animation. This is because a blank period is created between the time one frame disappears and the next frame appears.

The following is a brief description of the appear/disappear effects available in 2MPro:

- **Stay** – On or Off Immediately
- **Unveil** – Curtain or cover moving off
- **Roll** – Text rolls on
- **Coalesce** – Random pixels appear
- **Fade** – Fades from low to high intensity

- **Zoom** – Frame moves in two directions
- **Wave** – Moves in a wave effect
- **Interleave Horizontal** – Moves in stripes horizontally
- **Interleave Vertical** – Moves in stripes vertically
- **Stretch** – Unfolds in given direction

Effect Directions
Some of the appear and disappear effects have directions associated with them. After selecting an effect, select the arrow on the direction drop down box. The direction list will display the directions available for the effect you have selected. For example, a Zoom effect can be used in an Up, Down, or Out direction.

Appear Modes
Appear Modes are used to set the way the appear effect of the current frame will remove the previous frame. The following is a description of the appear modes:

- **Blank** – Blanks the screen prior to appearing the next message
- **Wipe** – The frame will appear on top of the previous frame
- **Scroll** – Scrolls the previous information off as the new message appears
- **Overlap** – Overlays on top of previous frame. Previous frame shows through any black area of new frame.

Hold Effects
The following is a brief description of the hold effects:

- **Hold** – No Effect
- **Blink** – Flashes the text on and off repeatedly
- **Snow** – Random pixels appear on giving appearance of snow
- **Bijou** – Lights the outside edge of sign, controlled by speed

Effect Speeds
All of the effects have a speed adjustment that is set with a slider bar. The slider can be moved in increments between the slowest and fastest which set a relative speed for the effect.

Hold Time
A hold time can be set for each frame. This is defined as the amount of time a frame will remain on the sign after it has appeared and before it will disappear. When a new frame is created, this is set to one second by default. You can change this by clicking in the hold time box and typing in a new hold time. You can enter this as a whole number or use a decimal point to enter a time down to 1/100 of a second. The spin control (arrows) next to the hold time box can also be used to adjust this time.

Auto Effects
In the document window, you may have noticed a check box entitled Auto Effects. This is a quick and simple method to have your messages run with display effects created at random rather than having to set these by hand. Simply check this box in order to apply the auto effects function. Once checked, most of the effect selection tools will be disabled (all except the hold effect and hold time). You can uncheck this box and manually set the effects for each frame at any time.

Graphic Frames

Graphic frames allow you to draw to each pixel within a frame to create a series of pictures. 2MPro has a number of graphic editing tools which can be used to create your own graphic frames. Graphic frames can also be created by importing Windows bitmap (BMP) files. A whole animation consisting of a series of graphic frames may also be created by importing a video file (AVI or MPG).

Graphic Tools
 The graphic tool bar is only available when you are working on a Graphic Frame.

Cancel: Returns the cursor to nrmal
Pencil: Draw Freehand.
Line: Draws Straight Line.
Text: Adds Text to a Graphic Frame.
Pick: Copies color from the frame.
Fill: Fills objects with selected color.
Selection: Copies, Cuts and Moves selected areas of screen.
Ellipse: Draws an Oval or Circular line.
Rectangle: Draws a Square or Rectangle line.
Filled Ellipse: Draws a filled Oval or Circle, with selected color.
Filled Rectangle: Draws a filled Square or Rectangle with the selected color.

For Help, press F1

Before using any of the graphic tools, you must first select a color to draw with. This done by bringing up the color palette box and choosing your color (see page 9).

Pencil: Use the pencil by pressing the left mouse button to draw while moving the cursor over the graphic frame. Pixels will be drawn to with the currently selected color.

Line: Move your cursor to the first end for the line, click and hold the left mouse button. Then move the cursor to the end of the line and release the mouse button. This will draw a line between the two points in the graphic frame.

Text: Text in a graphic frame is entered differently than in a text frame. After selecting the text tool, you will see a text entry dialog box. After entering your text, and choosing the font and text color, hit the OK button. You should now see your text in an outlined box in the document frame. Move your cursor into the outlined box. Now hold the left mouse button down and drag the box around the frame to position it where you would like. You can hit the ESC key at any time to abort the text entry.
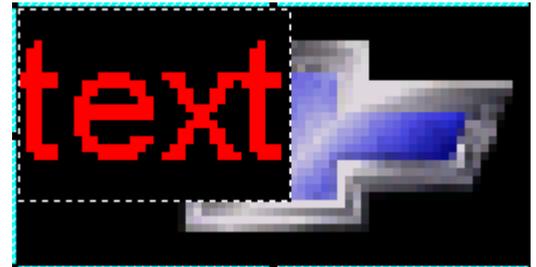
NOTE: The text can be set to appear transparently over the frame. This is done from the Tool item in the main menu which has a selection for Transparent Selection. Text will appear transparently when this item is checked. Transparency also is used with the Block tool.

Pick Color: This tool is allows you to select a drawing color from a color in the frame rather than through the palette box. To do this, first select the Pick Color tool. Move the cursor to the frame window and point to the color within the frame you wish to select. Press the left mouse button. This will set the new drawing color which can be used with any of the drawing tools.

Fill: Fill is used to fill an area of a graphic frame with the drawing color. After selecting the fill tool, move the cursor to the frame area to fill and hit the left mouse button. The original pixel and all of the surrounding pixels of the same color will be filled with the new drawing color.

Block: The Block tool is used to copy, paste and move graphic blocks between graphic frames. To select a block choose the block tool and move your cursor to the graphic frame. Position the cursor to one corner of the block you wish to move or copy and hold the left mouse button down. Now drag the cursor to the opposite corner of the block. You will see the outline of the box as you drag the mouse. Let the mouse button up when you have outlined your block.
To move the block around the frame, hold the mouse button down while pointing anywhere within the box. You can now drag the block anywhere on the frame. Let the mouse button up to drop the block in its new position.
You can also copy and paste a block. Use the steps described above to define the block and select the copy button from the main tool bar. This copy the graphic block to the Windows clipboard. You can now paste the block into the same graphic frame by selecting the Paste button. The block is pasted to the upper left corner of the frame. You can again go in and drag the block to the desired position on the frame. Blocks can be pasted to any graphic frame in the animation or even to a graphic frame in a separate animation.

Ellipse and Rectangle: These tools allow you to draw the chosen shape to a graphic frame. Select the tool and point to your graphic frame. Click and hold the left mouse button. As you drag the cursor around you will see an outline of the shape you are drawing. The shape will be drawn to the frame once the mouse button is released.

Importing Bitmaps
2MPro can import Windows bitmap files for use in graphic frames. To do this, in a graphic frame, bring up the edit properties box and select the Text tab. In a graphic frame, the text sheet will look as shown here. Select the browse button which will bring up a file selection box. Find the bitmap file (extension is .BMP) to import and hit Open. 2MPro will now import and scale the bitmap for your sign size and color. This will appear in the graphic frame.
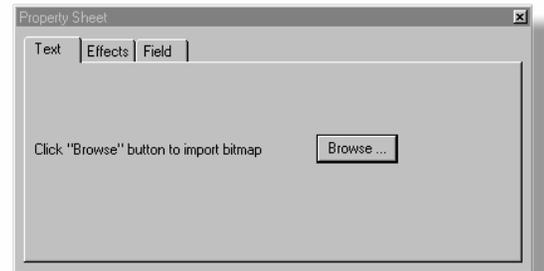
NOTE: The new graphic frame may not look much like the original bitmap. This is because your sign might be a much different resolution than the bitmap you are importing. For example, if your sign is a 16 x 64, 256 shades of red, and you are importing a bitmap that is 100 x 100 and full color, you do not have the resolution necessary to display this bitmap properly.

Importing Video Files
2MPro can also import video files in both AVI and MPEG formats. Importing a video file will create a complete animation by converting each frame in the video file and creating a series of graphic frames in the 2MPro animation. To do this, first create a new animation. Then from the main menu, select File and then Import Video File. This will bring up the Import Video File box. There are three conversion options to choose from. Stretch to sign size will stretch or shrink each frame of the video file to the resolution of your sign. Crop Left/Top align will convert the original frames with no scaling and will start at the top left of the video frame. This will result in only the top left portion of the video image being used. How much of the image is used depends on the relative size of the video frames and your sign size. Crop Center is similar except it will crop the images from the center of the video frames.
Once you have selected the type of conversion, hit the Browse button to choose the video file. In the file selection box, you can use the "Files of Type" drop down menu to choose to import either an AVI file or an MPEG file. Once you have chosen the video file, hit Open to return to the Video File box. Now hit the Start button to begin the importing process. Once started, you will see the number of frames in the document title bar advance as new frames are added. You will even see each graphic frame in the document change. The status bar in the Import box tells you how much of the video file is left to import. You can hit the Stop button at any point to stop the operation. When completed, you will have a series of graphic frames. The hold times of these graphic frames will have automatically been set to play at the speed of the original video file.

Setting a Frame Rate
2MPro provides a function for setting the frame rate of animation. This function is normally used only with an animation that has been created by importing a video file. To set a frame rate, you must first select the frames you want to apply the new rate to. This is done from the frame list window. Click on the first frame you wish to apply the new rate to. Now scroll down to the last frame to change, press and hold the SHIFT key down and select the last frame with the mouse. This will hilite all the frames in the list between the two you've selected. Now, choose Frame from the main menu, and select the Apply Frame Rate function. Use the arrow keys in the hold time area to adjust the hold times. You will see the frame rate change as well. Adjust this until you achieve the frame rate that is as close to the desired rate as possible. Select OK when done. This will apply the new hold time to all of the selected frames and in turn, the animation will play back at the desired frame rate.
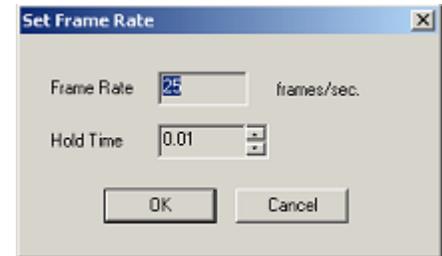
General Frame Functions

Adding, Moving, and Deleting Frames
So far we have described how to add and edit a single text frame. As we mentioned, most animations consist of a series of frames that can either be all text or can also use graphic frames. Additional text frames can be added at any time by selecting the Insert Text button from the main tool bar. Graphic frames are added in the same manner with the Insert Graphic button. The frame list on the right side of the document will update as new frames are added. New frames are always inserted into the frame list **after** the current frame. For instance, in the list shown here, frame number four is the current frame. The current frame can be selected by pointing and clicking, or by scrolling to it with the arrow keys. If the user were to select the Insert Text button, a new text frame would be inserted as frame five and the rest of the frames would be shifted down.
Frames can be moved by selecting them with the cursor, dragging them to the new location on the list, and dropping them by letting go of the mouse button.
Frames to be deleted are first selected with the mouse to hilite them. You may then either press the Delete key or select the Delete Frame button from the main tool bar.
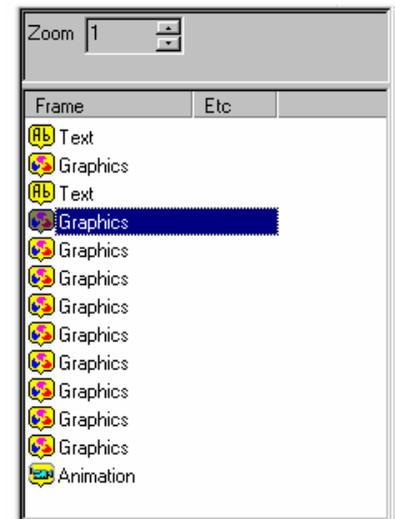
Editing Multiple Documents
2MPro is a multiple document editor. This means that you can work on more than one animation at a time. As you create new animations or open existing ones, a new document window is created. As in all Windows MDI applications, you can choose the document you want to work on by clicking anywhere in its' window.

Copying Frames Between Animations

Frames can actually be copied from one animation to into another. To do this, select the frame from the frame list of the animation to copy from Then select the Copy button from the main tool bar. This copies the frame into the Windows clipboard. Then, select the animation to copy the frame to and select the spot in the frame list to copy to. Now select the Paste button from the main tool bar. This will paste the copied frame into the second animation.

NOTE: Both animations must be of the same size and color type for this to work.

Using the Simulator

2MPro comes equipped with a simulator that will display your animations on the video monitor as they would appear on your sign. To start a simulation, select the Play Animation button from the main tool bar. You may receive the following message "Would you like to play from the current frame? Selecting no will play entire animation"
Press the NO button to play all the frames in the animation. Pressing yes will play only the frames from the currently selected frame to the end of the animation. The simulator window has three zoom level buttons. These can be selected to vary the size of the simulator window. Click the 'X' of the simulator window when you wish to stop.

Field Boundaries

Normally, text or graphic frames are the same height and width as the sign. However, it is possible to change the size of the any frame. This allows you to create some interesting effects by leaving one message on part of the sign while having a new frame appear on another portion. For example, if your sign were 32 pixels high and 64 pixels wide, you could have a sale message appear on the top 16 pixels and in your second frame have information travel across the sign on the bottom half of the sign.

Fields can be set two different ways. The first way is to drag the boundaries using the cursor. The frame has a blue border surrounding it. Within this border are eight black marks. When the cursor is positioned directly over one of these marks, it will change its shape to a double headed arrow. At this point you can click and drag the border to a new location to define a new boundary for the frame. The second way to create a field is to select the field tab in the properties box. The field can be adjusted by entering the new positions. After hitting the Apply button the blue boundary will move to show the new position of the field for this frame.
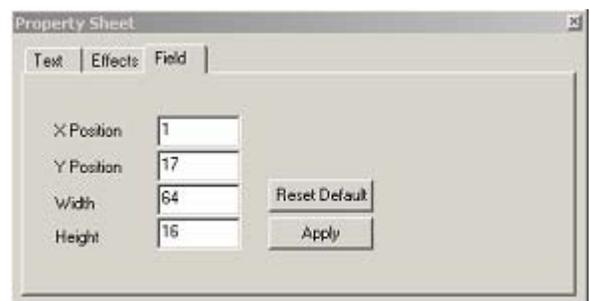
Saving Your Animation Files
To store your animation, click on the Save icon in the Main Tool Bar or use File – Save from the Main Menu. If this is a new animation, you will be prompted to enter a name for the file. It is best to create a name which is descriptive of the animation content. 2MPro will automatically append the file extension .mme to your file name. All 2MPro animations will be stored with this extension.
2Mpro allows you to store animations anywhere on your drives but we suggest that you use a single folder to store your work.

3) The Scheduler

The scheduler allows you to program your sign to run multiple animations and control the exact times and dates of when each animation runs. The scheduler is used to build a schedule file. This file contains a list of animations along with the time/date information. Once the schedule file has been created and stored, it can be sent to your sign for playing.
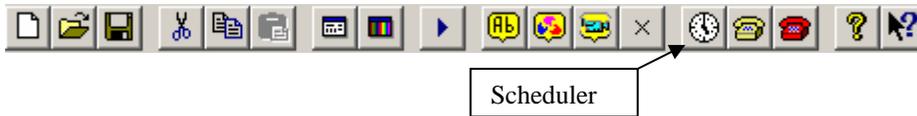
Scheduler

To access the scheduler, select the scheduler icon from the Main Tool Bar. This will bring up the scheduler window.

Scheduler Window

Num	Name	From	to	Start Date	End Date	Excl.Days	Mem.used	Play Time	Advertiser	Status
0	signature2.mme	Always		Always			85433	10 s.		Ok
1	video4.mme	Always		Always			154961	10 s.		Ok
2	effects.mme	Always		Always			21266	10 s.		Ok
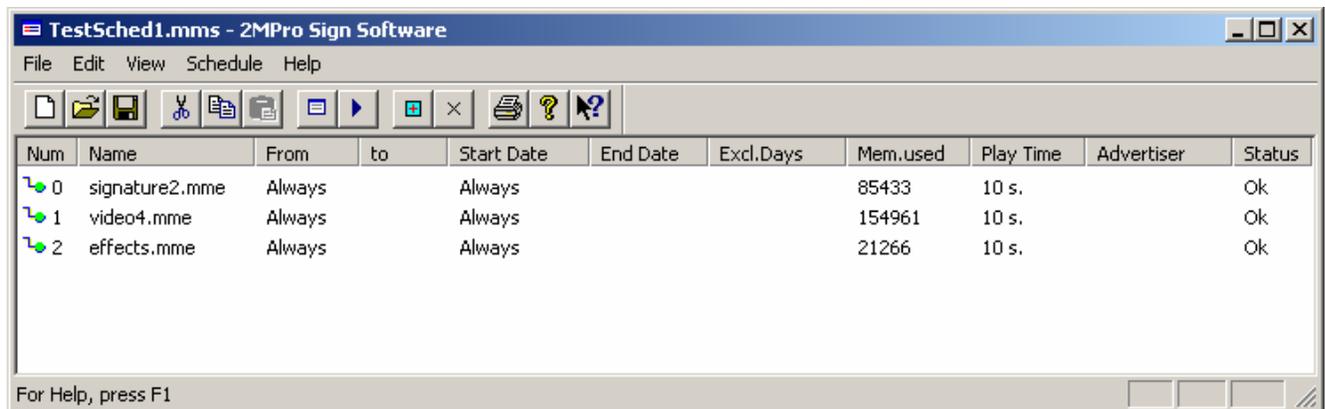
This is the 2MPro scheduler window. This is a popup window which means you can switch back and forth between this window and the main 2MPro window at any time. The scheduler will automatically load the schedule file you were last working on. Here you can see a file with three animations in the list.

When the schedule runs on the sign, the animations are played from the top of the list. However, each schedule entry is first tested to see if it is scheduled to run at the current time and date. If it is not, the next entry is tested and so on. When the last entry is reached, the loop repeats from the top of the list again.

Adding Animations

To add an animation to the schedule click the Add button and select the file from the open dialog box.

Note: The first time this dialog box is opened it may not be in the correct directory and you will need to locate the directory that your animations are stored under.
Animation files have an extension of *.mme. Select the animation file name from the list and click Open.
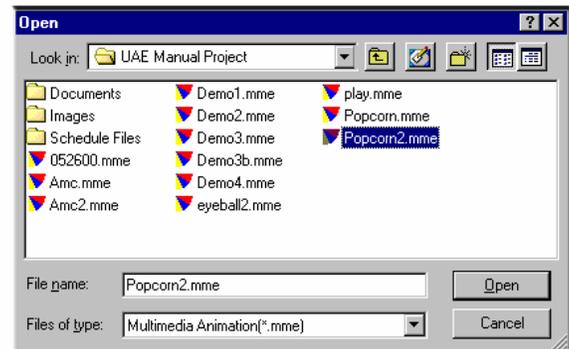
Setting the General Options

This will bring up the Options box. The General Sheet will display the name of the file you just selected. It also has a drop down box for you to associate and advertiser with. It is not necessary to fill this in, this is a feature only used by people doing third party advertising. A description of the advertisers feature is included in Section x.xx. A box containing the playing time of the animation is shown. Currently this feature is not active and will always default to 10 seconds.
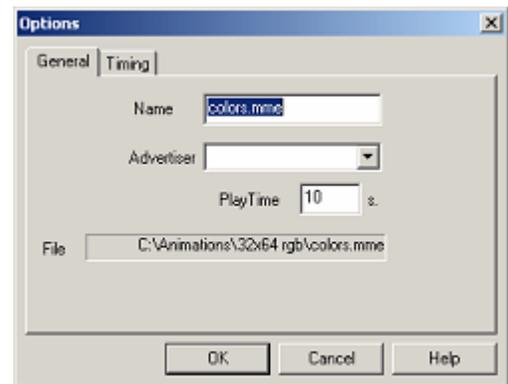
Setting the Timing Options

To set the times and dates for this entry, click on the Timing Tab. New entries are defaulted to play all the time, every day. If you wish to have the animation play between certain dates, uncheck the Always check box in the Dates. To set a start date, click on the start date drop box which will bring up a calendar. Select the date you wish the animation to start playing. Now click on the end date drop box and select the last day for the animation will play. To set a start and stop time, first uncheck the Always box. Start and stop times are set by clicking the appropriate box. You can use the arrow keys to set the hours and minutes or type directly into the box.

The Exclude Days feature allows you to program the entry to play on particular days of the week. To do this, first uncheck the Always box, then put a check mark next to each day of the week you do not want the animation to play. For example, if you want this entry to play only on weekdays, check off the Sat and Sun boxes.

Once you've finished with the timing options, click the Apply button to add this entry to the schedule.
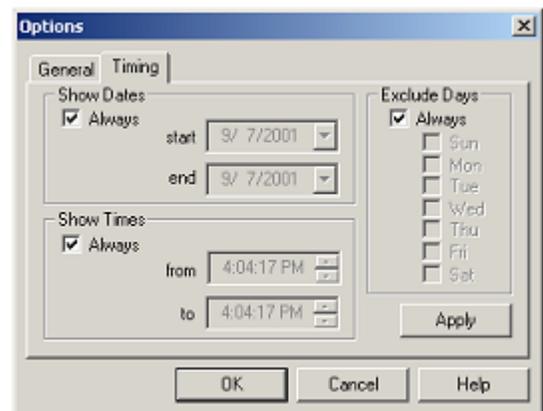
Adding, Deleting, and Moving Entries

New entries can be added anywhere within the schedule list. The position of new entries is determined by the position of the hilite cursor. For example if you wanted to add a new entry to the beginning of a schedule list, you would hilite the first entry by pointing and clicking it. The first entry will now be hilited in blue. If you now add a new entry, it will be inserted into the first position in the list and the original entries will all be pushed down one location.
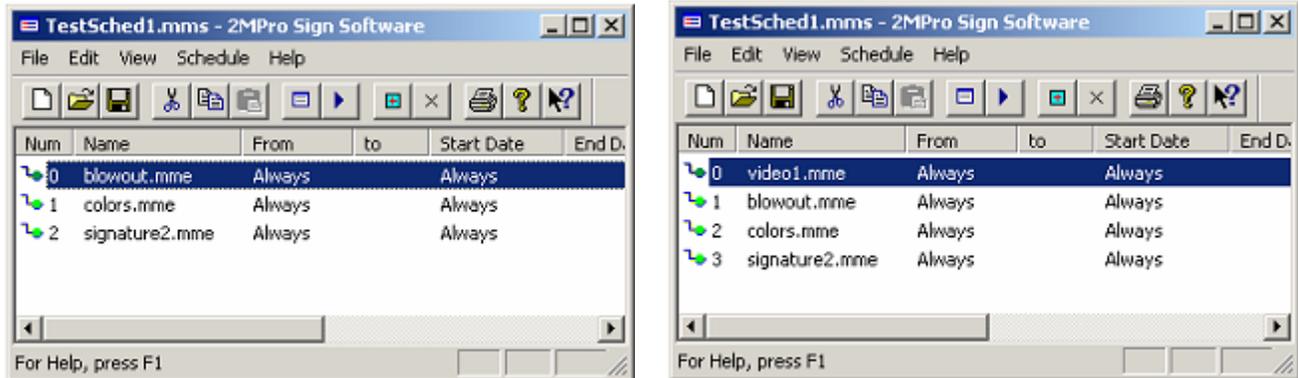
To add an entry to the end of the schedule list, click in the list window below the last entry so that none of the entries are hilited. Any new entries are added to the end of the list in this condition.
Similarly, entries can be moved within a list by dragging and dropping. Use the cursor to hilite the entry to be moved and hold the mouse button down. Now move the cursor to the new location in the list and let the mouse button up. This will drop the entry into the new location.
Entries may also be deleted from a list. Again, you must first hilite the entry to be deleted. Now select the Delete icon from the tool bar and the entry will be removed from the list.

Editing Existing Entries

It is possible to change the time/date settings of any entry in the schedule after it has been added. To do this first select the entry(s) to edit. More than one entry can be edited at once. To select multiple entries, hold the CTRL key down while selecting each entry by pointing and clicking. You will see each entry hilited by a blue cursor. Then select the Event Options icon from the Tool Bar. This will bring up the Options Box (the same as when adding a new entry). Please not that if you have selected multiple entries, any changes you make are applied to each of these

Simulating

Animations added to the schedule list can be played on the simulator. This allows you to verify that the animation you have entered is actually the one you want in the schedule. To simulate, hilite the entry with your cursor and click the Simulate icon. This will bring up the simulation window playing the animation. When done viewing, click the X in the simulation window to close it.

Advertisers

The 2MPro scheduler allows you to add advertiser names to your schedule entries. This is useful if you are doing any third party advertising on your sign and allow you to track the entries which have been assigned to each advertiser. The use of advertisers is optional.

The Advertiser List

To add advertisers to your schedule entries, you must first create an advertiser list. To access the advertiser list, select the File and then Properties.. from the menu. This will bring up the Global Options box. Select the Advertisers tab which will bring up the list. Select the Add button to enter a new advertiser. Enter a name and a number in the appropriate box. Numbers are arbitrary and are just there for your reference. Click OK when complete and the new advertiser will be added to the list. You can use the cursor to hilite entries and the Edit button to change the name or number. Advertisers can be deleted by hiliting and pressing the Del button. Hit the OK button when done to save the advertiser list.
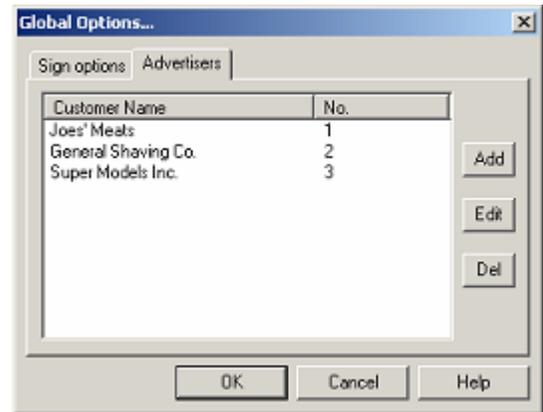
Your list of advertisers will now be available to add to schedule entries when editing their General Options.

Finding Entries

The find feature is handy when your schedule file contains so many entries that scrolling through would be very time consuming. Select "Find" from the edit menu and the find dialog box opens. You can find an entry in the list by a animation name, advertiser, date, or a combination of the three.

To search by animation name, check the box next to Search in the "Find by Name" section, and type in the full file name including extensions.
To find by advertiser, check the box next to Search in the "Find by Advertiser" section, and select an advertiser from the pull down list.
To search by date check the box next to Search in the "Find by Date" section, then select a date from each of the pull down calendars. Check in the box "Process Always Events" to include animations that are set to play always. Check the box "Check Day of Week" to include non-excluded days.

Find First

Click the "Find First" button to locate the first item fitting the search criteria. The first entry on the list will be highlighted.

Find All

If you click the "Find All" button, all entries that fit the search criteria are highlighted.

Saving The Schedule File

Once you have finished editing the schedule, you need to save it to a file. Click the Save icon from the Tool Bar or select File – Save from the menu. If you are editing a previously stored schedule, it will be automatically updated. If this is a new schedule, the Save As dialog box will appear. Enter a name for your new schedule. The extension for a schedule file is .mms. When you save a schedule file, the program will automatically give it a .mms extension. You may store your schedule file anywhere on your hard drive but we suggest storing it in the same folder with your animation files.
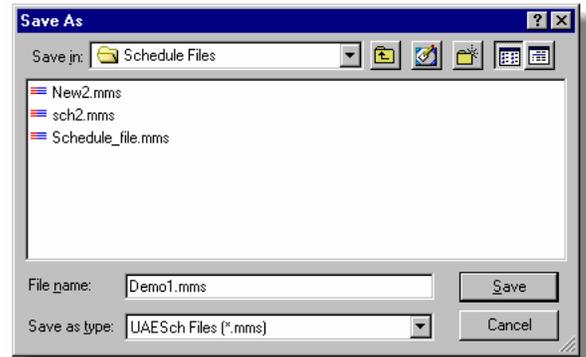
4) Communications

2MPro provides you with the functions to communicate to and control your sign(s). Before you can communicate, you will need to create the connection details. These details are needed for 2MPro to know the communications method to use to connect to your sign. To create or edit the connection list select Sign – Edit Sign List from the Main Menu. This will bring up the Sign Connections Box.

Sign Connections

This box will display a list of sign connections with their connection types and sign type information. Most of you will have a single sign that you are controlling and therefore will need only a single entry in your list. Some of you will have multiple signs to control with their own communications settings and you will need to create a connection for each. Notice the telephone icon beside the connection number. This is used to indicate the active sign which is the sign that will be transmitted to when you initiate communications.
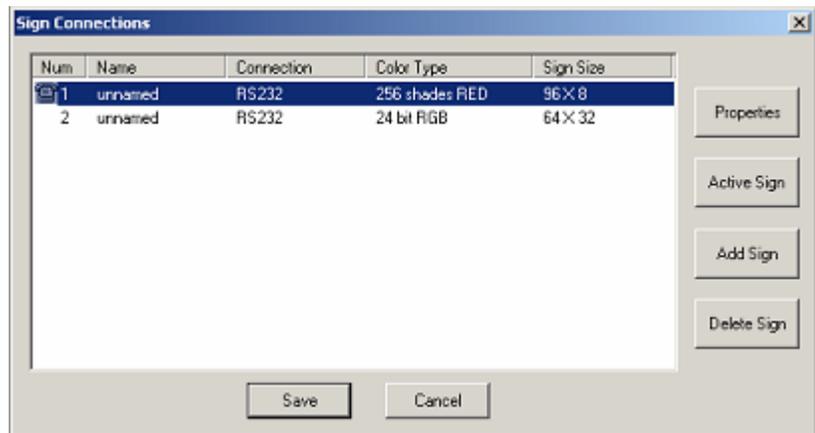
Adding Connections

To add a new connection, click the Add button. This will bring up the New Sign Connection box.
Sign Name - The first entry is for a sign name. Type a name for your sign in this box.
Sign Model – This is a drop down selection for the sign model. Refer to the documentation that came with your sign if this is in question.
Color – Another drop down to select the color type of your sign. Again, refer to your sign documentation if in doubt.
Height/Width – Use the arrow keys to enter the number of pixels in your sign.
Communications – Select the communication method from the drop down list. Currently there are three selections available; RS485, RS232, and modem. You will also need to set the communications details (page 24).
Dimming – You can program times for the sign to switch between dim and bright mode. You may want to enable this feature for outdoor signs that appear to bright in the evening. Use the Sign on Bright section to set the time in the morning for the sign to switch to bright. Use the Sign On Dim section to set the time in the evening to switch the sign to dim. The Dimming Enabled check box must also be checked for this feature to take effect.
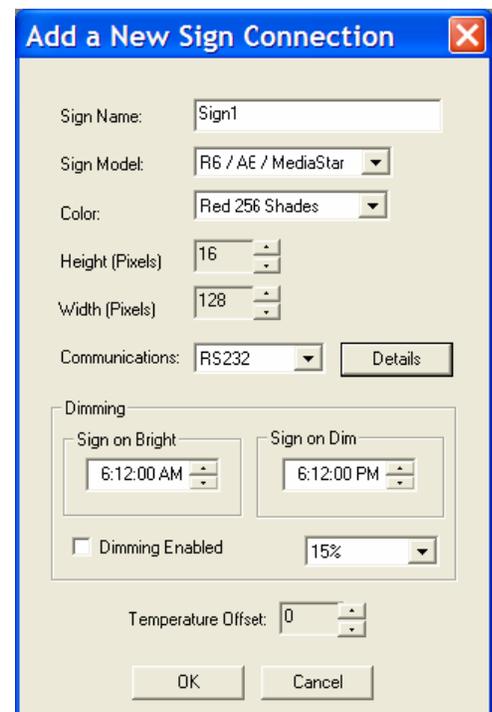
Temperature Offset – This control allows you to offset the temperature you display on the sign. The temperature reading from your temperature sensor is displayed on the status box when you connect to the sign. If for some reason, the reading appears to be higher or lower than it should be, you can change this with the offset. The spin buttons allow you to adjust this by nine degrees up or down.

Once all the connection information has been filled in, click OK to save the connection in the sign list.

Communications Details
When choosing a communications methods, you must click on the Details button in order to set all of the parameters.
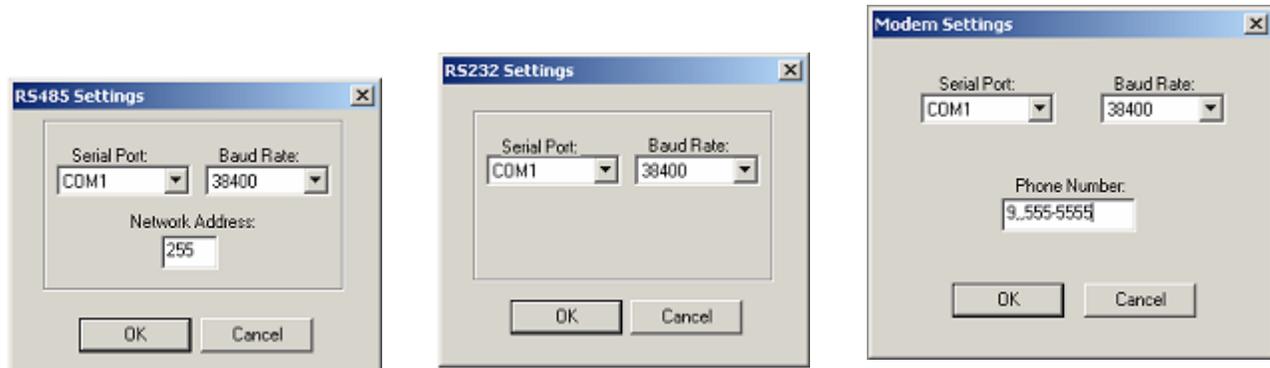
Above are the settings boxes for the three communications types.

RS485 Settings
Communications via RS485 requires that your computer be equipped with an RS485 converter box. This is a box that sits outside your computer and is connected with a cable to your computers serial port. PC computers name their serial ports as COM1, COM2, etc. You must know the name of the serial port which you are connecting the converter box to. Use the drop down list to set this.

The baud rate is the speed at which you communicate to the sign. Presently, all RS485 connections are made at 38,400 baud so you should leave this setting at 38,400 which is the default.
The network address is used when you have more than one sign connected to the RS485 cable. This is referred to as an RS485 network and requires that you set a separate network address for each sign. This should be left at 255 if there you have only one sign connected.

RS232 Settings
RS232 connections use a cable plugged straight into your PCs' serial port. The other end of the cable connects to your sign. The serial port must be set for the COM port that the cable is plugged into. The baud rate in most cases should be left for 38,400. There is one exception to this rule and that is when radio modems are being used to communicate. The communications type is set for RS232 when using radio modems, but the baud rate must be set to 9600.

Modem Settings
2MPro will automatically detect and use any modem which has been installed and configured for the Windows operating system. Therefore it is generally not necessary for you to set the port and baud rate settings. The phone number that is used to dial to the sign must be configured. Enter the exact number needed to dial the modem at the sign. If this is a long distance call, it must include 1 and the area code. If your phone system requires that a number first be dialed to access an outside line, this must be entered as well.

When you have completed entering the communications details, click the OK button to save the settings. This will bring you back to the New Sign Connection Box.

Changing the Active Sign
The active sign is the one that will be transmitted to when you request to communicate with the sign. If you have only one sign in your list, this will always be your active sign. If you have more than one sign in your list, you can change the active sign by hiliting the sign in your list with the cursor, and selecting the Active Sign button. This will cause the telephone icon to appear next to your new active sign selection.

Saving your Connection Settings
All of the settings you have entered for your signs needs to be saved before exiting the Sign Connections Box. Click the Save button and this will be done automatically. Selecting the Cancel button will take you out of the Connections Box without saving your changes.

Connecting to Your Sign(s)

Once you have created and saved your connection settings, you can communicate with your sign. To connect, press the Connect to Sign icon on the Main Tool Bar.

Connection via Modem
 If you are connecting via telephone modem, you will see a dialing status box while the modem dials the phone number for the sign and waits for a response. You may also hear the modem as it dials out and connects to the sign. If the connection to the sign is made you will see the Connection Status Box. If the connection is not made, an error condition box will appear with further information about the cause of the problem. Possible modem connection problems include:
- phone line busy
- no dial tone
- sign is not answering
- can't detect modem

Connection via RS485 or RS232
With RS485 and RS232 connections, you are directly connected to the sign via a cable. Therefore, a connection be established immediately after selecting the Connect to Sign icon. If for some reason, you cannot ocmmunicate with the sign, you will get a "No Response From Sign" message. Possible causes of this message would be:
- cable not plugged into serial port
- cable not plugged into sign
- bad cable
- bad serial port
- bad RS485 converter box
Consult with the Multimedia Installation manual for a further diagnosis of communication problems.

Sign Status

Once connected, the sign status box provides you with the following information:

Status: Indicates whether the sign is currently playing a schedule or is turned off
Playing: Is the name of the animation currently playing on the sign. This field will be blank if the sign is currently off.
Schedule Entries: Is the number of entries in the schedule currently playing on the sign.
Animation Files: Is the number of animations stored in the sign controller
Used Memory: Animations are stored in the sign controller in FLASH memory. FLASH is a type of memory that holds its information even when powered down. Used memory is the amount of FLASH being used for animation storage.
Free Memory: The amount FLASH memory still available for animation storage.
Temperature: The sign controller is equipped with an external temperature sensor. This is the reading shown in the temperature status box.
Software Rev: Is the software revision number of the sign controller. This is useful when reporting controller problems to Multimedia technical support staff.
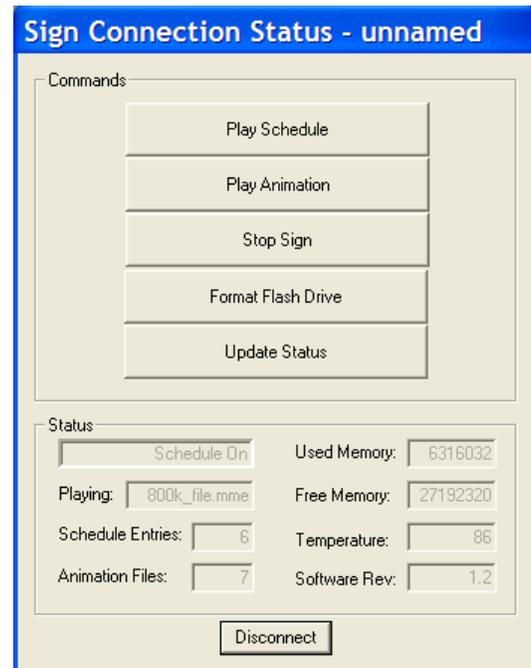
Sending Commands

Play Schedule
This command is used to send the schedule file and all the animations used in the schedule to the sign. After choosing the Start Schedule button, the software will ask if you wish to overwrite files that have the same name. If you answer yes to this question, all of the animation files that you have programmed into your schedule will be sent to the sign. Previous versions that had been stored in the controllers FLASH memory will be overwritten. If you answer no to this question, animations already stored in the signs' FLASH memory will not be resent. This allows you to make changes to your schedule and update the controller without having to send all the animations. As animations are transmitted to the sign you will see a status box with an indicator bar that shows you the progress of the file download. Once the schedule and all of the animations to send have been received by the sign, the Sign Status box will reappear showing that a schedule is now running.

Play Animation
This command is used to transmit and play a single animation on the sign (rather than a schedule). When the Play Animation button is pressed, the file open dialog box will appear. Choose the 2MPro animation file to send and click OK. If this animation already exists in the signs' FLASH memory, you will be asked if you wish to overwrite it. If you answer yes, the animation will be sent and will overwrite the version of the file stored in the sign controller. Answering no will cause the version of the animation already stored at the sign to play immediately. In either case, you will be returned to the Sign Status box which will indicate the sign is playing the animation you requested.

Stop Sign
Pressing the Stop Sign button will cause the sign to stop and go blank immediately.

Format Flash
Similar to formatting a hard drive, this command will format the FLASH memory of the controller. This will delete all the animations that are currently stored at the sign.
NOTE: You should only format the FLASH when you have exceeded the available storage.
 After selecting the Format button, you will be prompted "Formatting will erase all animations, are you sure?" You can abort the format by selecting No at this point. Pressing Yes will begin the format process. A box indicating that a format is taking place will appear. The format can take a number of minutes depending on the size of the FLASH storage in your controller. When complete, the status box should again appear indicating 0 Animation Files and all memory available for use.

Update Status
The status information shown in the box is only updated when the box is first displayed and in response to a Play Schedule or Play Animation command. You can update the status information at any time by hitting the Update Status button.

Disconnect
Hit the Disconnect button when you are finished communicating with the sign. If you are connected via RS485 or RS232, this command will close the serial port and close the Sign Status box. If you are connected via modem, this will hang up the phone line and close the Sign Status box.

Sending an Animation Directly to Sign

  You can also send an animation you are currently editing in 2MPro directly to instantly display on the sign. You must have an animation file open for editing in 2MPro for this feature to work. Press the red telephone icon to connect to the sign. If this is a modem connection, the dialing operation must be performed. Once connected, the animation you are currently editing will be sent to the sign and played. When complete, the Sign Status box will appear showing the animation being played at the sign.

Appendix A) Updating the Sign Firmware

The software that resides in the controller that runs the sign is referred to as firmware. Updates to the firmware are periodically released and you may want to load the newest version into the controller. Multimedia will provide you with a new software application called DOWNLOAD.EXE. This will be used to send the firmware file ControllerRom.srec to the controller.

NOTE: The following procedure does not apply for locations that use a telephone modem for communications to the controller. Upgrades for these signs must be done with an external RS232 cable.

Rebooting the Controller
The first step in the update is to reboot the controller. This is done in 2MPro from the Sign Status dialog box. The reboot is a hidden command. Double click the right mouse button within the dialog box. This will bring up the box asking "Are you sure you want to reboot the sign?". Click the YES and the sign will reboot and be ready for the download. Exit the 2MPro software.
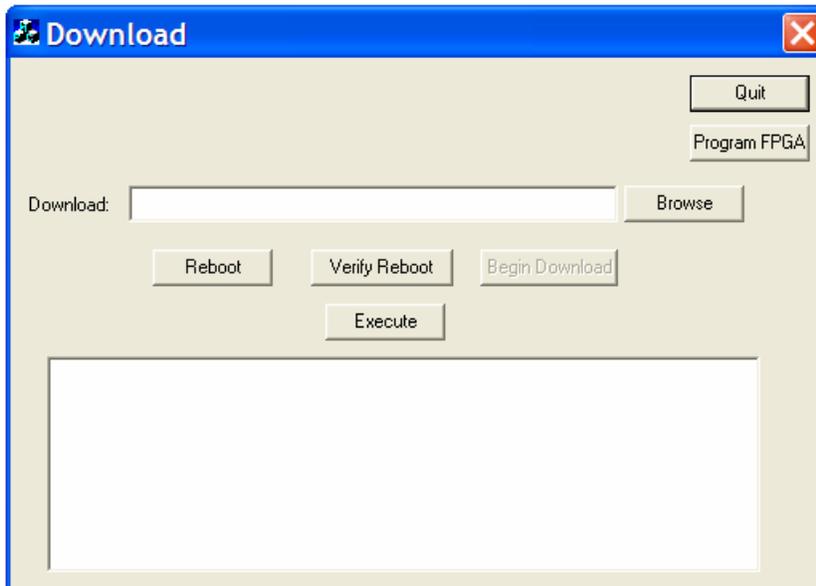
NOTE: Download.exe requires that the communication to the sign be done on the serial port COM1. If your computer is not configured this way, please contact Multimedia.

Using the Download Program
Use the following procedure to download the new firmware:
1) Run download.exe. Notice the Begin Download button is grayed out.
2) Hit the Reset button. The Begin Download button should no longer be grayed. This means you received a response from the controller.
3) Select the Browse button and choose the ControllerROM.srec file.
4) Hit the Begin Download button. You should now see data packets in the status window.
5) The message - Download Complete will appear when done.
6) Hit the Execute button.

The controller will now restart using the new firmware. Wait several minutes while the controller completes start up before attempting to re-communicate using 2MPro.

Appendix B) Adjusting the RGB Palette

RGB signs require a balanced color setting for each color (red, green and blue) to create the best possible colors on the sign. The default palette in the controller is ideal for most signs. However, we do provide you with the tools to adjust the color palette yourself. PaletteGeneration.exe is a utility that will allow you to adjust the RGB values and store them in a palette file (.plt). 2MPro has a hidden command that allows you to download and store this file in the sign controller.

Using the Palette Generator Software
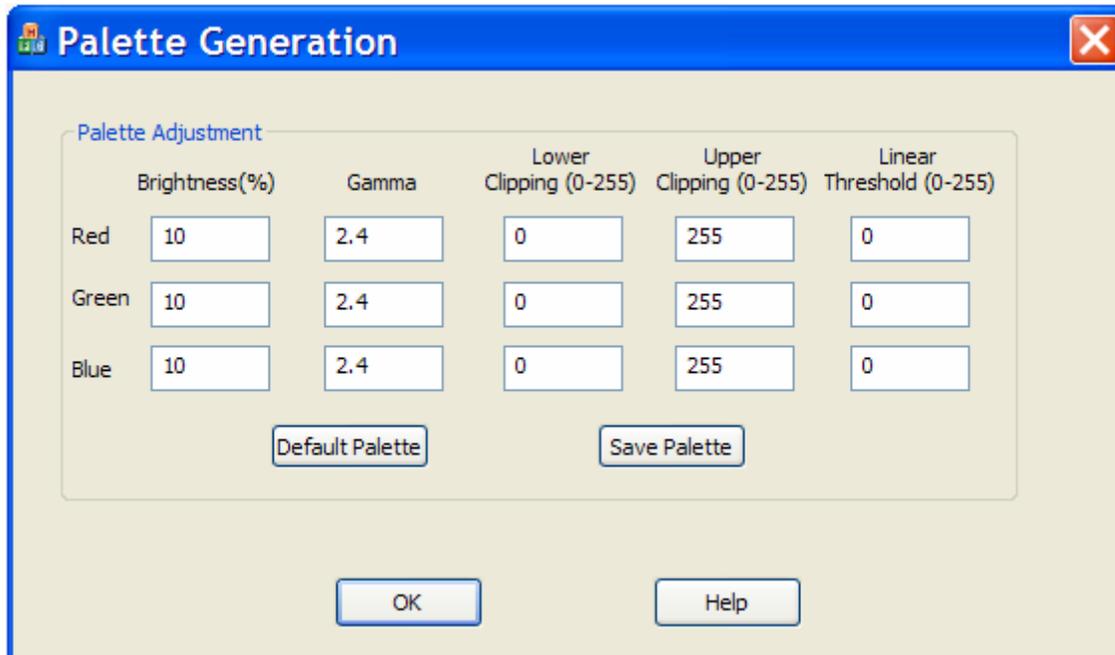
All of these controls are used together to create a palette that will make your RGB sign look as good as possible. The next page has a technical description of how all of these functions work. Typically, you will want to leave the gamma at 2.4.

Normally, palette adjustments are made because the red, green, or blue value is not balanced. With RGB on full brightness, the sign should appear white. If, for example, the sign appeared a little pink, you would want to decrease the percentage of red. The simplest method to accomplish this is to use the brightness percentage controls. The blue and green values might be set for 100% and the red turned down to 80% in order to balance the colors. This may take a few attempts to get the balance just right. Once you have set your values, click the "Save Palette" button to store a .plt file.

Updating the Sign's Palette

The palette file can be sent to the sign from 2MPro. Connect to the sign to bring up the Sign Connection Status box. Double click the left mouse button in the status box. This will bring up a file open dialog box where you will select you palette file (.plt). Once selected, the file will be transmitted and stored in the sign controller and will automatically change the sign to use your new settings.

Gamma Control

The Small Sign Controller uses a table known as a *Palette Table* to translate input intensity values for each color (Red, Green, and Blue) that can range from 0-255, into the appropriate output color values. These output colors can range from 0-4095. The intensity value of each LED may change with each frame. One typical Palette table may represent a *Linear* change in intensity. The output value would change be a constant amount (K) multiplied by the input value. So,

OUT = K x IN

However, our eyes see light intensity non-linearly. That is, the perceived color change for a change in intensity is not a constant value. Therefore, we generally need a palette table that provides a non-linear change in output value for a given input value. The general equation for this is of the form

$OUT = IN^{Gamma}$

Which says the output value is the input value *raised* to the Gamma power. Gamma is also known as contrast adjustment. A typical Gamma value is 2.4.

The palette generation table *Normalizes* the output from this function to only allow the output values to range from 0-4095, which is the range of output values allowed by the sign hardware.

The following chart shows a plot of output values as a function of input values for different gamma values. Note that the Linear plot is the same as a gamma value of one.
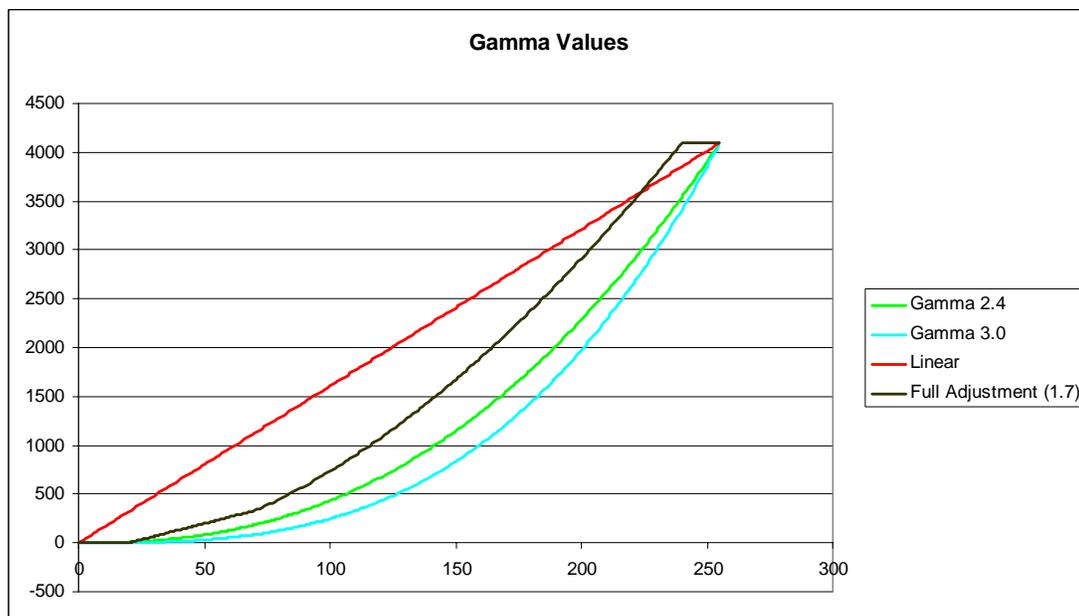
You can see that as Gamma increases, output values do not change as much as a function of the input value for lower input values. Our eyes don't respond to small changes in intensity, so we're "loading" the output at the higher end to provide for a higher contrast.

Lower Clipping

The *Lower Clipping* value is to typically make the sign look black at low intensity values. You can adjust this value so that any input value below this value is set to zero. Also, the Lower Clipping value is subtracted from the input value before further calculations are performed. This causes the output values to increase faster for lower input values.

Upper Clipping

The *Upper Clipping* value is used to raise the output value to full scale (4095) at a point prior to the full input intensity value (255). Video rarely hits the maximum input intensity value, so although the brightest portions of the video data will be "clipped" at the maximum value, overall the sign will look brighter. Note that decreasing this value "pulls" the plot to the left, giving an overall brighter output for smaller input values.

Linear Threshold

The *Linear Threshold* value is used to provide faster changes in the output values as a function of the input value, for very low input values. Any input value that is below the *Linear Threshold* value but above the *Lower Clipping* value provides an output that is a straight line (linear) until the point where the input reaches the *Linear Threshold* value, and then the output is a function of Gamma.

The *Full Adjustment* plot illustrates the results of these factors. In the chart above, the *Full Adjustment* shows a plot where *Lower Clipping = 20, Linear Threshold = 50, Gamma = 1.7, and Upper Clipping = 220.*