WMS-16STR Windows Graphical Software Display Reference

Table of Contents

START

Installing WS16 Display Software

1. Insert the disk(s) into your floppy disk drive.

2. Press the Windows 95, 98 or NT Start Button.

3. Select the Run Command.

4. Type A:\Setup.exe and press Enter.

5. Follow the dialog prompts.

   Install WS16 in a directory of your choice (default directory is recommended).

   Note: If you use the default directory, updates will install directly without directory changes.

7. Enter WS16 into your program directory.

8. Run WS16.

Welcome to WS16

WS16 Display is a Windows 95, 98 or NT software program for datalogger applications. WS16 communicates with WS16 loggers for monitoring and display of sensors and devices. WS16 provides a graphical display interface, report generator, data analysis, security, and telephone dialer. WS16 includes the design and runtime interface in one package. There are no limits on the number of loggers or sensor data points you can set or use. WS16 standard window's interface and setup tools make it easy to design new screens and reports for your application.

WS16 screen display

General Description

WS16 is written for Windows 95, 98 or NT operating systems. Windows was chosen as the base platform because of its multitasking capability and handling of computer resources. WS16 is an object-oriented program: each visual component is an object (Trends, Tanks, Annunciators, LED Displays, Images, Labels, etc.). Every component stores its own display properties and sensor data properties. Once you have created a new component and set its properties, the program updates the component whenever a change is measured.

Run Mode vs. Edit Mode

The program can be toggled from run mode to edit mode by selecting the Edit | Run menu item, or by clicking the red square, run button. Clicking this button changes the state of the program from Edit Mode to Run Mode. When in the edit mode certain functions are disabled until you go

back to the run mode. To switch back to the run mode, click the green arrow or run button. You must log on before changes can be made.
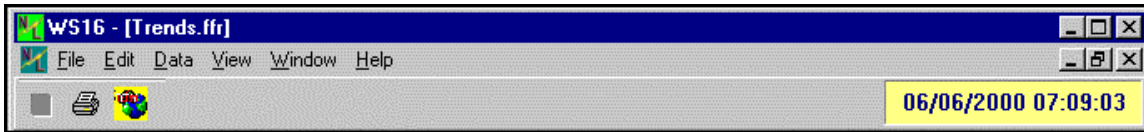
Main toolbar when logged off.

Note: The user must be logged on before the run and edit modes can be toggled on/off.

Toolbar

Creating new display objects are easy. Click once on a toolbar button in the edit mode to create a new component. The new component is centered on the active form. To change the component's properties, double click it to open the property form. Change it's properties to get the look you want. When you click the update button, the new properties are applied to the component. Drag the component anywhere on the form, resize it by selecting one of it handles and dragging it. Nudge it by pressing the Ctrl Key and Arrow keys at the same time.

Click on the green triangle button to go back to the run-time mode. (the green triangle changes to a red square). Click the red square Button to see tool bar.

In Run Mode
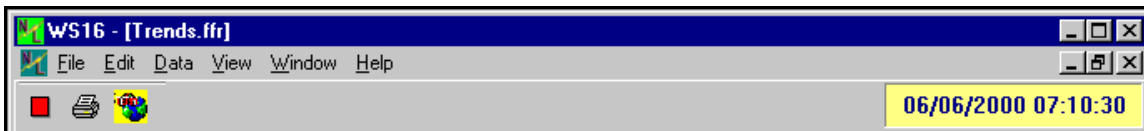
Main toolbar when logged on, in run mode.

In Edit Mode
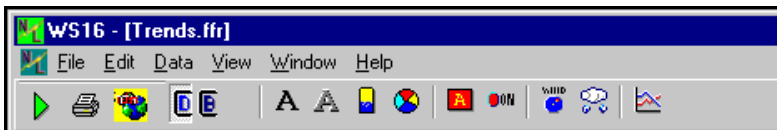
Main toolbar when in edit mode.

This program is designed to follow many of the standard Windows mouse and keyboard commands. In edit mode, copy a component by pressing `Ctrl-C` and paste it back by using `Ctrl-V`. Right click the mouse button to show a popup menu. Use `Ctrl + Arrow` keys to move components on the form and `Shift + Arrow` keys to resize existing components pixel by pixel.

A key part of this program is learning to set the component properties to reflect what you want to display. Once you have set the properties and closed the property form, the new properties are stored in the component. When the program is closed, each form saves its components and their properties.

WS16 is a Multiple Document Interface (MDI) application. The multiple documents are the child forms or screens you create. The main window houses all the child forms in one area, keeping them together. You can tile, cascade, maximize, resize, and close the forms. Closing a form, however, only minimizes it so that the components are still updated with changes. Deleting a form deletes all its components and it's saved file also.

There are other windows that are not child forms. These windows are either running in the background or created when needed. The Setup, File Form and Communications Window are always running in the background, just hidden from view. These windows are updated with new data as they happen.

WS16 has been designed to use a minimum amount of Windows resources while running. This will allow you to use other programs at the same time. We have had over 6 programs running at the same time with WS16. This includes Excel, Word, Notepad, MEW (word processing), PhotoShop, and ImageEdit. The amount of RAM in your system will affect program speed, 32 Megabytes is the minimum recommended. WS16 also runs while accessing the Internet or CompuServe at the same time.

Important WS16 files

Main Initialization File   "WS16.ini"

Project Initialization File   "ProjectName.INI"

Setup Files   "ResGrid.bnn & ResData.dnn"

                        "SetGrid.bnn & SetGrid.dnn"

Form Files   "Form1.ffr", "Summary.ffr", "Overview.ffr", etc.

Chart Files (Chart Folder)   "ButtonChart1.tee", "ButtonChart1.tdd", "ButtonChart1.INI"

Data Files (Data Folder)   "Data1.txt"

Report Files   "Report.rtf, MaxMinAve.rtf"

WS16 help file   "WS16.hlp & WS16.cnt"

Undo_ffr Folder   "Form backup when editing"

Rain Folder (Data Folder)   "Rain button files"

PROPERTIES

The Property Form is shown when the program is in edit mode and an object or component is double clicked or right clicked and selecting Properties from the pop up menu will bring up the Property Form.

Property Form	31 Annun1 :evAnnun
Property	**Values**
TagName	Annun1
Text	
Sensors(1)	R-T1CommFail.1
Font	Arial
OnMsg	Fail
OffMsg	OK
OnColor	clRed
OffColor	clBlue
BorderStyle	Lowered
SetPoint	0
Operator	NotEqual(<>)
UseBits	No
Left	337
Top	97
Width	55
Height	22

Close   Undo   Update
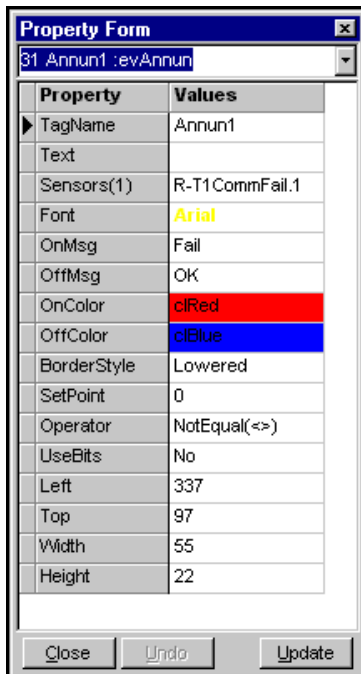
Typical property box

The property form allows you to change the display characteristics of each component. You can move it to a new location, change its font, change its text, set a sensor, etc. You can edit these properties, update the component changes on the form, undo the changes, and press Close button.

Some standard component properties:

Left - This is the component's left position on the form.

Top - This is the component's top position on the form.

Width - This is the component's width.

Height - This is the component's height.

Font - This is the font for the components text. Set the size, style and color.

Back Color - This is the background color for the current component.

Other common properties are:

Title Color- set the color of the title text on the component.

On Color- the color the component becomes when the status bit is on or the bit is equal 1.

Off Color- the color the component becomes when the status bit is off or the bit is equal 0.

Fail Color- the color the component becomes when the status bit is equal 1.

Title- the component title. This value will help the user to know which component represents which part in the system

On Message- this message is displayed when the component status bit is on.

Off Message- this message is displayed when the component status bit is off.

Fail Message- this message is displayed when the component status bit is on

Style- this option is for image components. Choose Normal, Transparent, or Masked.

Line Width- set the width of the line in pixels.

Line Slant- the line can be either Horizontal, Vertical, Slant Right, or Slant Left. Choose the orientation for each line with this setting.

Line Color- set the color of the line here.

Angle- some components can be rotated; this setting determines how many degrees the component is rotated

One of the best ways to set properties is to configure one component first. If the component has the look you want, copy it and then paste it back to your form. The pasted component will have its properties set the same as the others.

FILE FORM

Use the File Form for historical data viewing and parsing. **Parsing a file** is separating the datetime and data in each row and placing the data in the setup grids. It then updates the display forms. It can parse a file very quickly with all the results being entered into the result grid and on the forms.
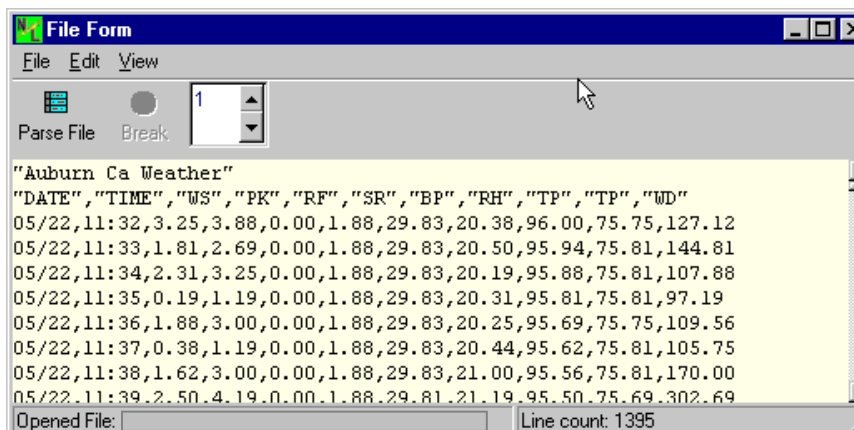
The file form is used to view historical data that is saved on your hard disk. You can load a file and then parse it into the main program. If you reset your data, the maximums, minimums, etc will be calculated for this data set.

The file form is where historical data is loaded from a file or loaded from a logger. When data is transfered from the memory of the logger, this form shows the results of the memory transfer.

The data can then be parsed into the program to calculate the maximums, minimums, averages. etc.

The logger number selected will only matter if you are using more than one logger. If you have logger 2 connected to your computer, select number 2 in this window. Then data from logger 2 will update the setup sensors that are defined for logger 2.

File Form Menu Items

File Menu
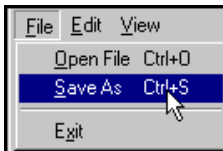
Select the file menu items; open an historical data file and parse it; save the file as a different name or exit the window.

Exit does not close the application here. It only hides the file form window.

Edit Menu
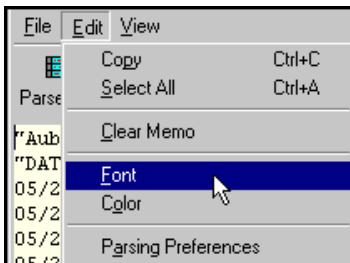
The edit menu allows you to copy or select all text, clear the memo, change the font and background color and select the Parsing Preferences.

Parsing Preferences

Parsing preferences are used when the viewing logged data after being in real time. The parsing preferences normally reset all data summarys and trends. Then an accurate summary is created from the new data. Each time you parse a logged file, the parsing preferences will be used. If you want to trend several data files together, then set the preferences so that the trend data is not reset when parsing. Then the data will be added to the data already shown in the trend.

Parsing Preferences

When parsing a file, the selected will be reset.

☑ Reset All   ☐ Reset MaxMin

Reset All resets   ☐ Reset Change
MaxMin, Change _Data.   ☐ Reset Data

☑ Reset Rain
☑ Reset Trends

[OK]   [Cancel]
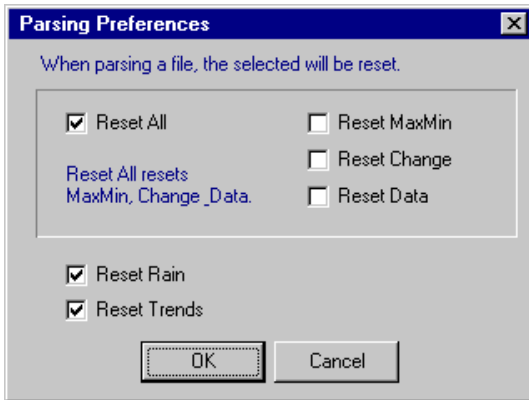
Select the parsing preferences needed.

FORMS

Form Files are saved as binary files with a *.ffr extension. Form files are child windows which are created by selecting File | New Form from the menu. See Editing Forms for more information on building forms.

WS16 - [Summary.ffr]

File   Edit   Data   View   Window   Help

04/28/2000 16:21:31

Summary

Sensor	Data	Maximum MaxTime	Minimun MinTime	Average	Change
Wind Speed	0.00	19660. 04/27/2000 11:04:00	0.00 04/27/2000 15:55:20	16917.	-1966C
Wind Direction	0	0	0	0	0
Temperature 1	278.25	278.25 04/27/2000 11:04:00	278.25 04/27/2000 11:04:00	278.25	0.00
Temperature 2	43.60	52.32 04/27/2000 11:15:45	34.88 04/28/2000 14:24:05	34.88	0.00
Rel Humidity	0	0 04/28/2000 16:21:35	0 04/27/2000 11:04:00	0	0
Baro Pressure	77.01	77.06 04/27/2000 11:32:00	76.95 04/27/2000 11:07:45	76.95	0.00
Rain	123.40	1285.0 04/27/2000 12:06:15	123.37 04/27/2000 11:12:50	124.58	124.58

Summary.ffr   Trends.ffr   Overview.ffr

Adding to: Rain1.04270.csv   Parsing Line 4   Weather

WS16 Form displays

The form files are stored in the project directory and referenced by name in the project initialization file.

The tabs at the bottom of the forms provide another means of accessing each form in the project. The selected form will be shown in white and the other forms will be in gray. Just click on any of the tabs to see that form.

EDITING FORMS

To edit a form you can click on select the Edit | Edit Form menu item or press F9, or click on the red square in the tool bar. A password to edit forms and communications is required before editing is possible.
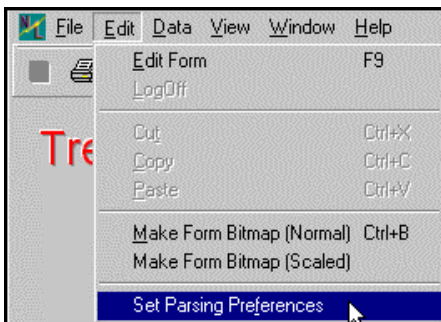
Edit Form or F9 menu item

FORM EDITING

The background shows a grid in edit mode and the green arrow is showing with the toolbar. Click the green arrow to go back into the run mode.

Select a component in the edit mode by clicking on it. Selected components have handles around them.

When in the edit mode, the form background changes to a dotted background. If a bitmap image is covering the background, there will be no visible change.

Form in edit mode. Press the Green Arrow Button to back to run mode.
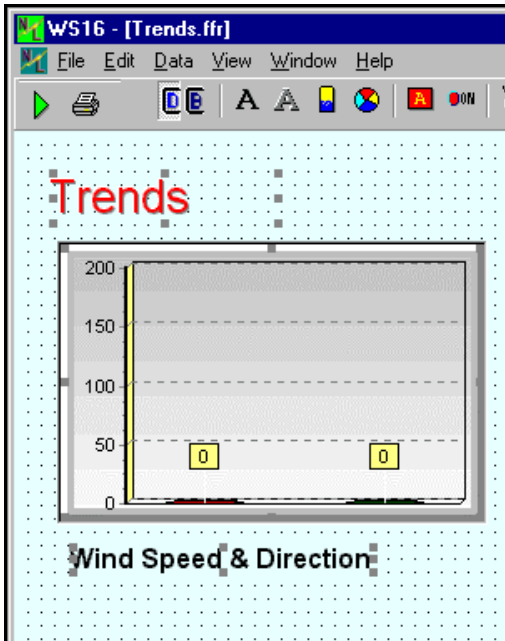
Select multiple components by clicking the form with the left mouse and dragging until a rectangle is shown. The components touched by the rectangle will become selected. You can also click on one component and then shift-click to add or subtract components to the group.

The editing mode allows you to edit the forms and components. If the current user has permission to edit forms, the Red Square Button on the toolbar will be enabled and the menu item, Edit | Edit Forms will be enabled.

Click the Red Square Button or select the menu item and you will be in the edit mode. The Red Square Button has changed to a green arrow. Clicking on the green arrow starts the communications again and the program goes back into run mode.
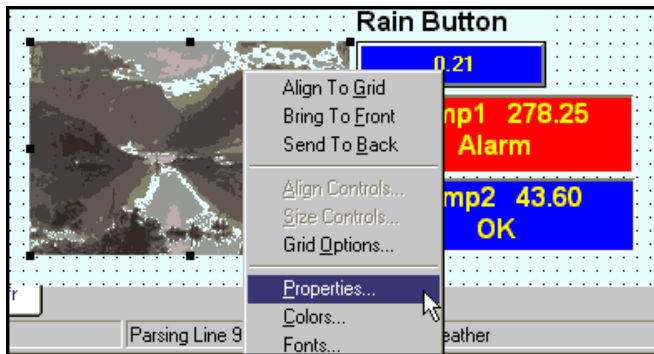
Use the right mouse button to click on one of the selected components. A popup menu will allow you to align controls, size controls, bring to the front, or send to the back. Use the right click to select the properties of one component without moving it on the form.

Note: The cut, copy and paste commands are only enabled when the form is in edit mode.
If you go back to the run mode, components that have been copied or cut will be removed from clipboard.

Cut

The Cut menu item or `Ctrl-X` can be used to remove a component from the form in the edit mode. When you cut a component from a form it can be pasted back to the same form or to any other form. Multiple components can be cut, copied or pasted.

Copy

The Copy menu item or `Ctrl-C` is very similar to the Cut command. To copy a component to the clipboard, select the component and press `Ctrl-C` or select the menu Edit | Copy. This is done only in the Edit Mode. You can then paste `Ctrl-V` the component back to the form as many times as needed.

Paste

The Paste menu item or `Ctrl-V` is used along with Copy and Cut. When a component is copied to the clipboard (by the Copy or Cut command), that component can be pasted back to the form by pressing `Ctrl-V` or selecting the menu item. Multiple copies of one component can be pasted to one or more forms. Just use the `Ctrl-V` command to paste the copied component as many times as needed.

Note: The object copied is clear when you go out of the edit mode. If you want to paste between forms, copy the component and click on the new form tab and then paste it. The component will be pasted into the selected form.

Nudging

You can nudge components if they are selected. Just press the Ctrl + Arrow Keys. You can also resize the component (pixel by pixel) by using the Shift + Arrow Keys. If multiple components are selected, all components will be moved or resized.

Make Form Bitmap (Normal)

Make form bitmaps copies the current form into the clipboard for pasting into reports. The main problem with this method may be the width of the bitmap (usually to big). Use this method if you

want to paste the bitmap into a paint program or other program for editing.

Make Form Bitmap (Scaled)

Make form bitmap scaled copies the current form into the clipboard and resizes the bitmap to fit into an existing report width (about 7"). Use this option if you want to make a report with the form image as part of the report.

MENU ITEMS

The following items are listed in order as they are seen within the program (from the top of the main window to the bottom).

Title Bar

Program Icon (Icon at top left of WS16 program)

Caption: WS16 - [Form Name]

If a child window is maximized then caption reads: WS16 - [Form Name]

Minimize Button, Maximize Button, Close Button

If you click on the program icon a standard Windows menu is displayed. This menu item includes standard window command:

Restore, Move, Size, Minimize, Maximize and Close.

Menu Items

The menu items allow you to view different forms and make changes to your program. Buttons on the toolbar duplicates some of the menu items. If you like using the keyboard, you can press the `Alt` key and the underlined letter to access a menu item.

File Menu
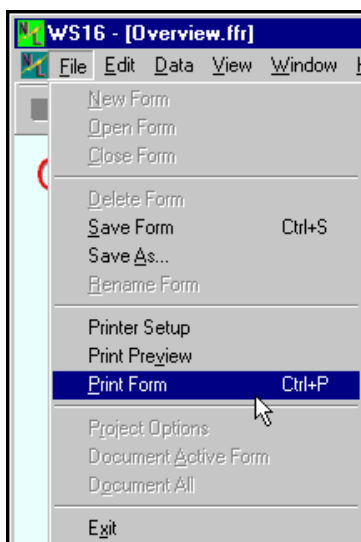
Several menu items are disabled. This is because the user is not logged on to the system. No changes can be made until the user logs on.

New Form

The New Form menu item creates a new form. This item is enabled only if the current security level allows it. Once a form is created it becomes part of the application until it is deleted.

Note1: When a form is created the application names it: Form1.ffr. You should rename the form by clicking on the File | Rename Form. Enter your new form name and click OK. When the application is closed, the form will be saved with this name. Save the current form with the selecting the Save Form menu item or using the key command Ctrl S.

Note2: You can also save the form by doing a File | SaveAs. This saves the form with the new name and doesn't change the original form. To duplicate forms, use the SaveAs command.

Open Form

The Open Form menu item opens a form file (*.ffr). If the file is already opened then it open a copy of the form.   You can open forms from other projects into your application. Be sure to rename the form if your form is a copy of another form or if the form name is the same as another form in your project.

The opened form becomes part of the project when saved or when the application is closed.

Close Form

The Close Form menu item closes the active child form and removes it from your project. It does not delete it from the project folder.   You will be prompted that this form will be closed from the project. Select yes if you really want to close it from the project.

Delete Form

The Delete Form menu item deletes the form from the project and also deletes the form file from the project directory. Use the delete command if you want to delete this file from your project and from the hard disk.

Save Form

The Save Form menu item saves the current form to disk, creating a .ffr file. The form name is the form's caption or title. You can use the rename form command at any time to rename the current form to a more meaningful name. Use keyboard command "Ctrl S" to save at any time.

Save As

The Save As menu item saves the current form as a new form.ffr file. Use the Save As form command when you want to make a duplicate of a form. This is useful if many of your sites are the same. You can then open the new form into your project for editing. You can open any existing form again by using the open form command. It makes a copy for you and opens it in your project.

Rename Form

The Rename Form menu item renames the current form and its corresponding ".ffr" file.

When a new form is created it is named Form1.ffr. You can rename the form to a more meaningful name by using the rename command. None of the components are changed or checked, since it is using an existing form.

Printer Setup

The Printer Setup menu item allows you to the select and configure the printer for this application.

Print Preview

The Print Preview menu item pops up a print preview screen to show the form to be printed. You can cancel the print job or select Print Form.

Print Form

The Print Form command is used to print the entire active form. If you only want a portion of the form you can resize the form first to show only the items you want to print and then select print form. Print form will print the form as soon as you select it.

Note: Be sure to check your default printer if you are using more than one printer. Use the printer setup command to do this.

Project Options

WS16 loads the last project opened when started. A project is a group of screens, and setup files stored in a project folder. You can open other projects from this menu item as well as back up your existing project (recommended). See the projects section for a complete description.

Document Active Form

Document Active Form loads the report form with a list of the project name, and the active form with all components. Important component's properties are shown. Use this menu command to check your forms and to keep a record of your forms. The report can be saved or printed.
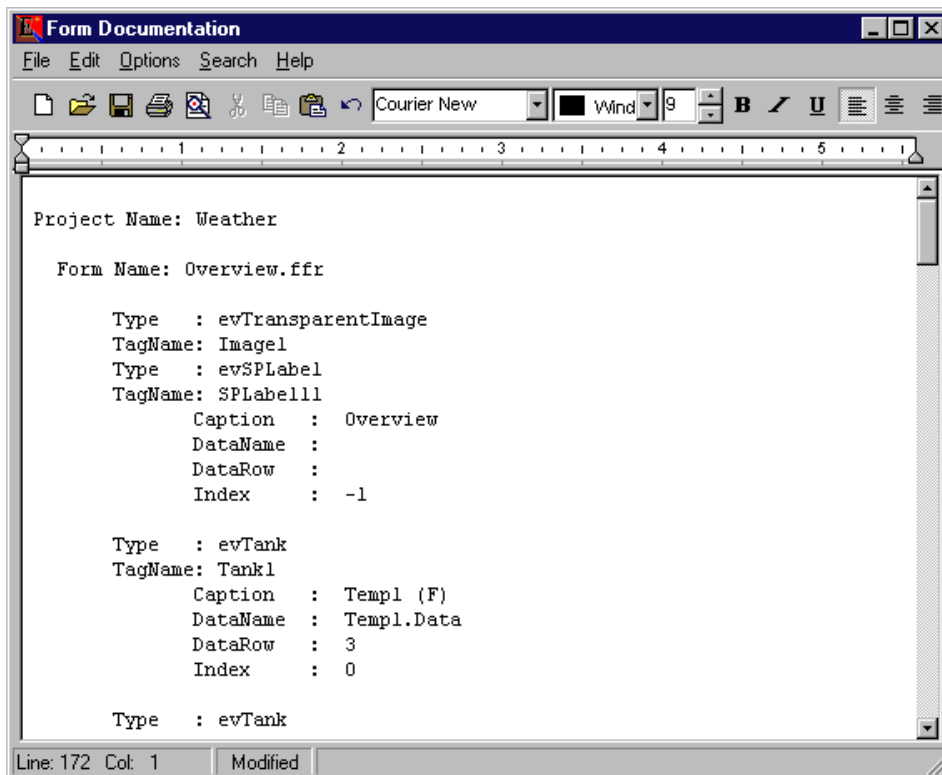
Form documentation

Document All

The Document All menu command loops through all the forms and documents each screen or form.   The output is presented as a report. You can save it or print it.

Exit Command

The Exit menu item closes the application and automatically saves the child forms and components. You do not have to save the forms individually. The program saves it for you. The exit command also writes to the WS16.ini file and the Project.ini file. These files are used to reopen the project as you left it.

EDIT MENU
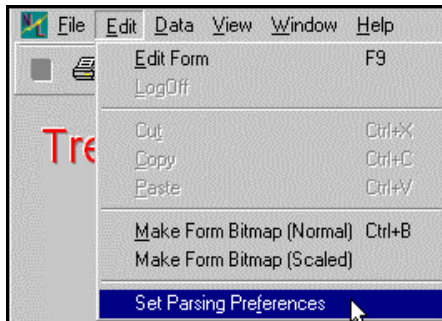
Main form editing menu options

Edit Form

The edit form is a toggle from editing to run mode. You can only go into the edit mode if you have the correct password.

Log Off and Log On

Logging off requires the password be entered again to do any editing.

Cut

The Cut menu item or `Ctrl-X` can be used to remove a component from the form in the edit mode. When you cut a component from a form it can be pasted back to the same form or to any other form. Multiple components can be cut, copied or pasted.

Copy

The Copy menu item or `Ctrl-C` is very similar to the Cut command. To copy a component to the clipboard, select the component and press `Ctrl-C` or select the menu Edit | Copy. This is done only in the Edit Mode. You can then paste `Ctrl-V` the component back to the form as many times as needed.

Paste

The Paste menu item or `Ctrl-V` is used along with Copy and Cut. When a component is copied to the clipboard (by the Copy or Cut command), that component can be pasted back to the form by pressing `Ctrl-V` or selecting the menu item. Multiple copies of one component can be pasted to one or more forms. Just use the `Ctrl-V` command to paste the copied component as many times as needed.

Make Form Bitmap (Normal)

Make form bitmaps copies the current form into the clipboard for pasting into reports. The main problem with this method may be the width of the bitmap (usually to big). Use this method if you want to paste the bitmap into a paint program or other program for editing.

Make Form Bitmap (Scaled)

Make form bitmap scaled copies the current form into the clipboard and resizes the bitmap to fit into an existing report width (about 7"). Use this option if you want to make a report with the form image as part of the report.

Set Parsing Preferences

Parsing preferences are used when the program goes from monitoring in real time to historical data analysis. You normally will use the reset all data option, reset trends and rain buttons when processing an historical data file.
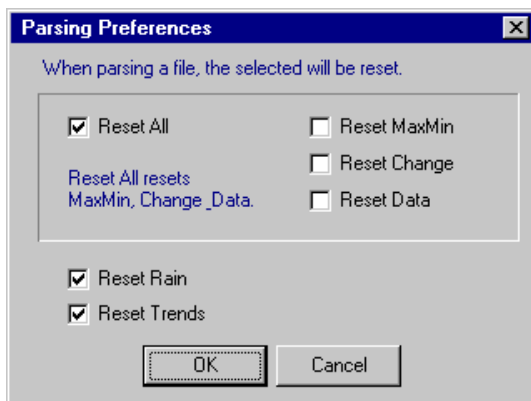
Select this dialog to set the parsing preferences.

DATA MENU
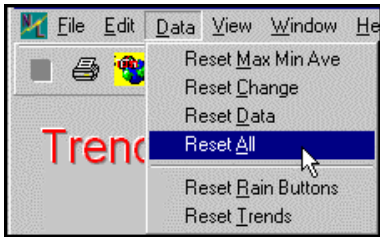
Reset Max Min Ave

Resets the maximum, minimum and average values. These are reset at midnite every day.

Reset Change

Resets the change values. These are reset at midnite also.

Reset Data

Reset the data values only. These are not reset at midnite.

Reset All

Resets all of the above (max, min, ave, change, and data).

Reset Rain Buttons

Resets the form rain buttons. If the WS16 has been running for a long period of time and the software is started and stopped on a regular basis, the rain button totals will be wrong. The rain button totals are only correct if you run the program at all times monitoring the rain. Reset the rain button if the totals look incorrect.

Reset Trends

Resets the form trend values. The trends should be reset if the data being loaded has the same dates as the existing data or has older dates. If you want to see more than one set of logged data then don't reset the trends.

VIEW MENU

View menu items

The view menu provides access to many important windows. The setup and communication window, and Reports are selected from here.

Standard Window Commands
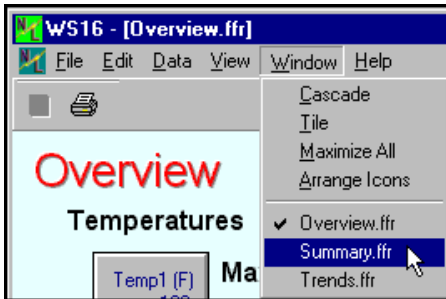
Wndow menu items

Window Cascade

Window | Cascade performs the standards Windows cascading function. The forms will be cascaded downward and to the right.

Window Tile

Window | Tile performs the standard windows Tile function. This arranges the windows side by side in the main window.

Window Maximize

Window | Maximize All maximizes all of the forms in the project.

Child Forms

The forms shown below the menu and tool bar are MDI Child Windows. These are your real time screens with display components. Forms, screens, windows, displays are all MDI child windows.

Status Bar

Summary.ffr	Trends.ffr	Overview.ffr		
Form Clicked: Trends.ffr		Parsing Line 64		Weather
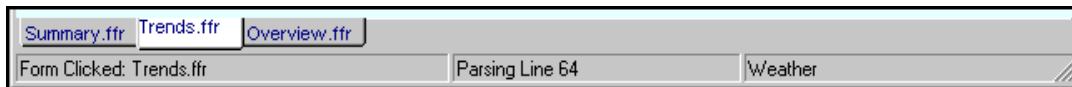
Status bar and form tabs.

Panel 1: Display system status messages.

Panel 2: Displays communication messages.

Panel 3: Current project name.

See Toolbar

SETUP

You can access the Setup Form from the Main Form by selecting the menu View | Communications or View | Setup. Both menu items will display the Setup Form. Sensor setup, data results and communications is done in the setup form.

The Setup Form has 3 tabs:

1. Settings

2. Results

The Setup Form showing the Settings Tab.

Note: The order of the sensors in the Settings Grid is important. When data is received from the WS16 communications, it is parsed into date, time, data1, data2, data3, ... dataN. Data1 is placed into the raw column, first row of the Settings Grid. Data2 is placed into the 2nd row, Data3 into the 3rd row, etc. The number of sensors assigned in the WS16 enclosure should be the same as the number of rows in the Settings Grid.

When in the edit mode, you can change items in the Settings Grid. The Results Grid is calculated from the settings in the Settings Grid. The raw column and time column are input from the communications parsing. When the program is in the monitoring mode, each line is parsed into the appropriate time and raw data columns. The raw data is changed into engineering units and placed into the results data column. The program then calculates the average, maximum, minimum and change for each sensor. These data values are available for reports and form displays.

Setting you can change:

1. Name (use default names as much as possible). Form components and reports use names to get data from the results grid. If the names are the same as the defaults, components will not

have to be changed and will display data properly. Default names (names are case sensitive) are the same as the xmodem transfer title names:

      a. WS   (wind speed)   and   PK (peak wind)

      b. WD   (wind direction)

      c. TP1   (temperature 1)

      d. TP2   (temperature 2)

      e. RH   (relative humidity)

      f. BP   (barometric pressure)

      g. RF   (rain fall)

      h. SR   (solar radition)

These names are entered when you want default names inserted into your grid. These names can be in any order or rows. Names should not be duplicated. The data from a duplicated name will always show the first row of the name.

2. Multiplier (normally 1).

3. Adder (normally 0).

4. Format (normally 2). This is the number of decimal places shown. (0=4, 1=4.1, 2 = 4.12; 3=4.123).

5. Count, Sum and First are calculated by the program. These values are used the maximum, minimum, average and change calculations. You don't need to set these values.

	Row	Logger▼	Name	Time	Data	Average	Maximum	Max Time	Minimum	Min Time	Change
▶	1	1	WS	05/10/2000 16:06:00	0.00	0.00	0.00	05/10/2000 09:57:00	0.00	05/10/2000 09:57:00	0.00
	2	1	PK	05/10/2000 16:06:00	0.00	0.00	0.00	05/10/2000 09:57:00	0.00	05/10/2000 09:57:00	0.00
	3	1	RF	05/10/2000 16:06:00	0.00	0.00	0.00	05/10/2000 09:57:00	0.00	05/10/2000 09:57:00	0.00
	4	1	SR	05/10/2000 16:06:00	3.38	3.34	3.50	05/10/2000 10:16:00	3.19	05/10/2000 09:57:00	0.31
	5	1	BP	05/10/2000 16:06:00	28.25	28.25	28.25	05/10/2000 09:57:00	28.25	05/10/2000 09:57:00	0.00
	6	1	RH	05/10/2000 16:06:00	0	0	0	05/10/2000 16:06:00	0	05/10/2000 09:57:00	0
	7	1	TP1	05/10/2000 16:06:00	77.00	77.00	77.00	05/10/2000 09:57:00	77.00	05/10/2000 09:57:00	0.00
	8	1	TP2	05/10/2000 16:06:00	108.19	109.39	123.44	05/10/2000 10:01:00	-39.50	05/10/2000 09:57:00	162.94
	9	1	WD	05/10/2000 16:06:00	359	359	359	05/10/2000 16:06:00	359	05/10/2000 09:57:00	0

Status   Parsing

The results grid showing columns for Name, Time, Data, Average, Maximum, MaxTime, Minimum, MinTime, & Change.

Components are assigned sensor names to show data.

The results sensor names are as follows:

1. 1.TP1.Time   1=logger number, TP1=sensor name, Time=column selected.

2. 1.TP1.Data

3. 1.TP1.Average

4. 1.TP1.Maximum

5. 1.TP1.MaxTime

6. 1.TP1.Minimum

7. 1.TP1.MinTime

8. 1.TP1.Change

Each defined sensor defaults into the 8 sensors listed above. Any of these values can be displayed or placed in a report.

Setup Menu Items

File Menu
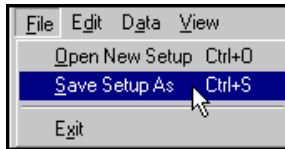
The file menu items, Open a data file for parsing, save setup as, and save the communications memo as.

Open Data File

Selecting this menu item, stops the current parsing and opens a data file for parsing. If the file is formated properly, it will be parsed and the data will be input into the results grid and the forms will be updated with the file values.

Save Setup As

Use this option to make a duplicate of your current grid settings. Use a different name than the default names.

Exit

Hides the Settings Form. If parsing is on, it will continue in the background.

Edit Menu
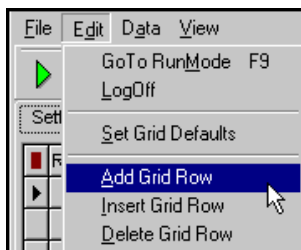
The Edit Menu Items are used for editing the grid settings and clear the communications menus.

Goto EditMode or Goto RunMode

You have to enter a password before you can enter the edit mode. If the password was already entered, you will go directly into the edit mode.

Log Off

Logging off means you will have to enter the password again to edit forms and sensor settings.

Set Grid Defaults

Set the grid defaults, sets the names and default parameters for the standard weather station. Only do this if you need to go back to the default settings.

Add, Insert and Delete Grid Rows

Add a grid row adds a row to the end of the grid.

Insert a row inserts a row above the cursor.

Delete a row deletes the row the cursor is in.

Data Menu
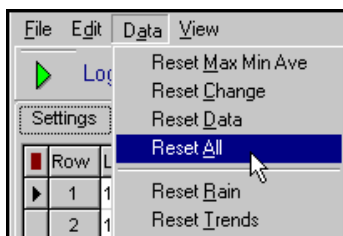
Use the data menu to reset maximums, minimums, averages and changes.
Use this menu to reset the rain buttons and trends.

The Data menu is used to reset the statistic information that is calculated during the day. These values are normally reset at midnite. Rain and trends are not reset at midnite.

View

You can go back to the main form using this menu item.

COMMUNICATIONS

Communications

The communications with the WS16 logger is easy to setup and use. The program must be set at the same communication parameters as the WS16 logger. Once this has been done and your communications port is open, you can press an enter key in the memo window to see a menu from the logger. Select the logger options necessary to either download XModem data or view real time data.

```
[Terminal] COM1,19200,8,1,None,isOpened                              _ □ ✕
File  Edit  Terminal  Dialer  View

   🟢        📝          ☎         ☎         ⟳X        📑
 CloseCom    SetCom        Dial     Hang Up    RX Xmodem   ParseON

06/05/2000, 13:30:15,    0.00,    0.00,    3.21,   28.25,    0.17,   77.01,   123.40,   359.47
06/05/2000, 13:30:20,    0.00,    0.00,    3.21,   28.25,    0.17,   77.01,   123.37,   359.47
06/05/2000, 13:30:25,    0.00,    0.00,    3.21,   28.25,    0.17,   77.03,   123.37,   359.47
06/05/2000, 13:30:30,    0.00,    0.00,    3.21,   28.25,    0.17,   77.01,   123.40,   359.47
06/05/2000, 13:30:35,    0.00,    0.00,    3.21,   28.25,    0.17,   77.03,   123.40,   359.47
06/05/2000, 13:30:40,    0.00,    0.00,    3.21,   28.25,    0.17,   77.03,   123.37,   359.47
06/05/2000, 13:30:45,    0.00,    0.00,    3.21,   28.25,    0.17,   77.03,   123.40,   359.47
06/05/2000, 13:30:50,    0.00,    0.00,    3.21,   28.25,    0.17,   77.01,   123.37,   359.47
06/05/2000, 13:30:55,    0.00,    0.00,    3.21,   28.25,    0.17,   77.03,   123.40,   359.47
06/05/2000, 13:31:00,    0.00,    0.00,    3.21,   28.25,    0.17,   77.03,   123.40,   359.47

Terminal File: None              Parsing Terminal Line 42          Line: 41  Col: 94
```
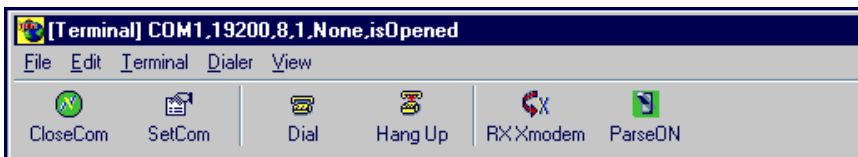
Communications memo showing data that has been parsed and entered into the settings and result grid.

Communications Toolbar

Many of the communication function are handled by clicking a the toolbar buttons.

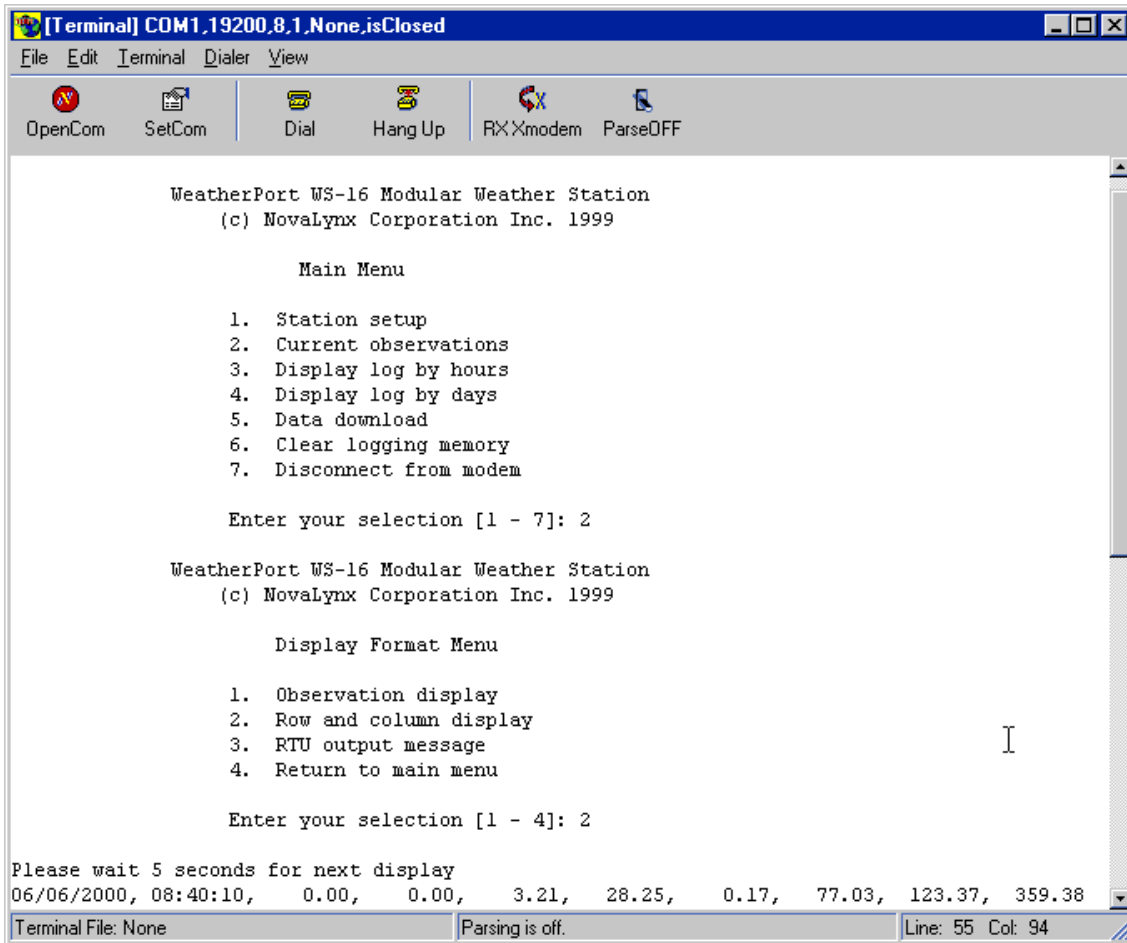You can open or close the communications port.

You can set the communication parameters.

You can dial out to a remote logger and then hang up.

You can receive an Xmodem file from a direct connect logger or modem logger.

You can toggle the parsing of real time data on or off.

Real Time Monitoring Process

```
[Terminal] COM1,19200,8,1,None,isClosed                    _ □ X

File  Edit  Terminal  Dialer  View

  ☢          ☝           ☎         ☎          ⟳x         ⬆
OpenCom    SetCom       Dial      Hang Up   RX Xmodem   ParseOFF

            WeatherPort WS-16 Modular Weather Station
                (c) NovaLynx Corporation Inc. 1999

                        Main Menu

            1.  Station setup
            2.  Current observations
            3.  Display log by hours
            4.  Display log by days
            5.  Data download
            6.  Clear logging memory
            7.  Disconnect from modem

            Enter your selection [1 - 7]: 2

            WeatherPort WS-16 Modular Weather Station
                (c) NovaLynx Corporation Inc. 1999

                    Display Format Menu

            1.  Observation display
            2.  Row and column display
            3.  RTU output message
            4.  Return to main menu

            Enter your selection [1 - 4]: 2

Please wait 5 seconds for next display
06/06/2000, 08:40:10,    0.00,    0.00,    3.21,   28.25,    0.17,   77.03,  123.37,  359.38

Terminal File: None              Parsing is off.              Line: 55  Col: 94
```

The WS16 logger menu selections for real time data processing.

Click the enter key in the terminal window.

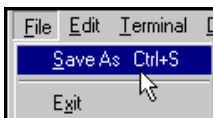The logger will present you with a menu.

Select the menu items shown above to go into real time monitoring.

Normally, you would press 2, Enter, and 2, Enter to go into this mode.
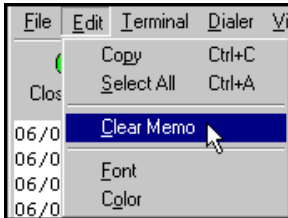
Communication Menus

Many of the menu items duplicate the functions of the toolbar.

File Menu

```
File  Edit  Terminal  D
   Save As  Ctrl+S
   Exit
```
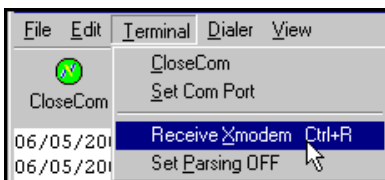
Save the terminal meno text as a file and exit. Exit does not stop the communications.
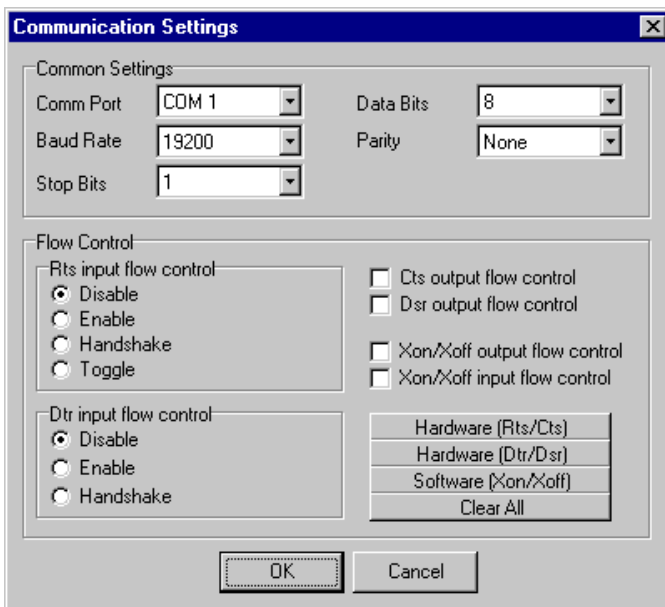
Edit Menu

Select part of the text or select all, copy to clipboard for pasing into another editor. Clear memo, change font and background color.

Terminal Menu

Use the terminal menu to set the communication parameters, open or close the comport, start xmodem, and toggle the parsing on or off.

Set ComPort

Select this option to change communication parameters. Standard parameters are Com1,9600 baud, 8 bits, 1 stop bit, and no parity,

Open or Close the Communications Port

This option opens or closes the current communications port.

Set Parsing On or Off

Toggles the communication parsing on or off. If the WS16 is sending 5 second data, parsing should be turned on to update the defined sensors. The parsing is automatically turned off when a file is opened for parsing. Once you go back to the 5 second data mode, you can toggle the parsing on again.
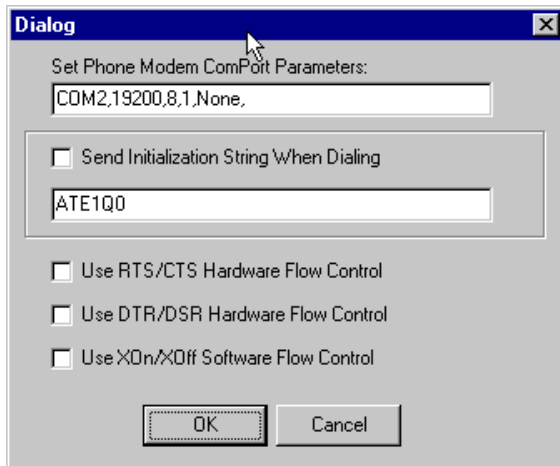
Dialer Menu
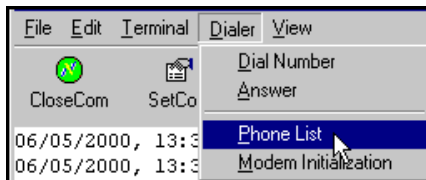
Dial a phone number, answer on 1 ring, set your dialout phone list and set modem initialization.

Phone Number List
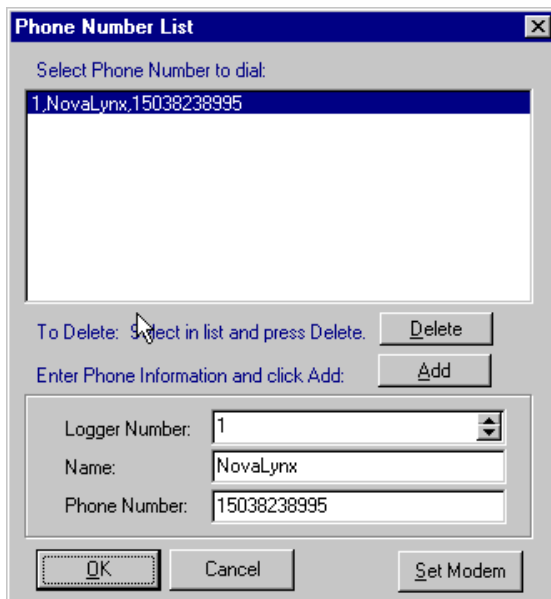
Enter phone numbers and logger reference here. This dialog is presented to you for selecting a phone number when you dial.
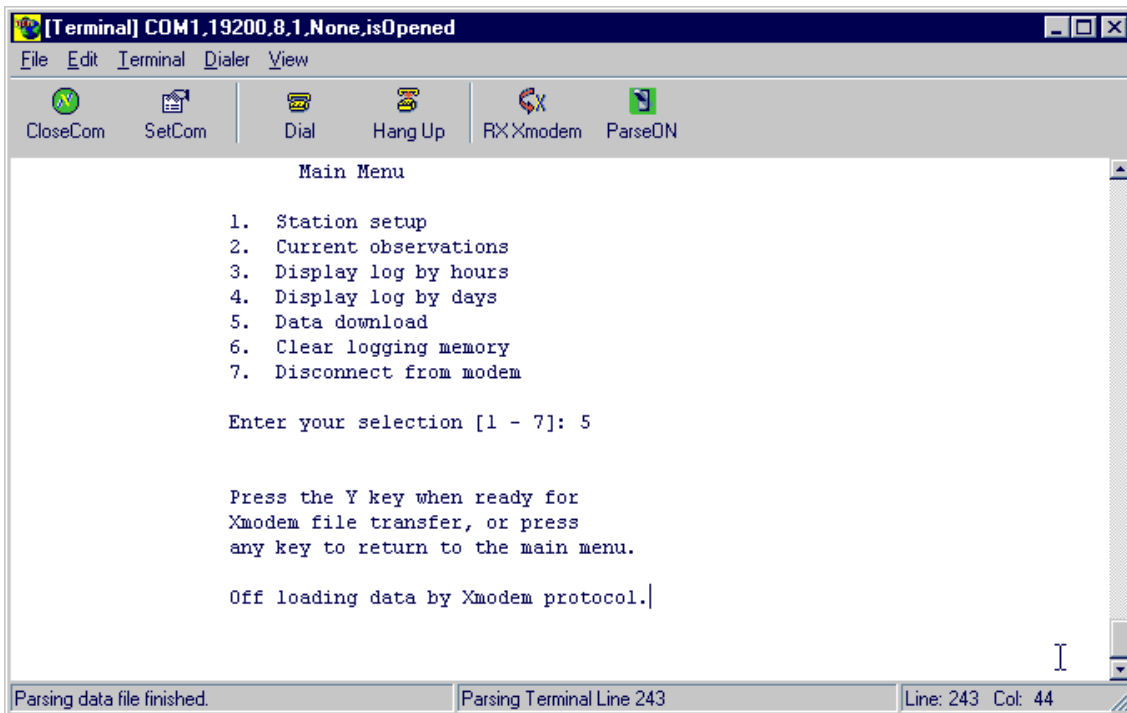
Modem Initialization

Set the phone modem port and dialout parameters here. Also send an initialization string to the modem if necessary.

There are two communication ports being used by WS16 Display. The first port is normally the direct connect port. A WS16 logger should be connected to this port. The second port is the modem port. These settings are used when connecting to a logger via modem.

Receiving XModem

```
[Terminal] COM1,19200,8,1,None,isOpened                    _ □ ×

File  Edit  Terminal  Dialer  View

  CloseCom    SetCom       Dial    Hang Up   RX Xmodem  ParseON

                    Main Menu

          1.   Station setup
          2.   Current observations
          3.   Display log by hours
          4.   Display log by days
          5.   Data download
          6.   Clear logging memory
          7.   Disconnect from modem

          Enter your selection [1 - 7]: 5


          Press the Y key when ready for
          Xmodem file transfer, or press
          any key to return to the main menu.

          Off loading data by Xmodem protocol.|


Parsing data file finished.    Parsing Terminal Line 243    Line: 243  Col: 44
```

When you have selected the proper menu items you can receive the historical data file from the WS16 logger.
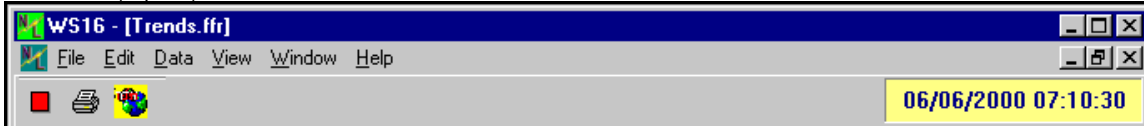*You can cancel the Xmodem process by pressing the break button.*

TOOLS

Run Mode Buttons:

Green Button (Arrow): WS16 is in the Edit Mode, click on to enter the run mode.

Red Button (Square): WS16 is in the Run Mode, click on to enter the edit mode.

The third yellow button selects the communications window.

Toolbar

Toolbar: Display Tab Selected

Labels, Special Labels, Tanks, Chart Buttons, Annunciators, LED, Wind Speed & Direction, and Rain Button

Toolbar: Background Tab Selected

Form Color, Shapes, Lines, Images (bitmaps, wmf, ico), Global Alarm Button, Buttons, Click Labels, Tabs

BACKGROUND TAB

Form Color, Shapes, Lines, Images (bitmaps, wmf, ico), Global Alarm Button, Buttons, Click Labels, Tabs

Properties	Display	Analog
Background Color	form color	no

Shape	yes	no
Line	yes	no
Image	yes	no
Global Alarm Buttons	yes	yes
Form Button	yes	no
Click Label	yes	yes
Form Tab	yes	no

DISPLAY TAB

Labels, Special Labels, Tanks, Chart Buttons, Annunciators, Pumps, Valves, LEDs, Polygon, Rain Button and Wind Speed & Direction, Rain Button

Properties	Display	Analog
Label	yes	yes
Special Label	yes	yes
Tank	yes	yes
Button Chart	yes	yes
Annunciator Display	yes	no
LED Display	yes	no
Wind Display	yes	yes
Rain Button	yes	yes

Change Background

The multicolored background button.

The Change Background Color button allows the user to change the background color on the current form.   A color dialog box will be displayed to select and change colors.

Select the form and click on this button to change its background color.

Special TagName Properties

The TagName property is an identifier that originally had to be unique for every component. When WS16 went to the grid configuration for Modbus settings, the TagName property no longer had to be unique.   The TagName property became available for special purposes.

We are using the TagName to set special properties for some components. The Annunciator uses the TagName property to show the data value as well as a text message. The Edit box and other controls use the TagName property for limiting access and allowing access to this control when no user is logged on.

These special properties were add to the TagName property so that older systems would still be compatible with newer changes. If a special property is defined it will be listed in the component's definition.

Button (Display Only)

Button (Show Form)

The button component is used to go to another form in the project.

To add a button to the current form, click on the 'Add Button' button on the Controls tab of the toolbar. The button is a component that allows the user to switch between forms in Run Mode. Simply select a form in the Buttons tab, and in Run Mode, the user can switch between forms. This is useful for making a main form and links to the main form and other forms.
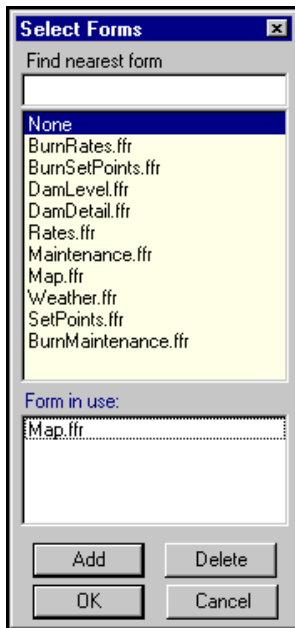
Click a button to go to another form.

To modify the properties of any component, double click it, and the Property Form will open.
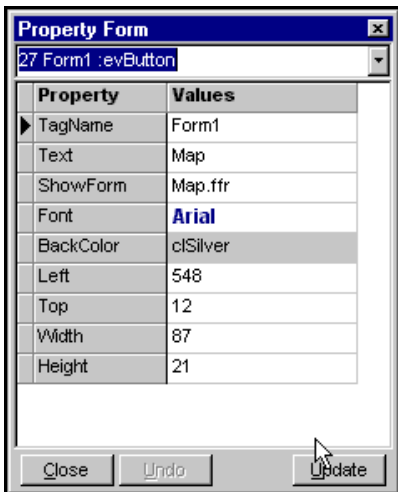
Button properties

Selecting a form To open from Button properties

*Selecting a form to show when the button is clicked*

No Special TagName Properties

Annunciator (Analog Display)

Use the annunciator display to show bit changes or analog value alarms. The back color changes and the message changes. The annunciator display can be shown using only the top message (half size). Just delete the text message and leave the alarm messages. Then resize the component smaller. Click on the annunciator button is the display tab to add it to the form.
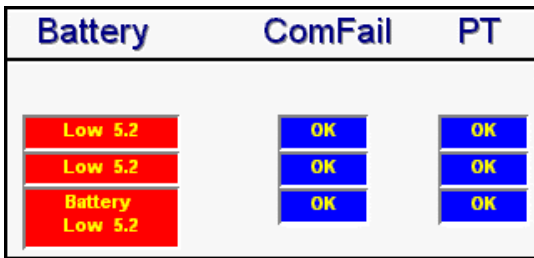
Two line annunciator and one line annunciator with alarm messages.

The annunciator component changes colors based on analog set points or status bit on-off values.   Use it to display on, off, or fail conditions for triggers, pumps, valves, or other bit values. The annunciator can also compare an analog value to a set point value. Analog comparisons include less than <, greater than >, or not equal <>. The text message is shown in the top line and the OnMsg/OffMsg is displayed in the bottom line.
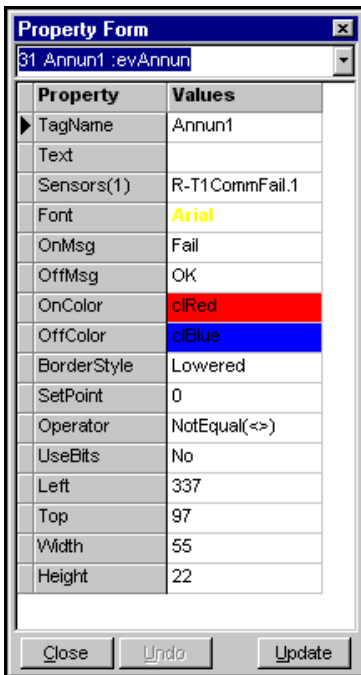
List of Annunciator properties.

Sensor List Selection from Annunciator Properties
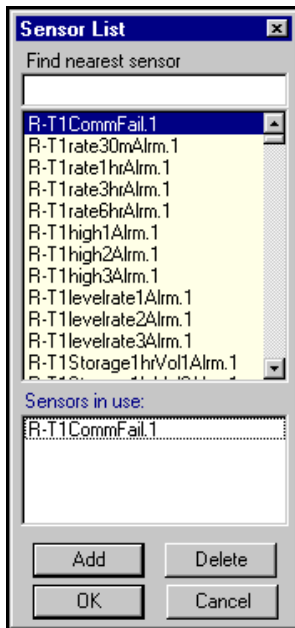
Sensor list selection

Annunciator Special TagName Properties (*put in the TagName property (use lowercase)* **)**

1. valuetop   (shows value only, top line)   value   (shows value only, bottom line)

2. valuetop+ (shows text message and value)   value+ (shows On/Off message and value)

3. Blank text line for bottom line message only.

Global Alarm Button (Analog Display)

The global alarm button serves three purposes.   It can be used as a display item, it can be used as a button, and it can be used as an alarm button.

Global alarm button shapes, can also be text

Display Only:

The global alarm button can be configured in 7 different shapes. The shapes are rectangle, rounded rectangle, Ellipse, Diamond, Triangle, Line and Text. To use the component as a display only, don't enter a show form name and select none for the data source. You can change the shapes and colors of the component to show the effect needed.

Display and Button Only:

The global alarm button can be configured to open any form or window that has been created. Just select one of the form.ffr names in the Show Form selection box. Now when you click on it, you will bring a new form to the front of the screen.

Display, Button and Alarm:

The global alarm button can be configured to have a sensor address that changes colors when the value is greater than, or less than, or not equal to a set point.

In many systems, there is an alarm word that is divided into 16 bits. Each bit is an individual sensor alarm for that site. If all the bits are off, the word will have a value of zero (0). If any bit is on or in alarm, the bit will be non zero and the data will be a value greater than zero (>0). By selecting a sensor and the operator (< >) and a set point, the global alarm button will change colors when the sensor is not equal to the set point.

This feature can be used with any analog value. The global alarm button is handy on system maps or overviews where you want to see if there are any alarms in the system, if there is an alarm, the button will change to the On Color and you can click on it to go to the selected form.

To add a global alarm button to the current form, click on the Add Global Alarm Button on the Controls tab of the toolbar.

Once a sensor is assigned to the component, along with the operator (< or >) and set point, the component will display the On Color and Off Colors. The normal button color is the Off Color.

To modify the properties of any component, double click it, and the Property Form will open.
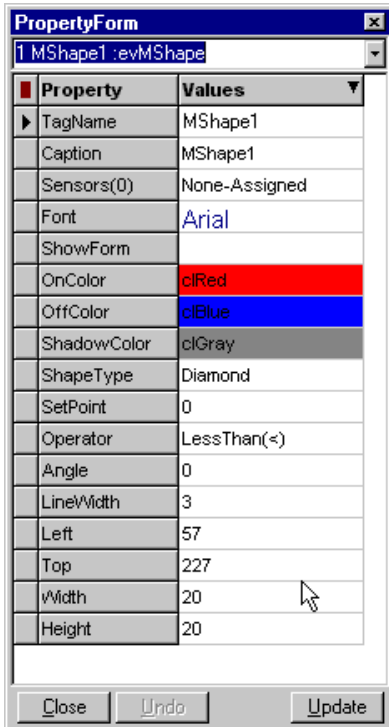
Global Alarm Button property screens

Global alarm button shapes, and colors. Text can also be a global alarm button.

Show Form- select which form will be brought to the front when this button is clicked in Run Mode

On Color- this property is for Global Alarm Buttons. The component will be this color when the specified alarm is on.

Off Color- this property is for Global Alarm Buttons. The component will be this color when the specified alarm is off.

Shape- set the shape for the global alarm button (Circle, Diamond, Ellipse, Rectangle, Round Rectangle, Triangle, Line, Text).

Border Width- set the width of the outline of the button.

Operator- this operator is used to determine an analog alarm. Choose whether the alarm state of the component is when its value is less than the set point (<), or greater than the set point (>) or (<>) not equal to the set point.

Set Point- the analog value with which the current value will be compared to determine alarms.

The alarms are for display only. Use the file and alarms to log historical alarms.

**No Special TagName Properties**

Image (Display Only)

Use Images for form backgrounds. Special image effects are masking and transparent modes.
Try these looks to see what looks the best.

Use Images for backgrounds to enhance your screen display

To add an imagee to the current form, click on the Add Image button on the Displays tab of the
toolbar. This will open up the Select Image Window. Three types of files may be opened by
WS16: .bmp, .ico (icon), and .wmf files. Only these files will be displayed in the file selection
boxes. Use a map image as the background of a screen, or any other image to graphically
enhance your screens.
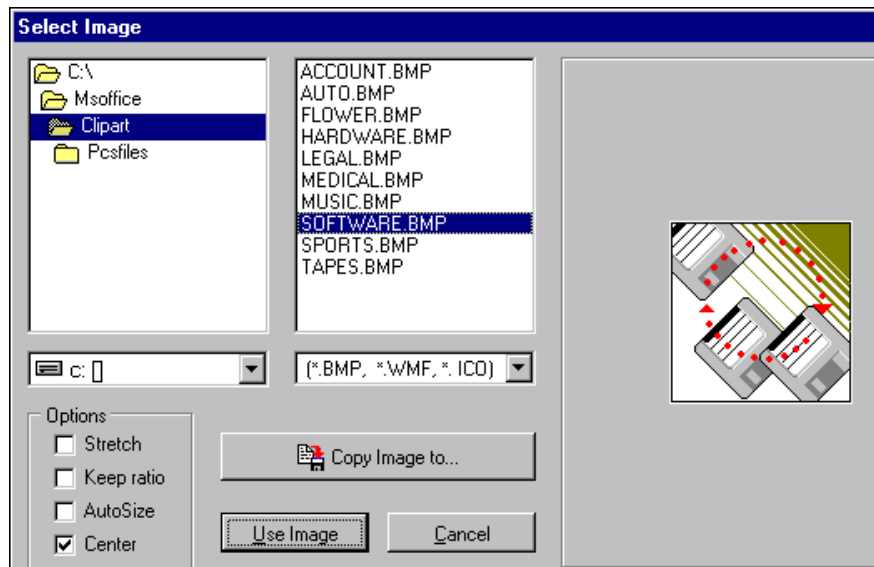
Select or copy an Image for a form background

Image Properties

Display Left, Top, Width, Height, Style, Stretch, AutoSize, Image Masked

The masked option masks the bitmap image. The image cannot be stretched in this mode. Masked is effective for window backgrounds.

Image Transparent: The transparent option takes the color of the bottom left hand pixel, and makes that color transparent through the image.

Select Image Window

The Select Image Window is opened when the Add Image button is clicked. Use the directory list to select the directory of the graphic file to be added. Four types of files may be opened: bitmap (*.bmp), icon (*.ico), enhanced window metafiles (*.emf), and windows metafiles (*.wmf). Only files with these extensions will show up in the file box. Click on a file to preview the image in the window on the right.

Directory list on left, bitmap images on right, click on image to use.
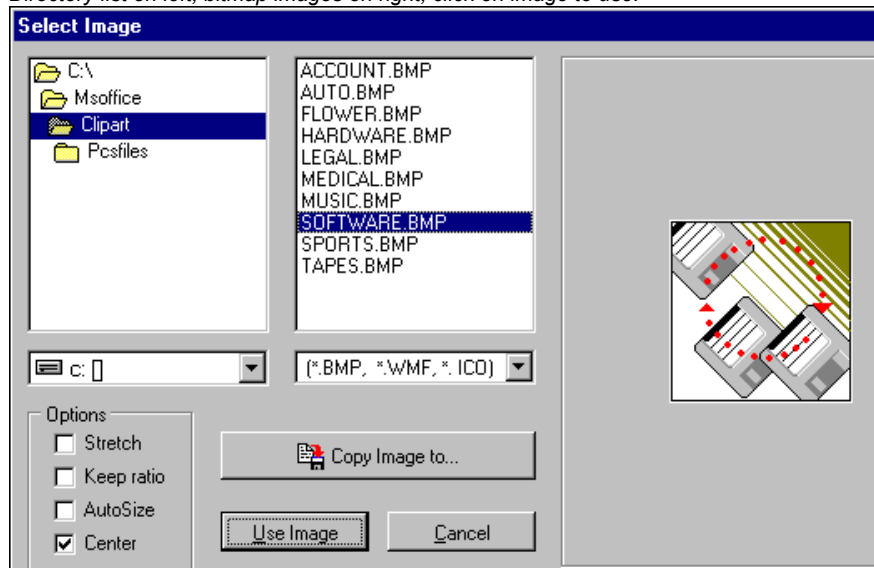
Copy an image into your form by selecting the image and then pressing Use Image button.

Options- the options box allows the user to preset some of the properties of the image.

Copy Image To- Click this button to copy the selected image file to another directory. This feature is helpful because all image files should be kept in the project directory. If you find an image to use elsewhere on the hard drive or on a floppy disk, use the Copy Image To button to copy it into the project directory. This button will open a standard Save As dialog where the file can be saved anywhere.

Use Image- Click this button when you have found and selected the image you want to use.

Cancel button- Click the cancel button to close the image window and to cancel the selection of an image.

Note: clicking on the Cancel button after copying files will not undo the files that have been copied.

Label (Analog Display)
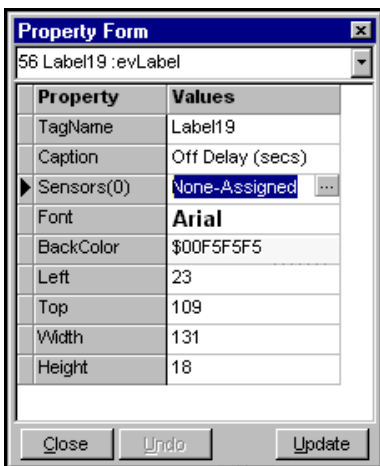
Label Displays

Labels can be used to show data or text

Labels are used to display analog values received by the master as well as regular text label displays. Labels can be used to show the results of the equation function also.

To add a label to the current form, click on the Add Label Button on the Displays tab of the toolbar. The label is a component capable of displaying sensor values or user set values. One label might display the level of a tank, another might say 'Main Valve' serving as a caption.

To modify the properties of any component, double click it and the Property Form will open.

Label properties

No Special TagName Properties

Line (Display Only)

Lines and lines with arrows are used for display purposes only.

To add a line to the current form, click on the Add Line button on the Displays tab of the toolbar. Lines are for graphical use only; they cannot be used to display sensor values.

Lines can be different colors and widths. See special tagname properties to add arrows to one or both ends.

To modify the properties of any component, double click it, and the Property Form will open.
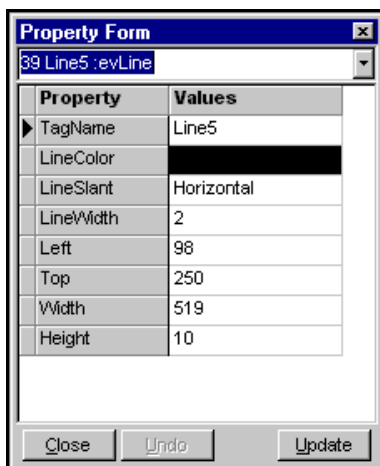
Line property box

Special TagName Properties (Arrows add names in lowercase)

arrowleft   LineSlant=Horizontal, draws arrow on left.

             LineSlant=Vertical, draws arrow on top.

             LineSlant=SlantLeft, draws arrow on left.

             LineSlant=SlantRight, draws arrow on right.

arrowright   LineSlant=Horizontal, draws arrow on right side.

             LineSlant=Vertical, draws arrow on bottom.

             LineSlant=SlantLeft, draws arrow on right.

LineSlant=SlantRight, draws arrow on left.

arrowleftright   Draws an arrow on both ends of the line component.

Shape (Display Only)

Shapes are used for display purposes only. You can right click a new shape and send it to the back, if it is on top of another component.

To add a shape to the current form, click on the Add Shape Button on the Displays tab of the toolbar. The shape will default to a rectangle, but it can be changed to a Circle, Ellipse, Round Rectangle, Round Square, or Square. A shape can serve only as a graphical component; it does not perform any functions or calculations. Shapes work well as pipes connecting tanks, pumps, and valves and for grouping labels in one area of the form.

Use a shape as a background for a group of components.
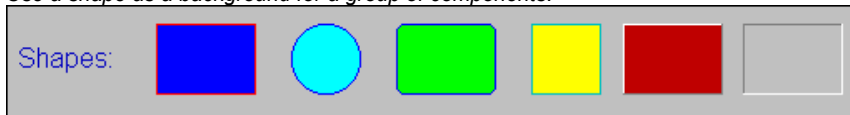
Rectangles, circles, rounded rectangles, squares, raise rectangles, lowered rectangles.

To modify the properties of any component, double click it, and the Property Form will open.
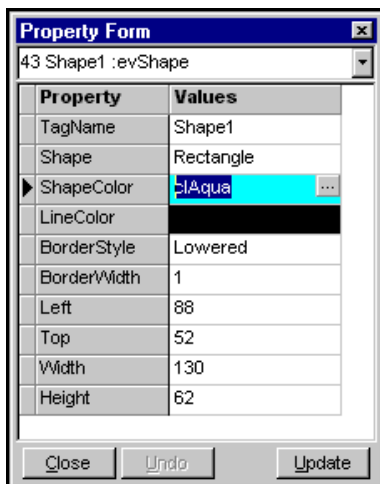
Shape property box

No Special TagName Properties

Special Label (Analog Display)

Special labels are used as form titles. Special labels are 3-dimension labels. This label can be rotated also.

> *note: Global alarm buttons can be shown as text that can also be rotated. The global alarm button doesn't have to be assigned a sensor address. The global alarm button also has different shapes you can use for display.*

To add a special label to the current form, click on the Add Special Label button on the Displays tab of the toolbar. Special labels are mainly for labeling screens and components. They have a 3-D appearance, and can be rotated. This makes them useful for creating attractive screens.

Special labels can be assigned a address to display data.

Special labels can be rotated and used as titles.
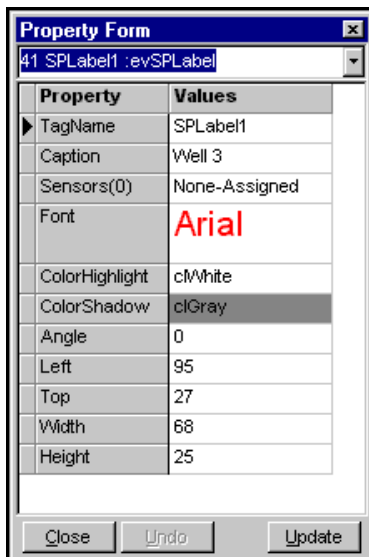
Special label property box
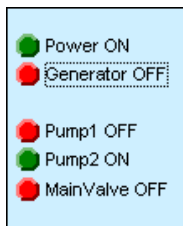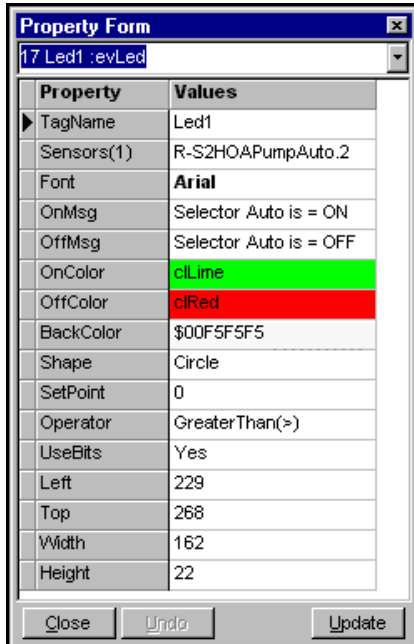
No Special TagName Properties

LED Indicator (Analog Display)

The LED component is used to show status messages when a bit changes. The LED changes colors and the caption changes.

To add a status indicator to the current form, click on the Add Status Indicator Button on the Displays tab of the toolbar. The status indicator is a component capable of displaying data values. It shows the state of any bit in the system. Use it to display on, off, or fail conditions for tanks, pumps, valves, or anything else. The LED can also change colors based on < <> > conditions.

Status indicator changes color and caption.

Status Indicator-LED property box

No Special TagName Properties

Rain Button (Analog Display)

Use the rain component to show an analog value accumulation. The rain component shows a running total accumulation change over time. The time intervals are fixed at 1 hour, 6 hours, 24 hours and each day for 30 days. Alarms can be enabled for these time periods. The WS16 time should be close to your computer's time. The rain button calculates rain rates using the computer clock. To get accurate rain rates, the computer needs to be on monitoring the WS16 sensors.

To add a rain button to the current form, click on the Add Rain Button on the display tab of the toolbar. The rain button shows the current rain accumulation for 1 hour, 6 hour, 24 hours, or 30 days. Clicking on the rain button displays rain-graph summaries. The list is the memo display of all the summaries. The rain graph is closed when editing and other forms are opened. The rain initialization file name is RateRain1.evt.

Rain Buttons
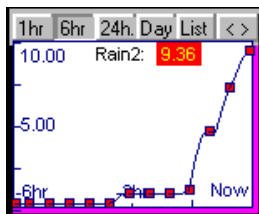
Open the rain graphs by clicking on a rain button
Close the rain graph by clicking on the graph or X button

```
┌─────────────────────────────────────────┐
│ 🔲 Rain Summary                      [×] │
├─────────────────────────────────────────┤
│ File                                     │
├─────────────────────────────────────────┤
│ 24 Hour Summarys & 30 Day Totals      ▲ │
│ FileName: Rain2.020398.csv              │
│ DateTime: 02/04/1998                    │
│                                         │
│ Last Hour       0.00                    │
│ Last 6 Hours    0.00                    │
│ Last 24 Hours   72.06                   │
│                                         │
│ ** Last Minute Totals **                │
│ Last 10 Min     0.00                    │
│ Last 30 Min     0.00                    │
│ Last 60 Min     0.00                    │
│                                         │
│ ** One Hour Totals **                   │
│ 14:00 to 15:00  0.00                    │
│ 13:00 to 14:00  0.00                    │
│ 12:00 to 13:00  0.00                    │
│ 11:00 to 12:00  0.00                    │
│ 10:00 to 11:00  0.00                    │
│                                         │
│ ** Six Hour Totals **                   │
│ 12:00 to Now    0.00                    │
│ 06:00 to 12:00  0.94                    │
│ 00:00 to 06:00  31.58                   │
│ 18:00 to 00:00  30.94                   │
│ 12:00 to 18:00  9.51                    │
│                                         │
│ ** 02/04/1998 =Today                    │
│ ** Last 30 Day Totals Summary **        │
│ 1 02/03/1998   40.36                    │
│ 2 02/02/1998    0.00                    │
│ 3 02/01/1998    0.00                    │
│ 4 01/31/1998    0.00                  ▼ │
└─────────────────────────────────────────┘
```

Rain list showing one hour, six hour, 24 hour and 30 rain totals
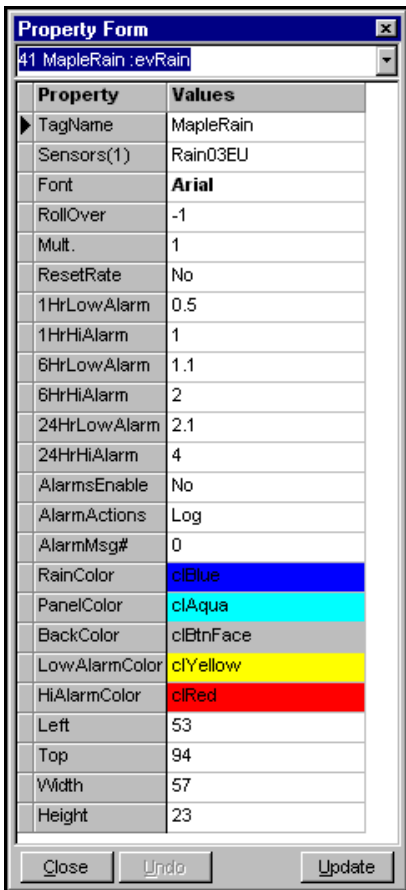*Print or save the memo, click File | Save or File | Print*

Rain Alarms

The rain button can also be configured to activate alarms based on accumulation. You can set low and high alarms for each time period (1 hour, 6 hours, & 24 hours). If the rain accumulation exceeds any of these values and the alarm is enabled, a system alarm will be triggered. The system alarm logs the alarm in the current and historical alarm log. You can configure the type of alarm action needed (log, blink, show, sound, message).

The rollover is used for ALERT telemetry systems where the accumulator value rolls over when counting up. If the value is –1, the roll over is ignored or disabled. ALERT systems use a roll over value of 2047.

To reset the rain values to zero, select the ResetRate to yes and press update. You can not undo a reset action. The next value received will be the starting accumulator value. Rain data received is stored in rate files, in the data folder. The accumulative file is named Rate-Name.evt in the project folder.

The multiplier (Mult.) property can be set to 0.03937, 0.01, or 1 to make engineering units.

Property Form	▣
41 MapleRain :evRain	▼

Property	Values
▶ TagName	MapleRain
Sensors(1)	Rain03EU
Font	**Arial**
RollOver	-1
Mult.	1
ResetRate	No
1HrLowAlarm	0.5
1HrHiAlarm	1
6HrLowAlarm	1.1
6HrHiAlarm	2
24HrLowAlarm	2.1
24HrHiAlarm	4
AlarmsEnable	No
AlarmActions	Log
AlarmMsg#	0
RainColor	clBlue
PanelColor	clAqua
BackColor	clBtnFace
LowAlarmColor	clYellow
HiAlarmColor	clRed
Left	53
Top	94
Width	57
Height	23

Close	Undo	Update

Rain Button property screens

No Special TagName Properties.

Tank (Analog Display)

Tanks are visual displays of analog value changes. The tank shows the analog value as a graphical bar chart as well as numerically.

To add a tank to the current form, click on the Add Tank Button on the display tab of the toolbar. The tank component displays sensor data from a minimum to maximum value. The rising and lowering of the tank bar indicates the level.
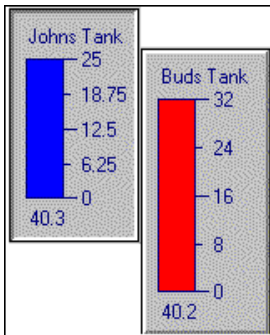
Tanks or bar charts can be displayed in different colors and borders.

Tank property box

Tank Properties.

Title Color- the title color sets the color of the text on the tank, which displays the title.

Back Color- the back color determines the panel color on which the tank sits.

Tank Color- the tank color is the color of the stuff in the tank. In a water tank, the tank color is the water. This is what raises and lowers indicating the level.

Tank Back Color- the tank back color is the color behind the tank color within the tank.

Show Title- when this is checked, the title will be shown, and otherwise it will be hidden

Show Labels- when this is checked, the numbers on the side of the tank will be shown, and otherwise they will be hidden.

Show Tick Marks- show or hide the horizontal lines on the side of the tank with this checkbox.

Show Border- show or hide the border around the actual tank with this checkbox.

Border Style- the panel on which the tank sits can be nonexistent (None), Raised, or Lowered. Raised will make the panel sit forward a bit, and lowered will make it sink into the form.

Max Value- each tank must have a maximum value to create its own scale. Set the maximum level of the tank here.

Min Value- each tank must also have a minimum value. Set the minimum level of the tank here.


No special TagName properties.

Button Chart (Analog Display)

Button trend charts are used to display one or more analog values in a historical trend. This component is really two charts. The first chart is the button. The second chart is the trend. You must first configure the button chart properties to add sensors, etc. Then in the run mode click the button to present the historical chart. A separate edit button allows you to configure the settings for the trends.

To add a button chart to the current form, click the Add Button Chart in the Displays tab of the toolbar. Double click the component and add "like" sensors to the button chart properties. The sensors' data values will be shown on the button and in the trend.

Note: The button chart has a time step property that adds a new data point to the trend at that time step. The trend also updates when the data value of any sensor changes. This way changes in sensor values are recorded in the trends. Maximum and minimum values will not be missed.
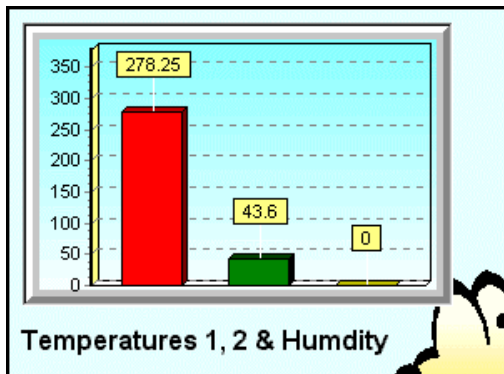
The button chart shows the last value received for each sensor.
Click on button to view trend.

Button Chart Properties (On the button)

The button chart and trend chart have separate property setting. The button chart has a standard property dialog where you define the sensors to plot, the number of points to plot and the look of button. The trend chart properties are set by viewing the trend and then clicking on the red edit button.
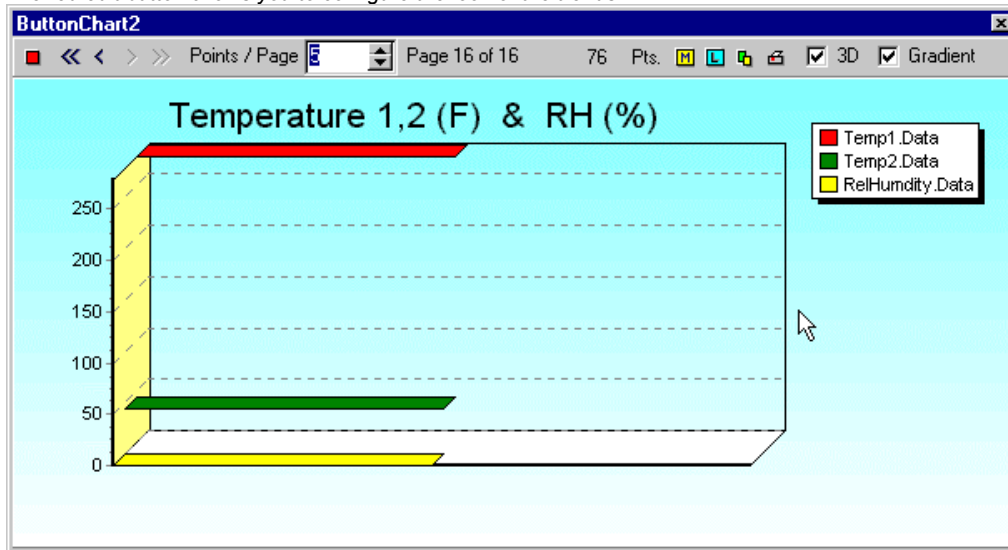
1. Button Chart

The button chart shows the last received value for each sensor. Click the button to show the historical trend.   If you right click the button chart in the run mode, you will be presented a chart property dialog that allows you to configure the look of the button chart. This dialog is the same at the trend chart property dialog.

2. Trend Chart Properties

The trend chart also has separate properties that can be set. Click on the red edit button to change the look of the trend chart. See the trend chart dialog options below.

The red edit button allows you to configure the look of the trends.

The chart trends each sensor defined by the button chart. The toolbar at the top is for editing the chart trends.

Trend Chart Toolbar

Edit Button (Red Square)

Click this button to change the properties of the trend chart. Below are several screens showing all the properties you can set for each trend.

Navigator Buttons

Click on the navigation buttons to go back in time or move forward. The double arrows go to the first or last page of data.

Points / Page Selection

This is the number of points plotted on the trend. If you enter a zero (0), the chart plots all the points. As you change the number of points, the chart is updated.

Mark Button

The mark button shows a yellow box with the data value for each point on the chart. If more than one series is being plotted a dialog box will be presented for you to specify the data series you want to mark.

Legend Button

This is the show chart legend toggle. The chart legend will be displayed showing a color symbol and name of the sensor being plotted.

Copy Button

The copy button copies the current chart to the clipboard. You can paste the chart into the report editor or into a graphics program like paint.

Print Button

The print button presents a print preview dialog box so you can select how you want the chart to print. You can cancel the print or print it to your printer.

3D Checkbox

The chart can show data in three dimensions or in two dimensions. Unchecked is two-dimensional, checked is three-dimensional.

Gradient Checkbox

The chart's background is either a solid color or gradient color. The gradient checkbox allows you to toggle this option on and off. The gradient start and end colors can be selected from the chart property dialog.

Setting up the Button Chart

To modify the properties of any component, double click it, and the Property Form will open. The property form shows the properties of the button. These properties should be set first before you configure the trend properties.

The ChartName property should be a unique name. This name is used when storing the trend charts properties, data and position. If two charts have the same name, one chart will overwrite another chart's data. Use chart names that are meaningful.

Property	Values
Title	Trending Values
ChartName	ButtonChart2
Sensors(3)	Temp1.Data Temp2.Data RelHumdity.Data
MaxPoints	250
Format	#,##0.0##
TimeStep	FifteenMinutes
Color	clBtnFace
GradientColor	$00FFFF80
ShowGradient	Yes
ShowData	Yes
Show3D	Yes
ShowXAxis	No
ShowYAxis	Yes
SeriesType	TBarSeries
BarStyle	Rectangle
Left	308
Top	140
Width	254
Height	166

PropertyForm — 2 ButtonChart2 :evButtonChart — Close   Undo   Update

Button chart properties

These are the Button Chart Properties . These properties should be set first. Then change the trend properties.   Change a property and click the update button to view your changes. You can always click the undo button to go back to the original components properties.

Trend Chart Property Dialogs

There are many properties that you will never set. The ones that are used the most are shown in the Axis tab, Titles tab, Paging tab and 3D tab. All the tabs are show below for reference.
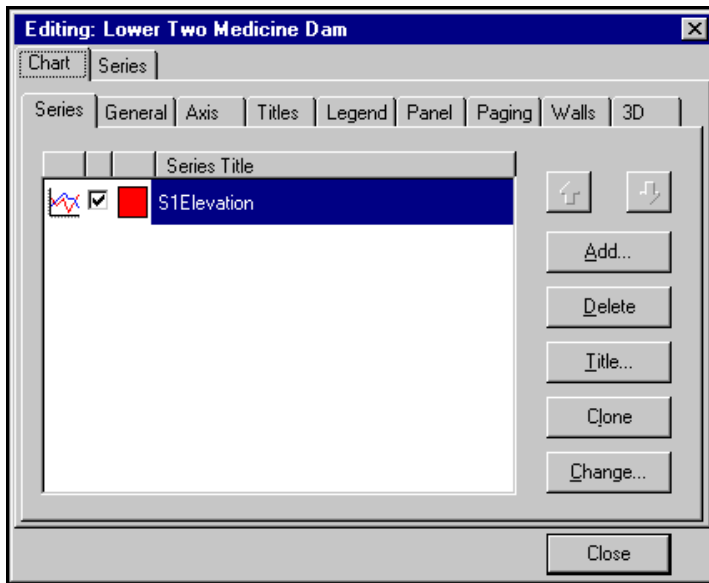
The chart series name is show here. The type of data series is shown by small graphic icon to the left. The check mark enables the trend. The square shows the color of the series.
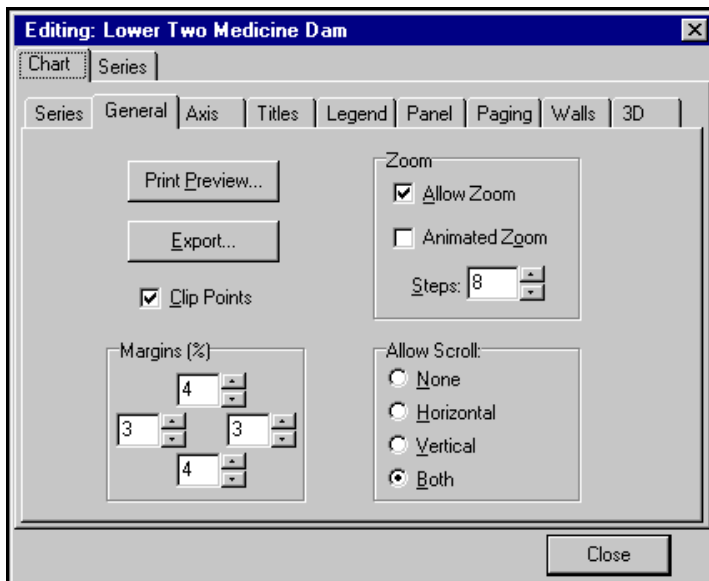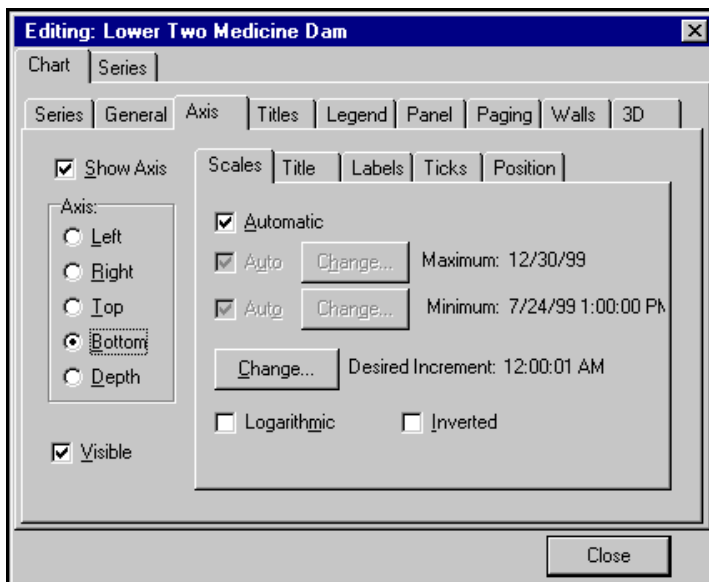

The General tab allows you to export the chart, print preview it, set the zoom properties and scroll properties.
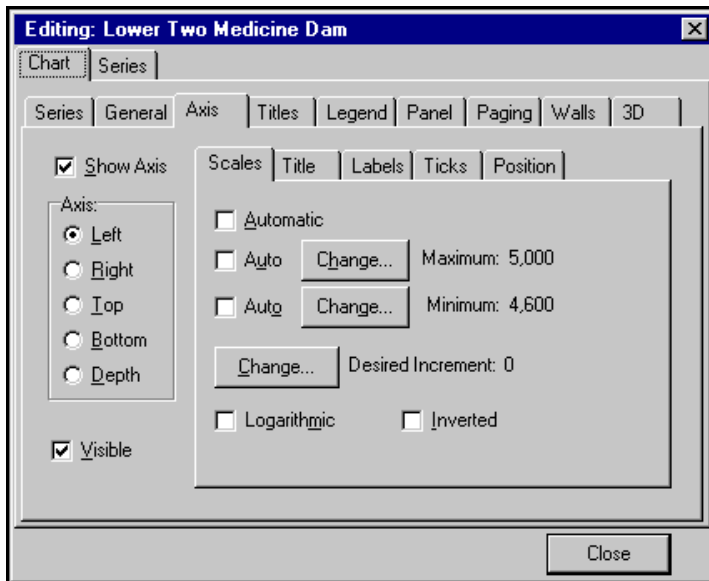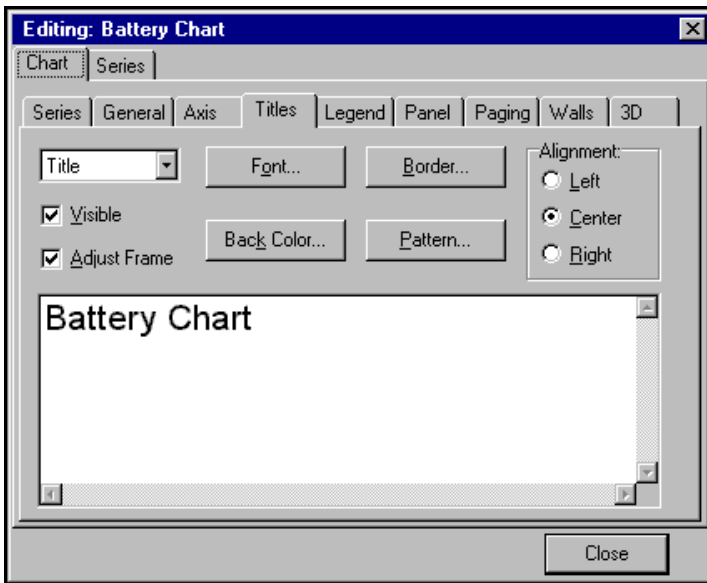
The Axis tab allows you to set the left axis minimum and maximum values. Use these to see the range desired.

The bottom Axis should be set to automatic. You can specify a minimum and maximum range for custom charts. Data not in that range will not be shown. If your trend is not showing the correct time, be sure to set the chart to automatic.
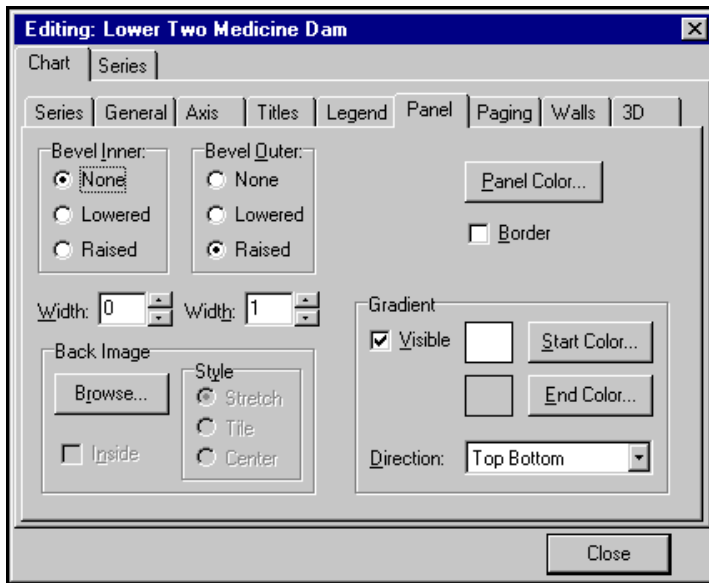
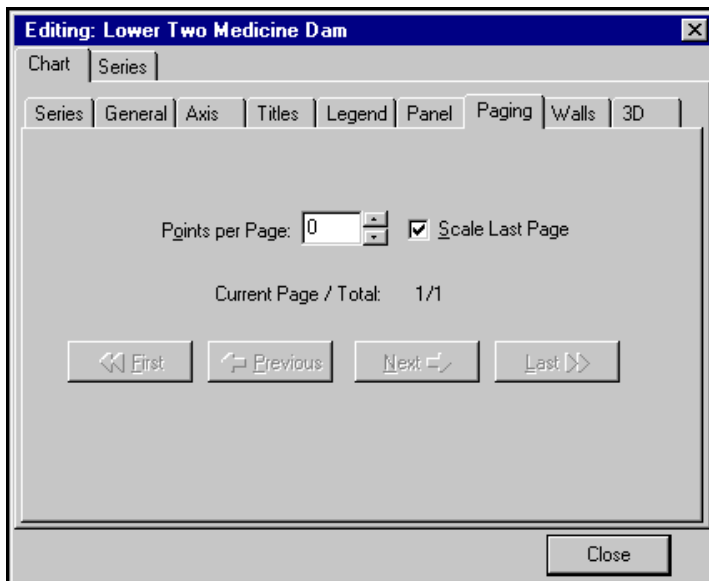*The Titles tab allows you to set the title for the trend. Change or add the text to help define the sensors being trended.*
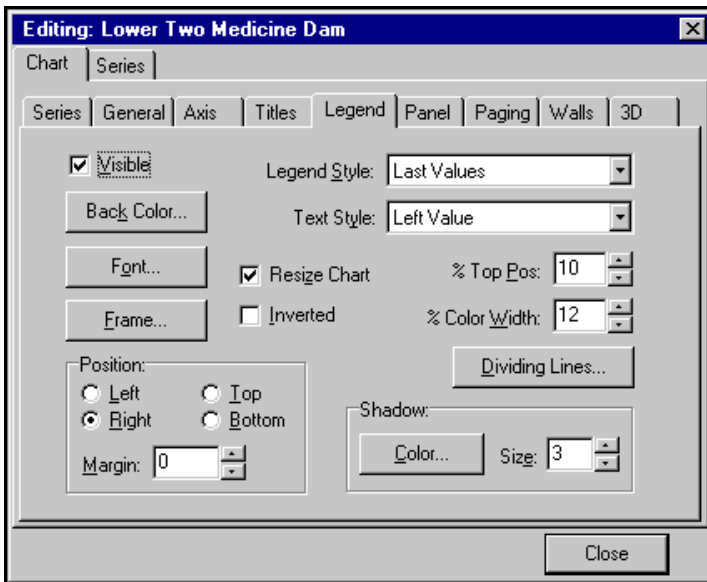
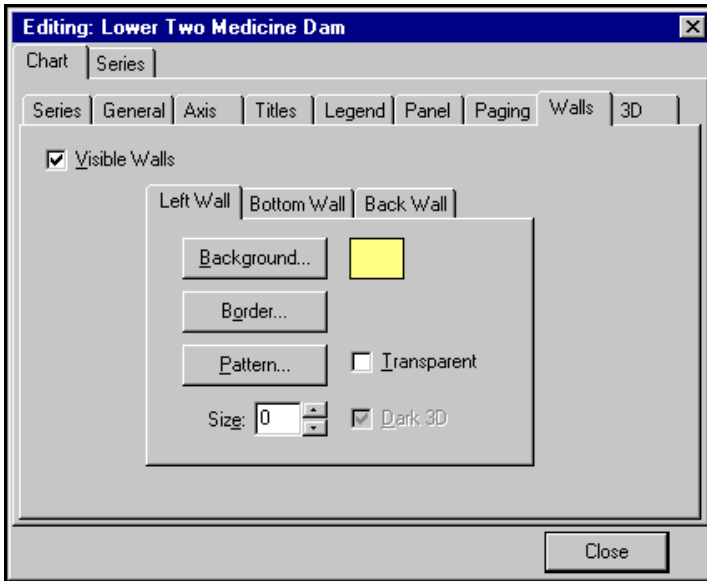*Show the legend, position the legend and define what shows in the legend.*

The Panel tab allows you to set the gradient color of the back panel.

The Paging tab allows you to set the number of points per page and to scale the last page.

Editing: Lower Two Medicine Dam

Chart | Series

Series | General | Axis | Titles | Legend | Panel | Paging | Walls | 3D

☑ Visible Walls

Left Wall | Bottom Wall | Back Wall

Background...

Border...

Pattern...   ☐ Transparent

Size: 0   ☑ Dark 3D

Close

The Walls tab allows you set the left wall, bottom wall and back wall of the trend.

Editing: Lower Two Medicine Dam

Chart | Series

Series | General | Axis | Titles | Legend | Panel | Paging | Walls | 3D

☑ 3 Dimensions   Zoom: ◄ ████ ► 100%

3D %: 15   Rotation: ◄ ► 345

☑ Orthogonal   Elevation: ◄ ► 345

        Horiz. Offset: ◄ ██ ► 0

☑ Zoom Text   Vert. Offset: ◄ ██ ► 0

   Perspective: ◄ ► 15

Close
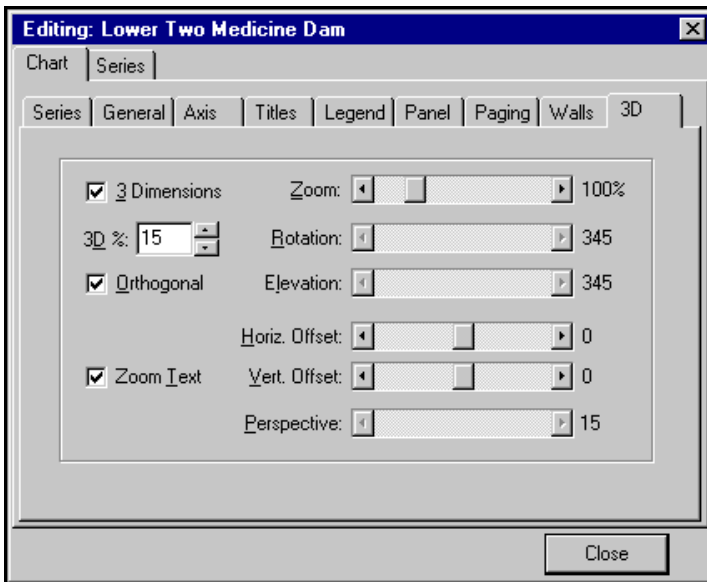
The 3D tab allows you to set the three-dimensional properties of the trend.

# Wind Speed & Direction (Analog Display)

Use a Wind component to display wind speed and direction graphically. The wind data and direction data are separate sensors. Size the component according to your needs.

To add a wind speed and direction component to the current form, click on the Add Windrose button in the display tab of the toolbar. Wind speed is normally 0 to 100 mph and wind direction is 0 to 360 degrees.

N =   0 or 360   degrees

E =   90   degrees

S =   180   degrees

W =   270   degrees
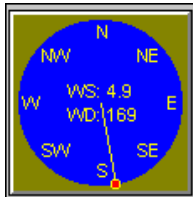
Two Windrose components are shown. Each component combines two analog measurements (Wind Speed and Direction.).
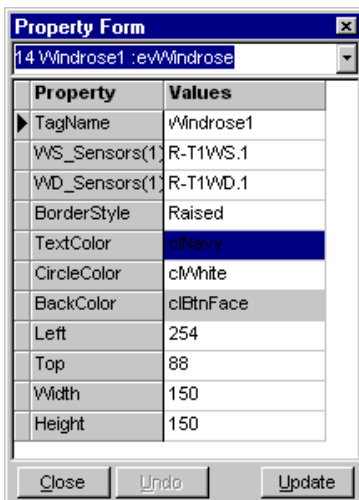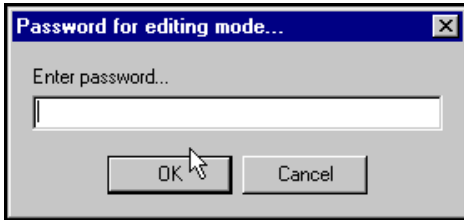

Windrose Properties

There are no special TagName properties.

Password

The Password allows the current user to go into the edit mode. Once the correct password has been entered the user can edit screens and communication parameters.


Enter password dialog

REPORT EDITOR

Reports are generated by use of the report editor. Form reports create a bitmap of the active form and place it in the report editor for viewing and printing. Maximums, minimums, averages and data from your sensors can be printed out in a professional looking report.
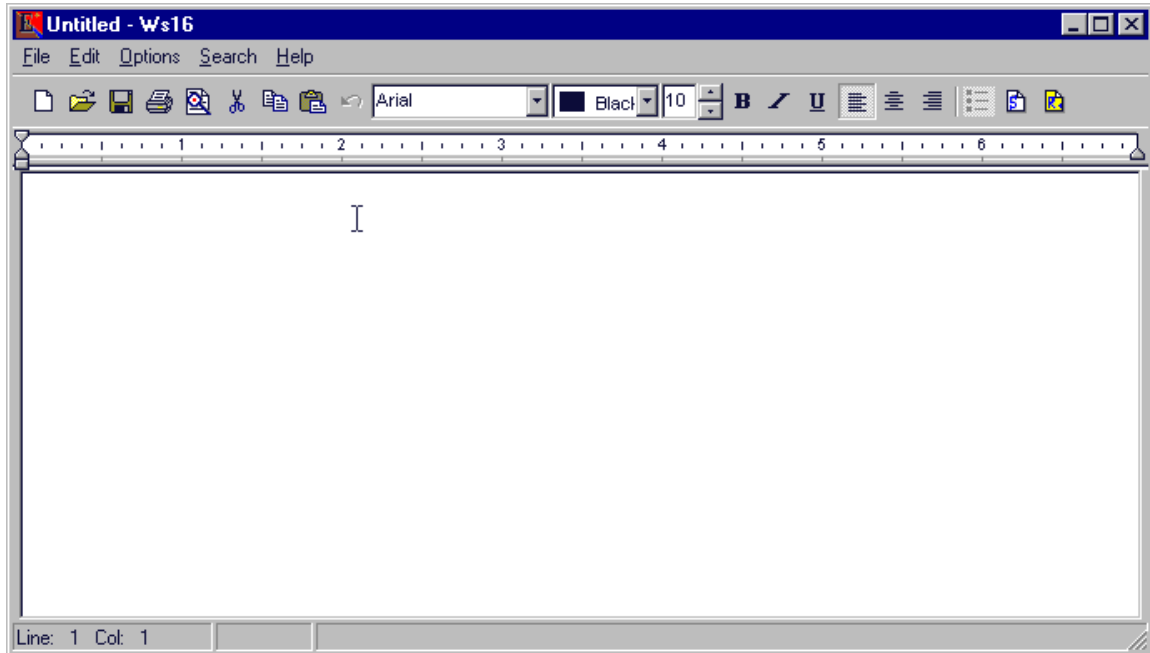
Report editor with no files loaded.

GENERAL REPORT INSTRUCTIONS
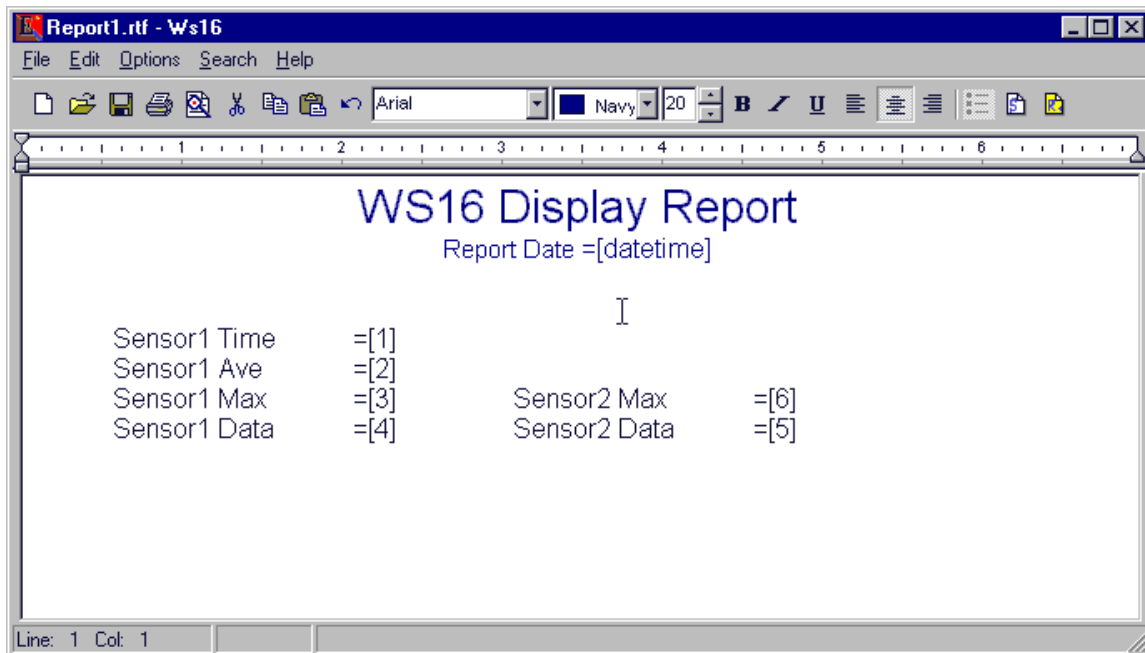
Adding data to your reports

To make reports you type into the editor the details of the report. Enter the titles, subtitles, and text as needed. Format the titles and text by using color and changing fonts, font styles. Use built in commands for dates (=[date], =[time] or =[datetime]) and then enter placeholders for data (=[1]. =[2], =[3]). Set your tabs for each row in the report. Tabs will help to line up rows of data at the same point in the report.

You can mix and match text with data placeholders. This way you can identify the data with the text.

Set tabs by clicking in the ruler area. Remove tabs by selecting the tab and dragging off the ruler. Move the tabs by selecting the tab and drag.

After you have entered some placeholders for data, select the add sensors button on the right and select the sensors you want to use for the data. After you have made your sensor selection, press the run report button and the report will be produced.

You can not edit the finished report directly. You need to go back to the editor and edit it, and then run your report again. To go back to the editor, click the run button again.

Be sure to save the report with an *.rtf extension. When data has been entered into the sensor list a second file is saved with the sensor information, margins, headers and form size. When the scheduler prints the report, this information is required to make the report look right.

You can print and preview both the setup report and the report itself. Just click on the print or preview buttons. You can also save the data report separately if you need to keep a copy of it. You can always regenerate the report as long as the data is in the database. Real time data will change if you are pulling the current data from the grids.
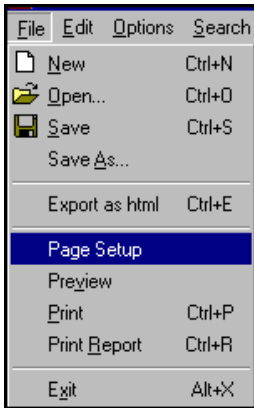
File Menu: Open and save files, preview, print or print report if sensors are assigned

These are standard word processing commands. Use the print report command if you have data placeholders and have selected sensors for your data. You may want to run the report first to see what it looks like. Press the run report button on the right of the editor to run the report.
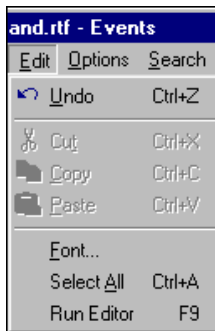
Page Setup

Press the Page Setup menu item to set the page formatting options.
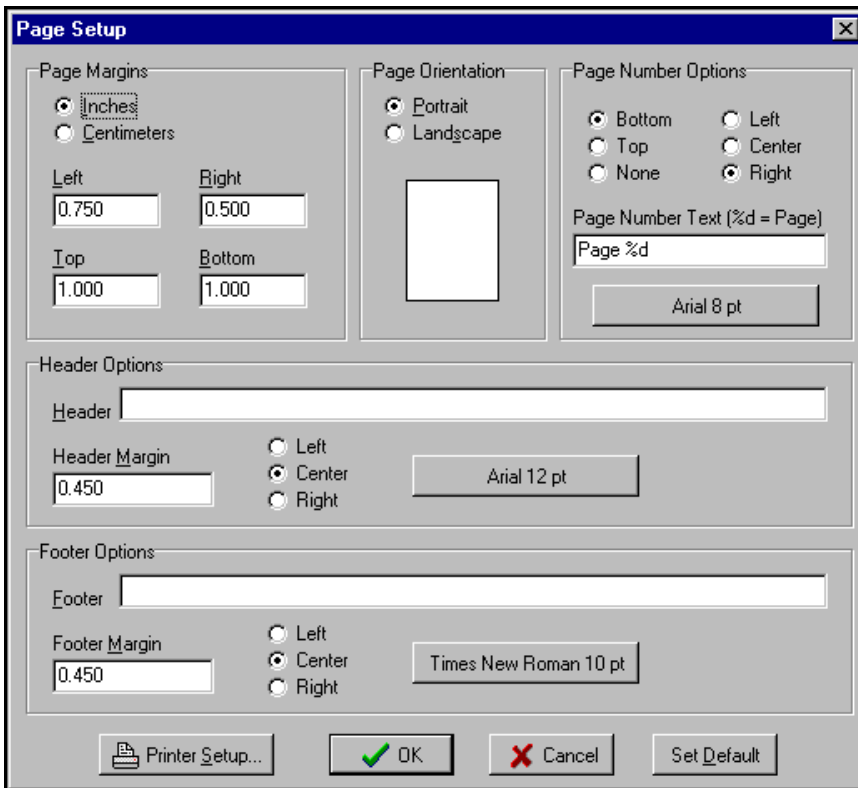
Page Setup allow you to set margins, headers, footers and positions. These settings are saved with the report.

Report Edit Menu

Edit Menu: Standard editing function plus run editor.

The edit menu allows you to cut, copy, paste, select all and change font. You must select some text first before you can use these commands. The Run Editor command executes the report by getting the data and showing the finished report. Go back the editor by clicking the same option again.

Report Tools

Report Toolbar and ruler. The two buttons on the right allow you to select sensors for your report and to run the report.

You can view what each button does by placing the cursor over the button. A hint will be shown with the action of the button. The toolbar buttons and windows are as follows:

New file, open file, save file, print file, preview file, cut, copy, paste, undo,

select fonts, font colors, font size,

font styles [bold, italicize, underline], align left, align center, align right, add bullets,

add sensors, run report.

ADDING DATA PLACEHOLDERS

Datetime	Sensor1	Sensor2	Sensor3
=[1]			
DateTime			
=[2]			

Enter =[1] is the first sensor in the report. Sensors are defined
from any of the defined sensors in the setup grids and file girds.

REPORT FUNCTIONS ENTERED DIRECTLY

Report functions

=[date]   =[time]   =[datetime]   =[day]

=[week]   =[month]   =[year]
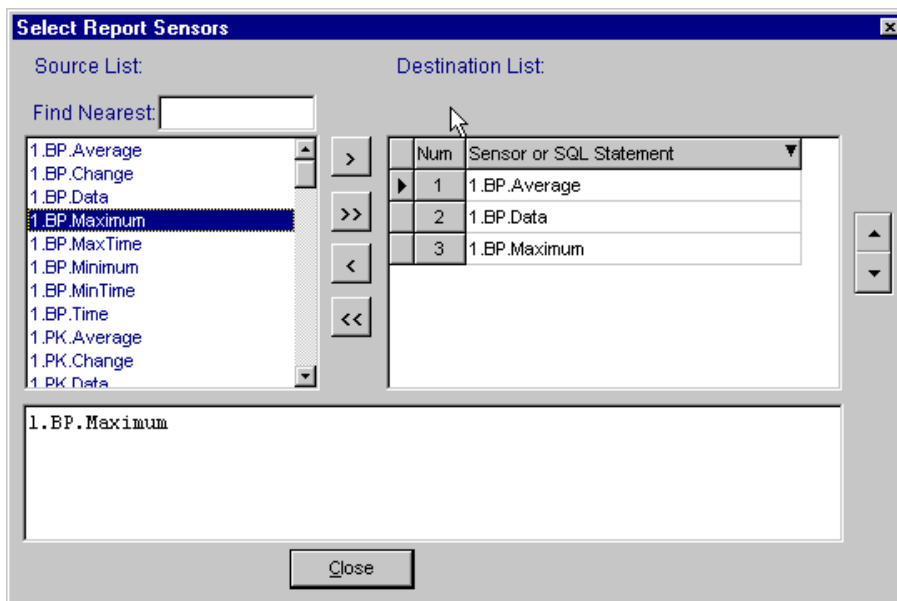
Selecting sensors from the source list. The distination list is used for the report.

Add and remove sensors from source list. The destination list becomes your report list. You can move sensors up and down in the list once it is entered into the destination list. The number of the destination list relates directly to data placeholder number in the report.

EXAMPLE OF A SMALL REPORT
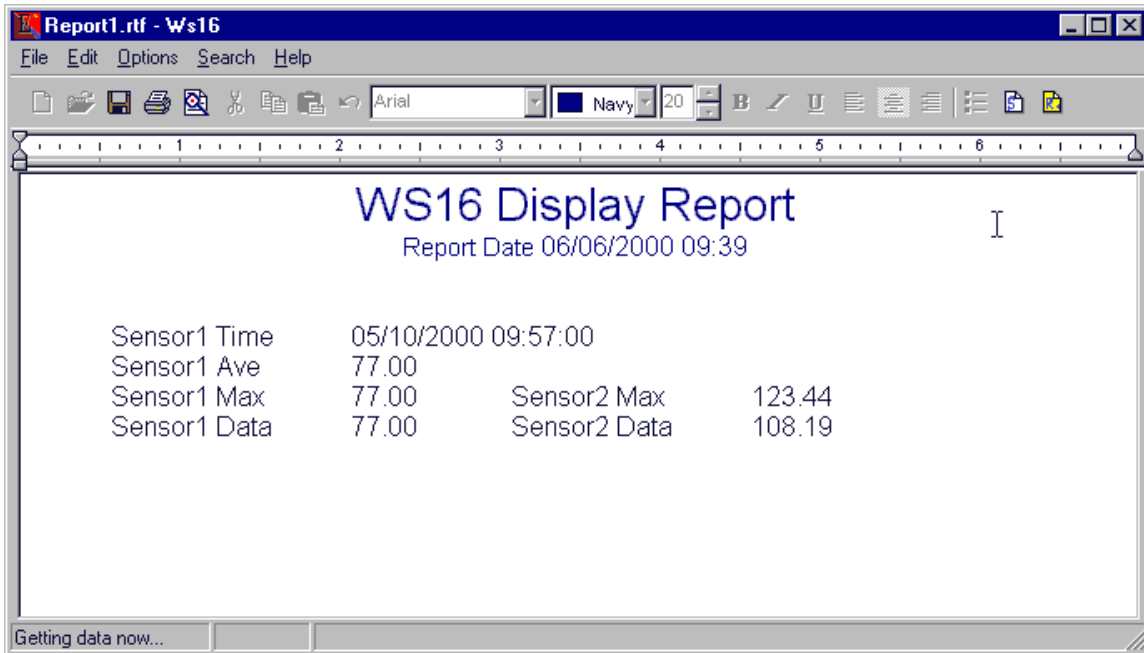
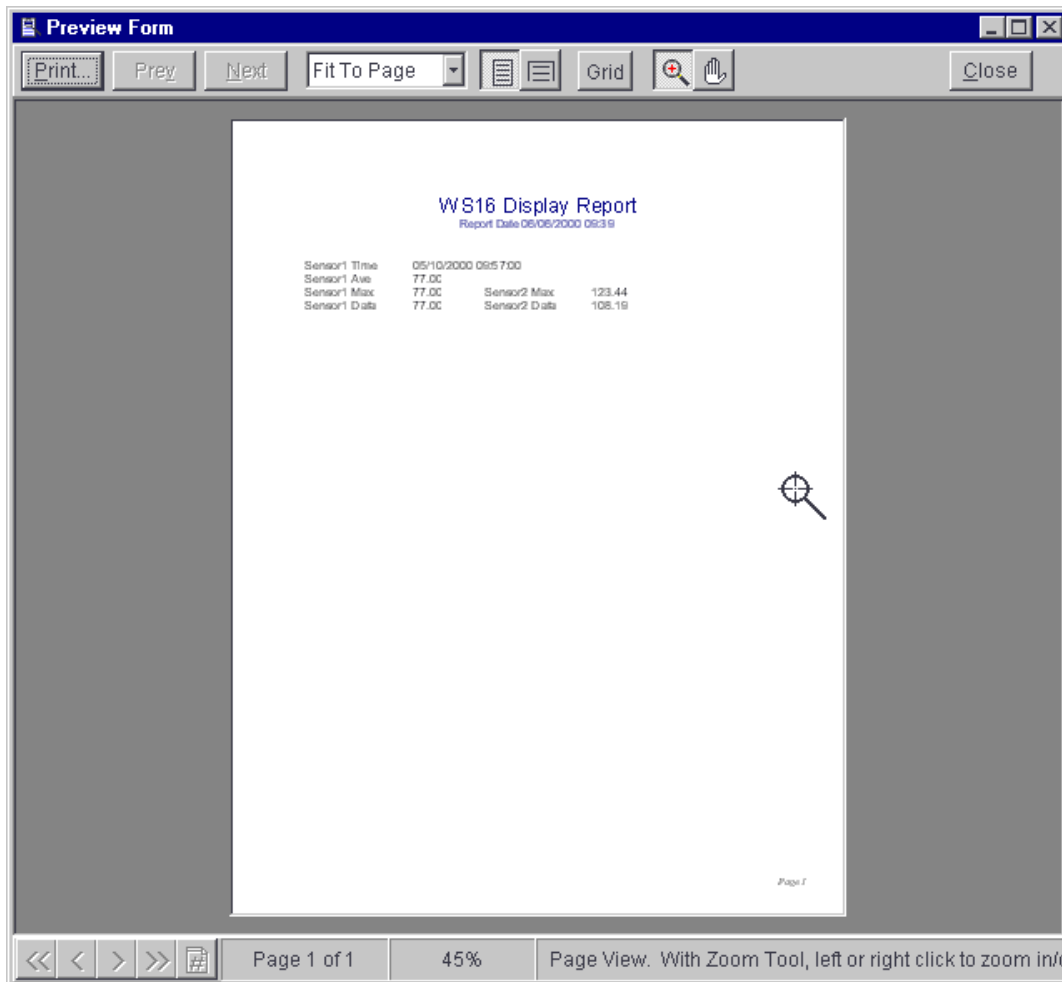*Set your report with the look you want by using standard editing commands. Assign a sensor to each of the =[number], and the values will be inserted into the report when it is run.*

Options Menu
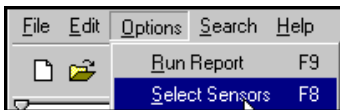
Report options: Run report or select sensors.

PRINT PREVIEW

Report preview: Select preview to see how your report will look printed.

Print the report from here by selecting the print button. You can print all pages or select the pages you want from the print dialog that pops up.

Main Initialization File (WS16.ini)

The main initialization file is used to remember the main form screen location and which project to open. You can manually change the Project Folder by editing this file. Just rename the ProjectDir = New project location.

New Project Name must be a sub folder in the WS16 folder and it should contain a Project initialization File with the same name as the folder (ie. NewProjectName.INI).

WS16.INI

[ProjectDir]

ProjectDir=C:\program files\omega\Weather\

Project Initialization File

The project initialization file stores information about the project being opened. A typical example is shown below. The main initialization file references the project initialization file.

The project initialization file can be modified to open only the forms you select. If you modify this file and add forms to your project, the files added must be in the project directory with a .ffr extension. The added forms must have been created by WS16.

Note: The project initialization *file may reference many forms but only have a form count of 2. The* Count = *number determines how many form files are opened. If the Count is 0, then no files will be opened. The forms are opened starting with 0, then 1, etc.*

Weather.INI

[PropertyForm]
Left=323
Top=91
Width=235
Height=437

[MainForm]
Left=185
Top=30
Width=687
Height=549

[FormTabs]
TabsVisible=1
Position=0
FontSize=8
Height=19
FontName=Arial
FontColor=clNavy
FontStyle=0
Format=1

[TimePanel]
FontSize=10
FontName=SF Sans Serif
FontStyle=2
FontColor=clNavy
BackColor=$0080FFFF

[FormCount]
Count=4

[ListForm]
Left=526
Top=86
Width=200
Height=366

[ComSet]
Parsing=1
Opened=isOpen
ComSet=Com1,9600,8,1,None
Xmodem=RX2.txt
PhoneSet=Com2,14400,8,1,None
PhoneNum=1,2033591660
PhoneLabel=Omega: 1,2033591660
LoggerNum=1
Logged=Log1.txt

[SetupForm]
Left=65
Top=176
Width=686
Height=325

[ReportForm]
Left=121
Top=76
Width=689
Height=392

[ColorForm]
Left=403
Top=125
Width=288
Height=228

[TermForm]
Left=46
Top=265
Width=795
Height=357

[Files]
FileName=Omega.txt
FileDir=C:\Program Files\Delphi5\Omega2\Demo\Data\
Color=clInfoBk
FontName=Courier New
FontSize=9
FontColor=clBlack
FontStyle=0
Left=36
Top=363

Width=751
Height=299

[Terminal]
PhoneCt=1
SendInit=0
ModemUseCTS=0
ModemUseDTR=0
ModemUseXOn=0
UseCTS=0
UseDTR=0
UseXOn=0
ComSet=COM1,19200,8,1,None,
Opened=isOpened
PhoneSet=COM2,19200,8,1,None,
Initialization=ATE1Q0
PhoneNum=12033591660
XmodemName=Xmodem.txt
R6FileName=
R6Dir=
Name=Omega
Color=clWhite
FontName=Courier New
FontSize=9
FontColor=clBlack
FontStyle=0
Left=45
Top=62
Width=680
Height=566
Parsing=0
PhoneList0=1,Omega,12033591660

[ParsingPref]
ResetAll=1
ResetMaxMin=0
ResetChange=0
ResetData=0
ResetRain=1
ResetTrends=1

[ChildForms]
3=Start.ffr
2=Summary.ffr
1=Trends.ffr
0=Overview.ffr

PROJECTS

The Project menu item allows you to backup your current project to a new directory, open a new project, or open existing project. If you backup or open a new project, you must enter a name in the New Project Folder edit box.

If you open an existing project, a dialog box will open which allows you to select which project to open. Select an existing project initialization file in the WS16 directory. Don't select your current project or the WS16.ini file (a dialog box will ask you to select another project).
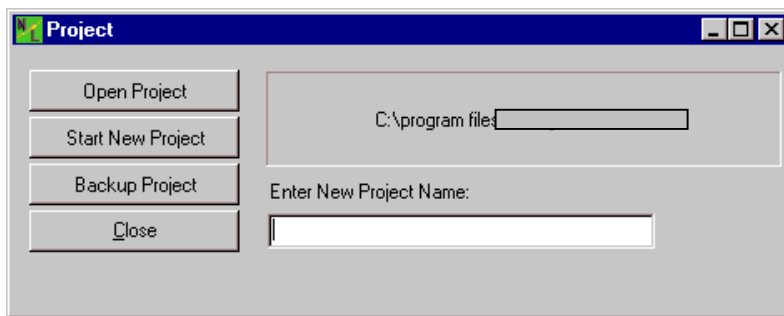
Open an existing project, start a new project or backup your existing project

Open Existing Project

To open an existing project, you select the menu item File | Project. Click on the Open Project button. A dialog box will be shown which is asking you to select a project initialization file. This project initialization file will be in a previously created project folder.

If you try to open the WS16.ini or the current project initialization file, you will be asked to select another file. The project folder must be in a sub directory of the WS16 folder.

Note: the current project will saved automatically when a new project is opened.

Create New Project

Create a new project command is found by selecting the File | Project menu item.

The Project menu item creates a new project. Enter a new project name in the edit box. This becomes your folder and initialization file name. Click on the Start New Project button and you will be asked if you want to close this project and start a new project. Click OK and a new project will be started.

Note: The current project will be saved when it is closed. No changes will be lost.

Backup Project

The backup command is found by selecting the File | Project menu item. Enter a new project name and then click the Backup Project button. Your current project will be saved to the new backup folder.

The Backup command backs up the form files, the alarm setup files, the password files, data files and the initialization files for your new directory.
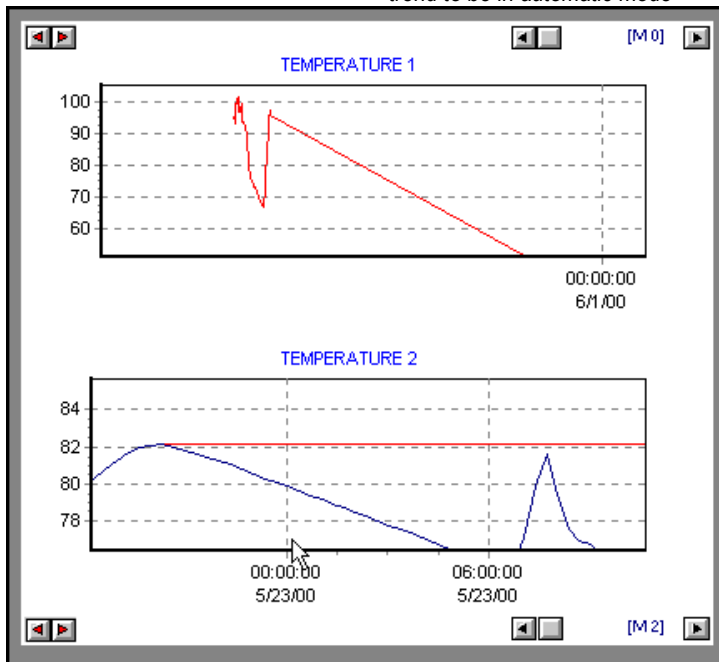
Note: Back up your data files by using windows explorer to copy these files to a new directory. These files may become very large, and may need to be removed to make room for new data files.

TRENDS

Real Time Trends

Changer Buttons on left

Scroller on right (A 0 shows the trend to be in automatic mode

Real time trends, right click the trend to set properties.
Right click the scrollbar to toggle between automatic scaling and manual scaling.
Click the changer button to change bottom scale time.

The real time trend has many of the same features at the Button Chart. Only this trend is showing the trend data all the time.

Right Clicking

Right click on the trend and on the scrollbar. Properties are toggled on and off and can be set by right clicking.

Right Click On The Scrollbar

If you right click on the scrollbar, the trend changes from automatic datetime scaling to manual datetime scaling. Manual date time scaling allows you to stretch the data and to view only a portion of the data. Automatic datetime axis shows all the data in the trend.
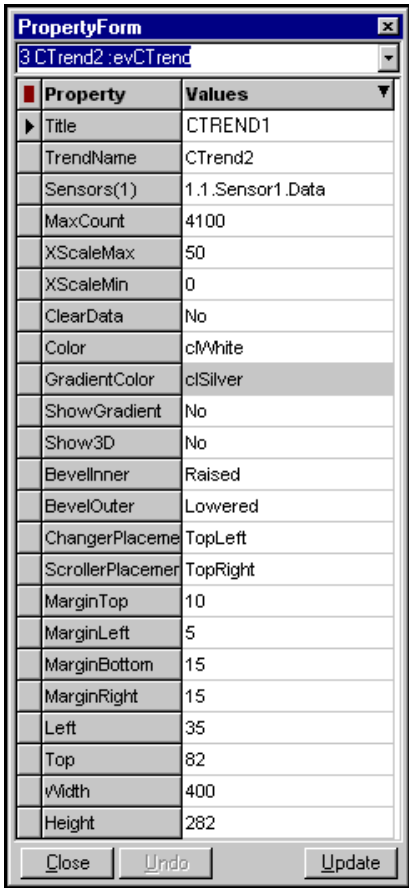
DateTime Changer

The datetime changer is a dual button that allows you to go short the datetime span or to lengthen the datetime span. There are 21 settings you can expand to (from 1 second to 1 year). Each click on the date time changer changes the trend to the manual mode. A hint shows up when the mouse is over the datetime changer that shows its current setting.

Right Click On Trend

Right click on the trend to present the property forms for the trends. These properties are the same for the button chart. Goto Button Charts to see all the property options

Trend Properties

PropertyForm

3 CTrend2 :evCTrend

Property	Values
Title	CTREND1
TrendName	CTrend2
Sensors(1)	1.1.Sensor1.Data
MaxCount	4100
XScaleMax	50
XScaleMin	0
ClearData	No
Color	clWhite
GradientColor	clSilver
ShowGradient	No
Show3D	No
BevelInner	Raised
BevelOuter	Lowered
ChangerPlaceme	TopLeft
ScrollerPlacemen	TopRight
MarginTop	10
MarginLeft	5
MarginBottom	15
MarginRight	15
Left	35
Top	82
Width	400
Height	282

Close   Undo   Update

No special properties are used in the trends