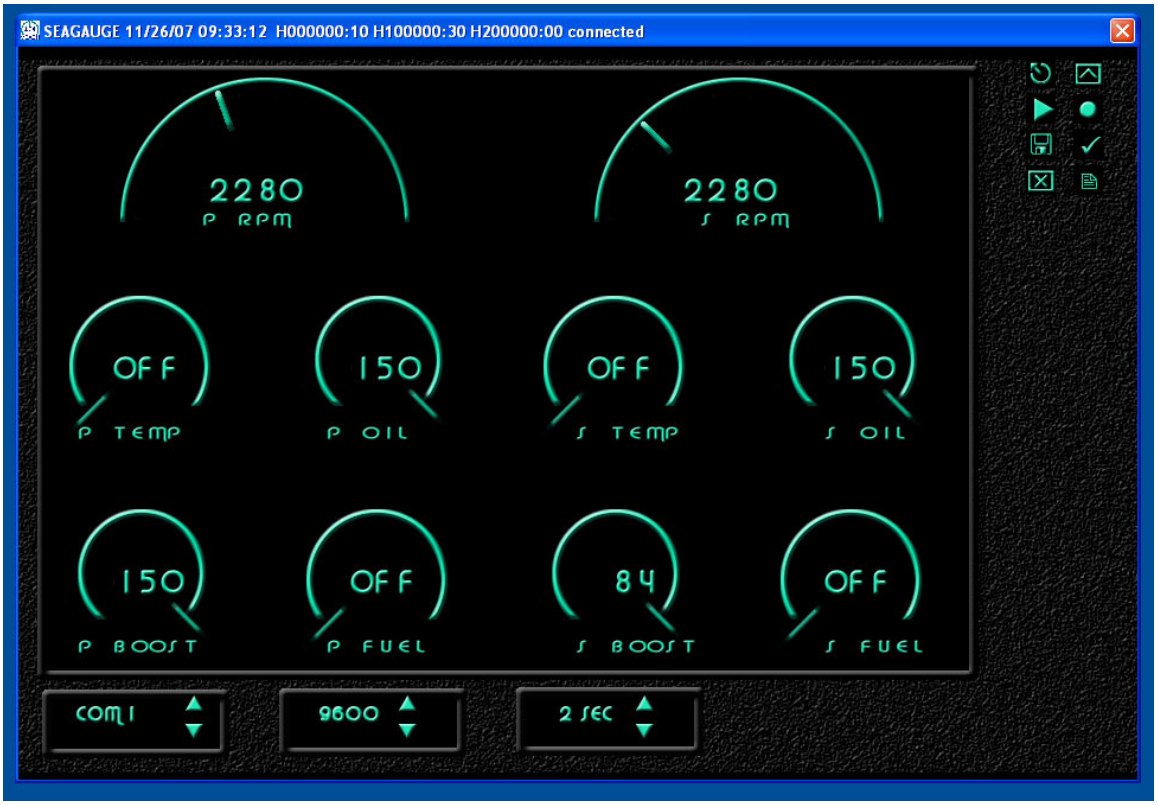
vDash™

Version 2.0 User's Manual



Chetco Digital Instruments

SeaGauge™ is a trademark of Chetco Digital Instruments, Inc.

vGauge™ is a trademark of Chetco Digital Instruments, Inc.

WARNING!

USE THIS UNIT ONLY AS AN AID TO MONITORING ENGINE PERFORMANCE INFORMATION.

CAUTION

When showing sensor data, this unit will only show information based on the sender used and its installed position.

The operating and storage temperature for your unit is from -4 degrees to+167 degrees Fahrenheit (-20 to +75 degrees Celsius). Extended storage temperatures higher or lower than specified will cause the liquid crystal display to fail. Neither this type of failure nor its consequences are covered by the warranty. For more information, consult the factory customer service department.

All features and specifications subject to change without notice.

Chetco Digital Instruments may find it necessary to change or end our policies, regulations, and special offers at any time. We reserve the right to do so without notice.

All screens in this manual are simulated.

NOTICE!

Free software upgrades will be available on our website at http:// www.chetcodigital.com as they are released. Please check our website periodically for these and other information as they become available.

Thank you for choosing Chetco Digital Instruments

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the factory customer service department for help.

SPECIFICATIONS

Operating System:..... Windows XP

Maximum Update Rate:..... 2 per second

NMEA 2.0 Instrumentation Sentences $IIXDR,A $IIXDR,C $IIXDR,D $IIXDR,F $IIXDR,G $IIXDR,I $IIXDR,P $IIXDR,R $IIXDR,S $IIXDR,T $IIXDR,U $IIXDR,V, $GPGLL, $SDMTW, $SDDBT, $SDVLW, $SDVHW

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Introduction

Welcome

Thank you for purchasing a Chetco Digital Instruments product.

vDash™ is a software application utility that provides a virtual dashboard on a Windows XP PC/Laptop. vDash™ works with SeaGauge™ and vGauge™ to allow configuration and data logging via attached serial cable or Bluetooth wireless interface.

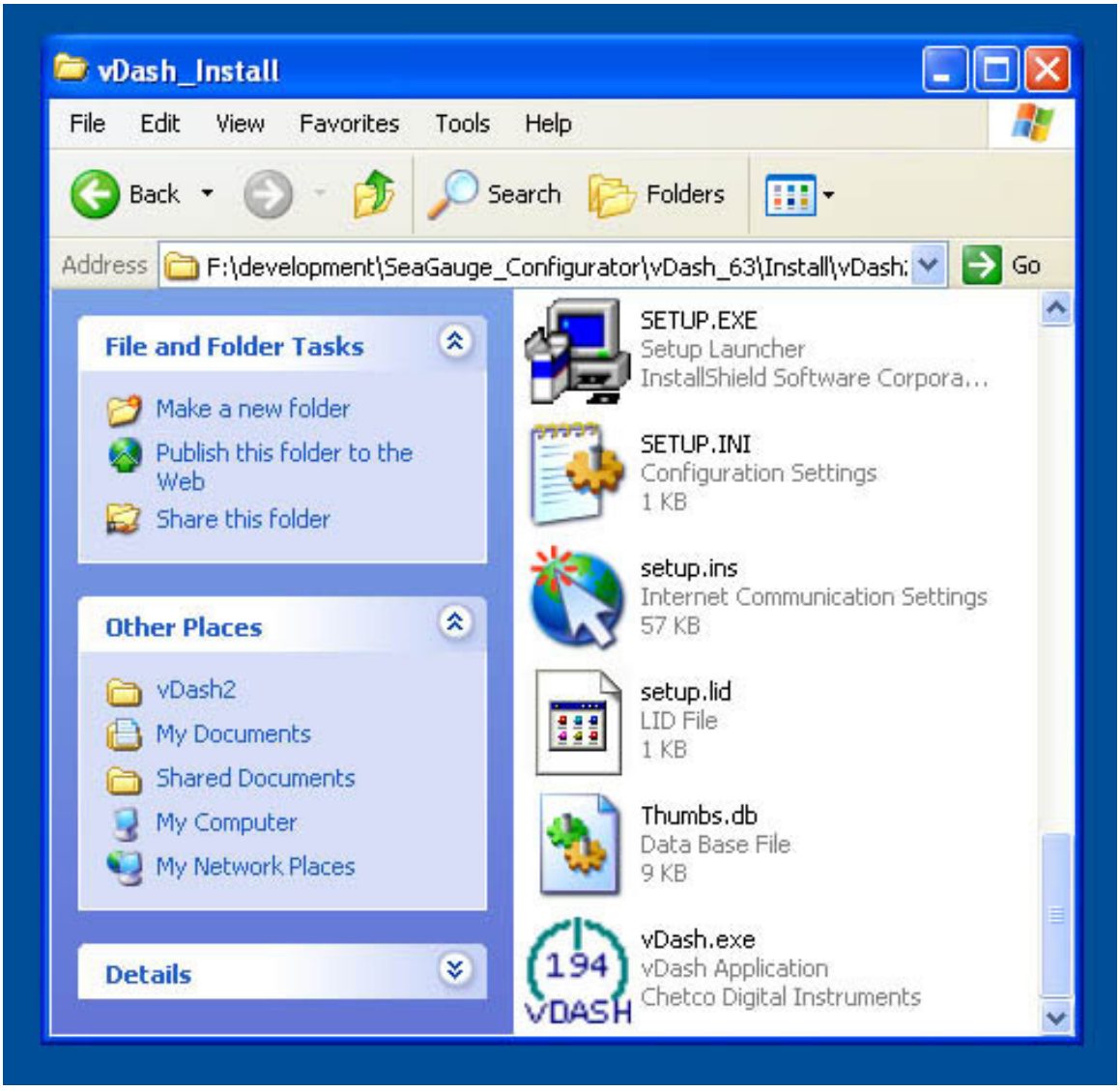
Once installed on your PC/Laptop, vDash™ accepts NMEA 0183 data from built-in serial ports, parses the recognized sentences and displays the data in a real-time viewer window. Up to 8 display screens can be laid out with a variety of graphic display formats using the point and click interface of attached computer mouse or touch pad. Once desired formats are configured, vDash™ provides real-time programming of any attached SeaGauge™ or vGauge™ product.

vDash™ is available for both PC/Laptop and PocketPC 2003 PDA. While both platforms are similar, there are small differences in screen layout. This manual will describe both applications and explain the differences where necessary.

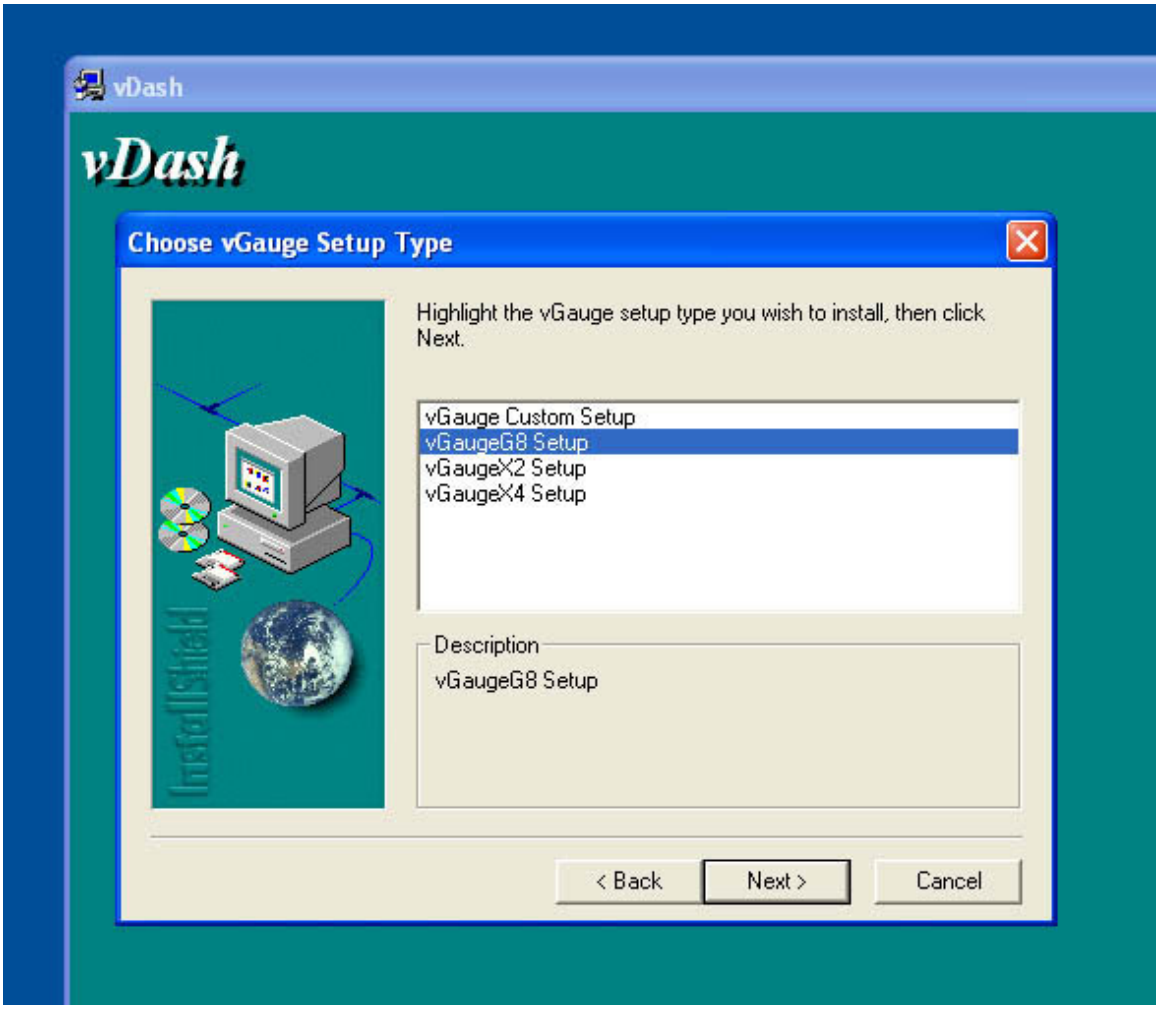
Installation

Windows XP PC/Laptop

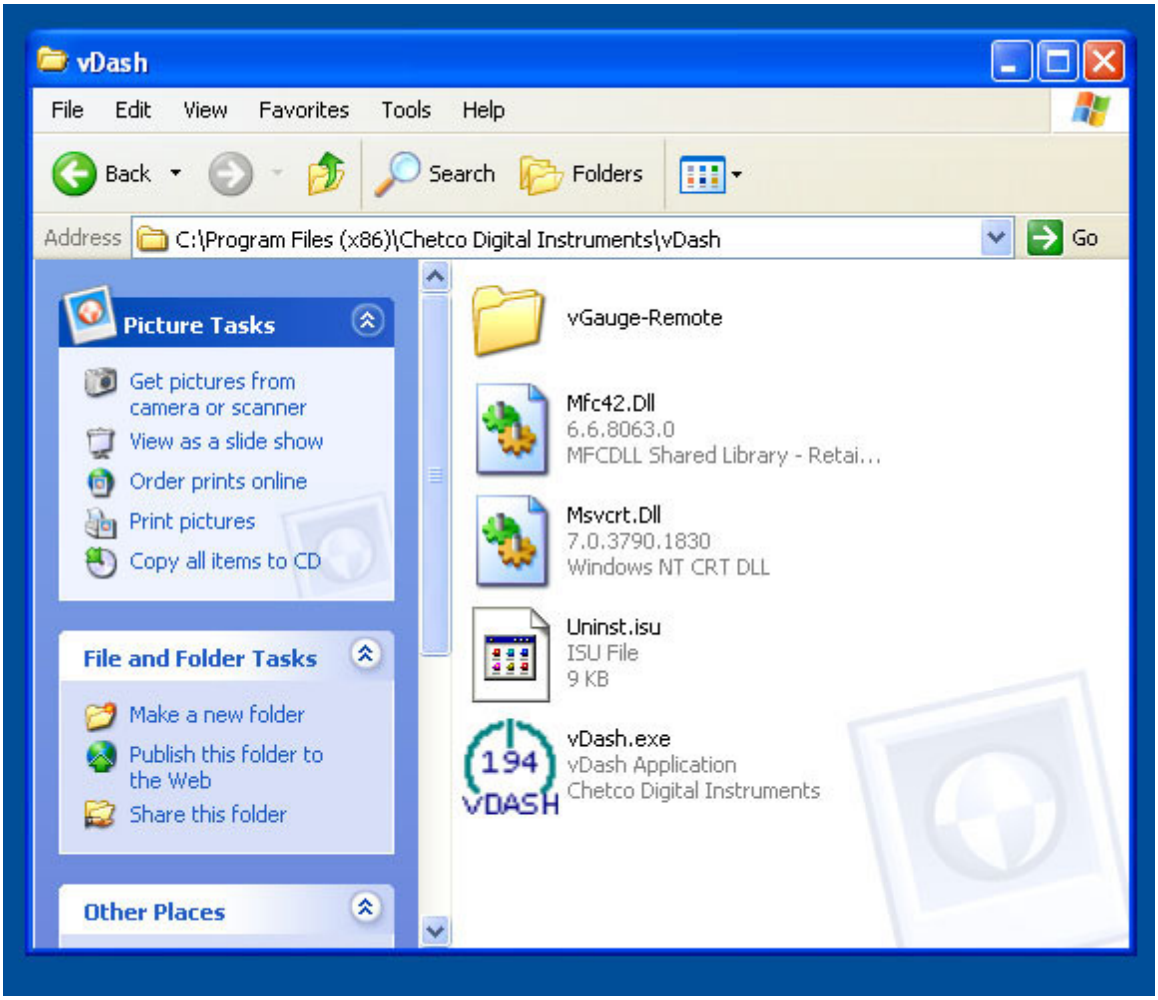
The PC/Laptop version of vDash™ is a complete installation script. Just uncompress the folder and start the "SETUP.EXE" program to install in the default program directory.



Follow the installation prompts. When you reach the SETUP TYPE screen, select the model of vGauge unit you wish to install for. This option will copy the necessary configuration files for the selected unit. If you do not have a vGauge unit, you can still select any of the options to install demonstration files. If you choose "CUSTOM", configuration files for all models will be installed. However, only the last configuration we become active. You will have to manually select a new project file to change the active configuration.

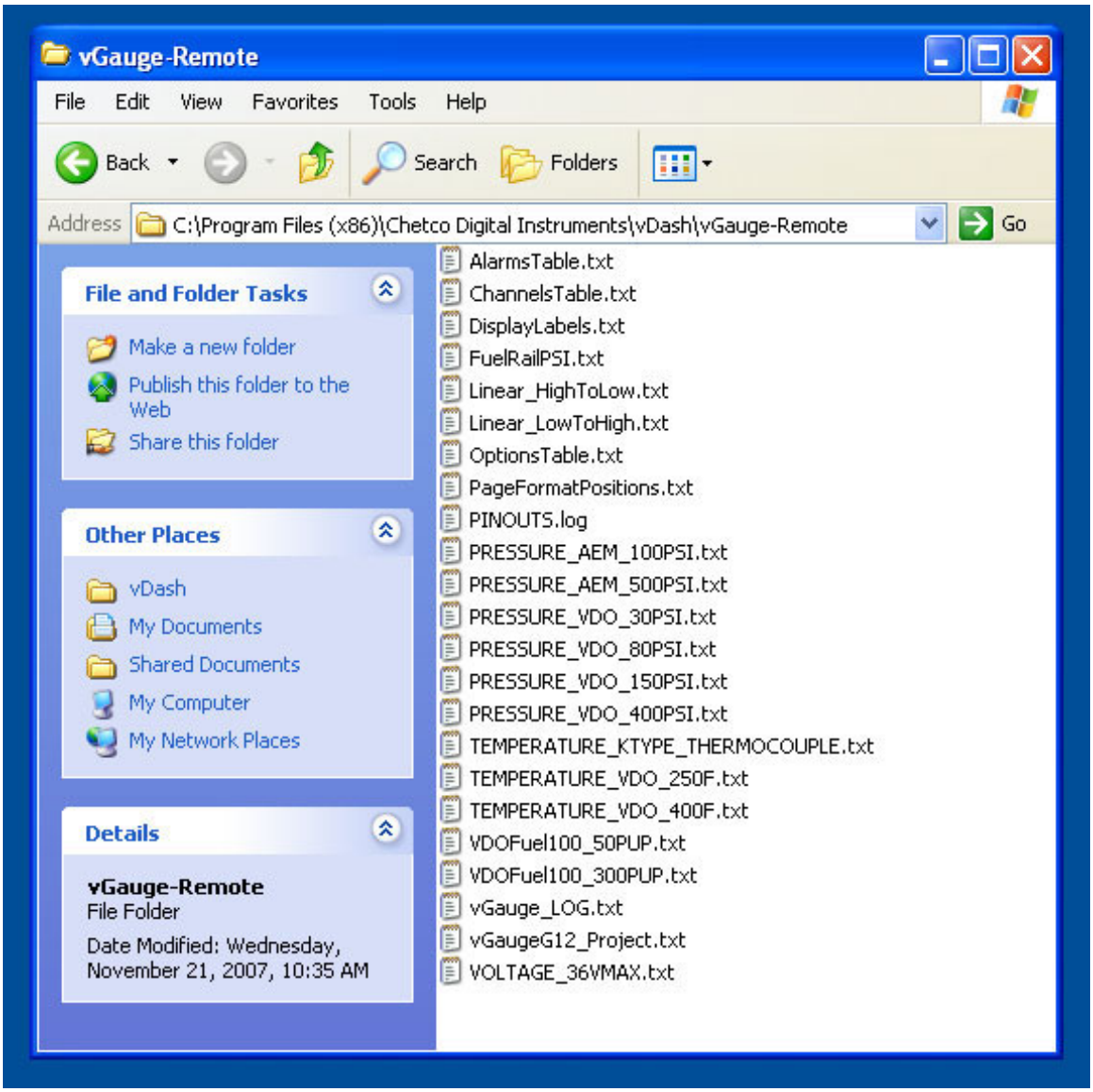


When installation of a project is completed, a new folder will be created in the target location with files required for configuration of the selected vGauge unit.



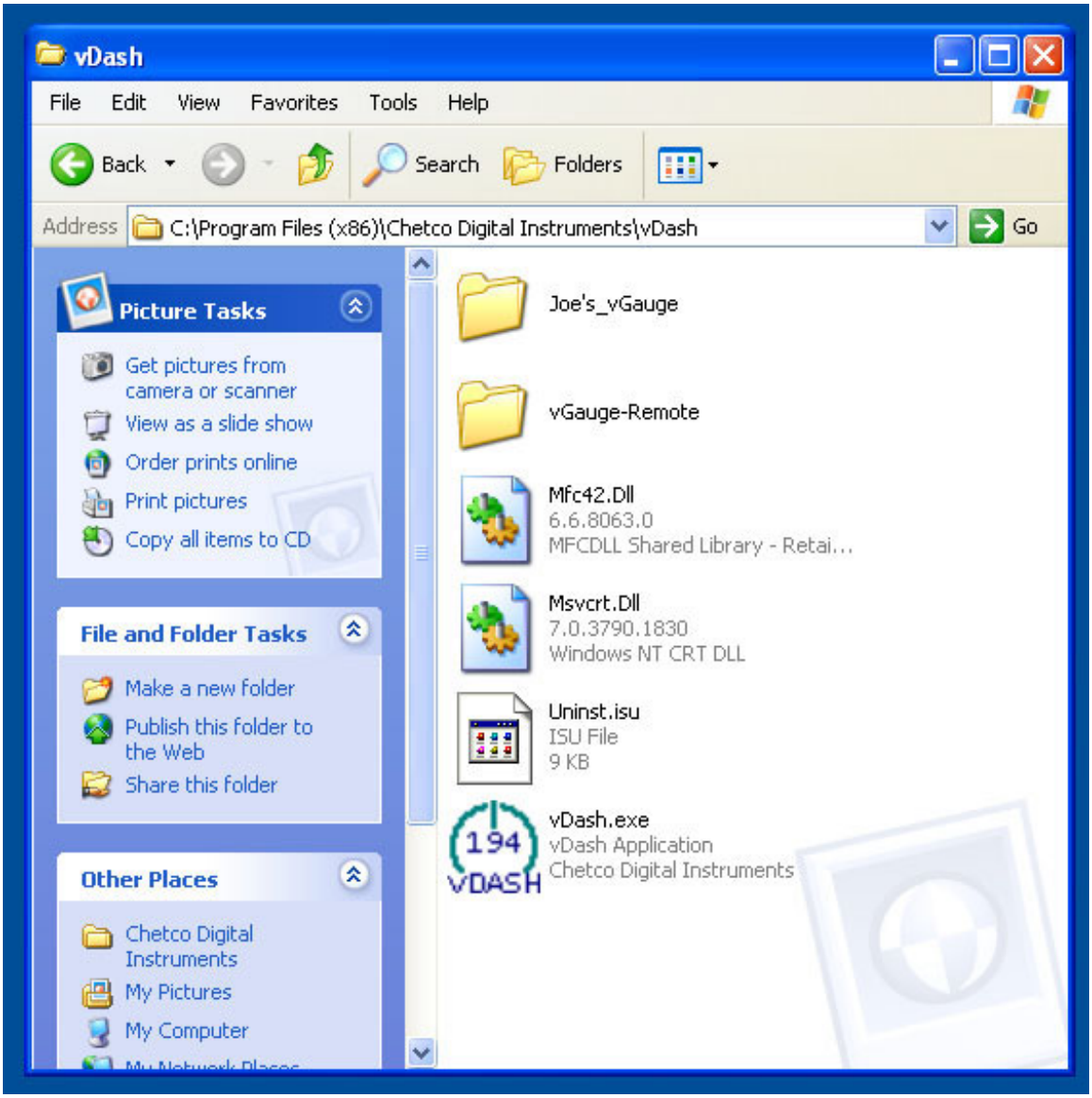
Additional default project folders can be installed by re-running the installation procedure and selecting different targets. The last project installed will become the current project when vDash is run. Different project folders can be selected from within the vDash application.

The contents of this folder will contain files which can be loaded into a target vGauge unit by using the vDash programming options.



These files contain user setup configurations and sensor calibration tables. All files are in simple text format and can be easily modified with any text editor application.

Custom vGauge project folders can be added by simply copying them to the default directory or to any other desired location and then selecting them from within the vDash application.



PC/Laptop Layout

The vDash™ software application is a single screen with a data display area on the left and a toolbar on the right column. The bottom of the screen contains controls for setting up the com ports, Baud rates, and capture intervals.

When the application is started you must select the desired com port that NMEA data will be arriving on. Once selected, the com port setting is saved until changed. After the com port is configured, use the connect button to establish communications and start display of incoming NMEA data. The utility will decode the appropriate sentences and place the data on the display. If no NMEA data is received on the selected com port the display will remain blank and no updates will occur.

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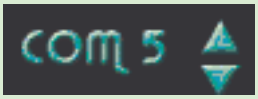
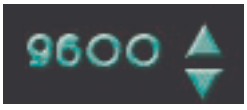
The following table describes the basic functions of the vDash Utility.

Symbol	Function
	**Data logging start/stop**. A toggle button that turns on data logging of received NMEA sentences to memory. If enabled. Clicking again will disable. If no unit is attached to PC, pressing Data logging button will initiate playback of previously selected log file.
	**Set function**. Command the SeaGauge or vGauge to set the current menu item. Performs same function as bottom button on SeaGauge or vGauge
	**Save current page definitions**. Saves the currently defined sensor labels and page format definitions to specified files
	**Connect**. Establishes a connection to SeaGauge or vGauge through the currently select serial port. If the serial port is via Bluetooth module, it will prompt which visible module to use
	**Update tables and firmware**. Used to send new tables or firmware to connected SeaGauge or vGauge units. Used to upload new Calibration and Display Label tables. User will be prompted for name and location of file to upload
	**Select function**. Used to scroll through display pages. Performs same function as top button on units
	**Clear Page**. Clears all display modes on the current page so new items can be assigned
	**Setup Pages**. Used to configure all of the settings and calibration tables for a attached SeaGauge or vGauge unit.
	**Com Port Select**. Used to select one of 8 comports (1-8) to listen on for NMEA data. Physical com ports are 1-4 and virtual comports are 5-8. Most Bluetooth devices will be assigned to a virtual comport. Check your system properties to determine which one to use. Use the Up/Down arrows to increase or decrease the Com port number
	**Data Logging interval**. Used to select the time interval between data capture events. Options are 1 sec up to 1 hour. Use the Up/Down arrows to increase or decrease the interval
	**Baud Rate**. Used to select the baud rate for the selected com port. Must match the specified rated for the selected unit.

Functions

Connect

Before any data can be displayed, the vDash™ utility must connect to a device that transmits a compatible NMEA 0183 data stream. vDash™ uses built-in com ports to listen for NMEA data.

vDash can use both physical com ports and virtual com ports. Physical com ports are usually 1-2 and are wired with standard RS232 cables. Virtual com ports are 5-8 and are used by wireless Bluetooth modules. Bluetooth support can be built-in as may the case with PDAs or add-ons which is common for PC/Laptops. In either case – determine which virtual serial port the Bluetooth is using before trying to connect.

Once a proper com port is selected, choosing the CONNECT option will try to open the port and initialize listening for a proper data stream. If connection is through a physical port, data updates should start occurring if the device is transmitting a proper NMEA data stream. In the case of connecting through a virtual port (Bluetooth), a device selection dialog will appear asking to choose the appropriate Bluetooth device in range. If more then one device is in range - choose the correct device.

When making a connection if any other application is using the same com port, the connection attempt will fail. If this occurs – close the application and retry the connection attempt.

Disconnected no data	Connected receiving data
	

After successful connection the TITLE BAR will display "Connected". When NMEA data starts arriving the TITLE BAR will display the name of the device sending data vDash will decode compatible NMEA data and display the device labels on the left and sensor data on the right. vDash will display the first 8 characters of device labels and the first 6 characters of sensor data.

If after connecting, no data is received – verify that NMEA data is arriving at the selected com port. This can be done by using a serial port application such as HyperTerminal to listen on the selected port. The default settings are 9600 BAUD 8-N-1.

The Connect function is a toggle operation. Selecting Connect again after a successful connection will break the connection and stop data display.

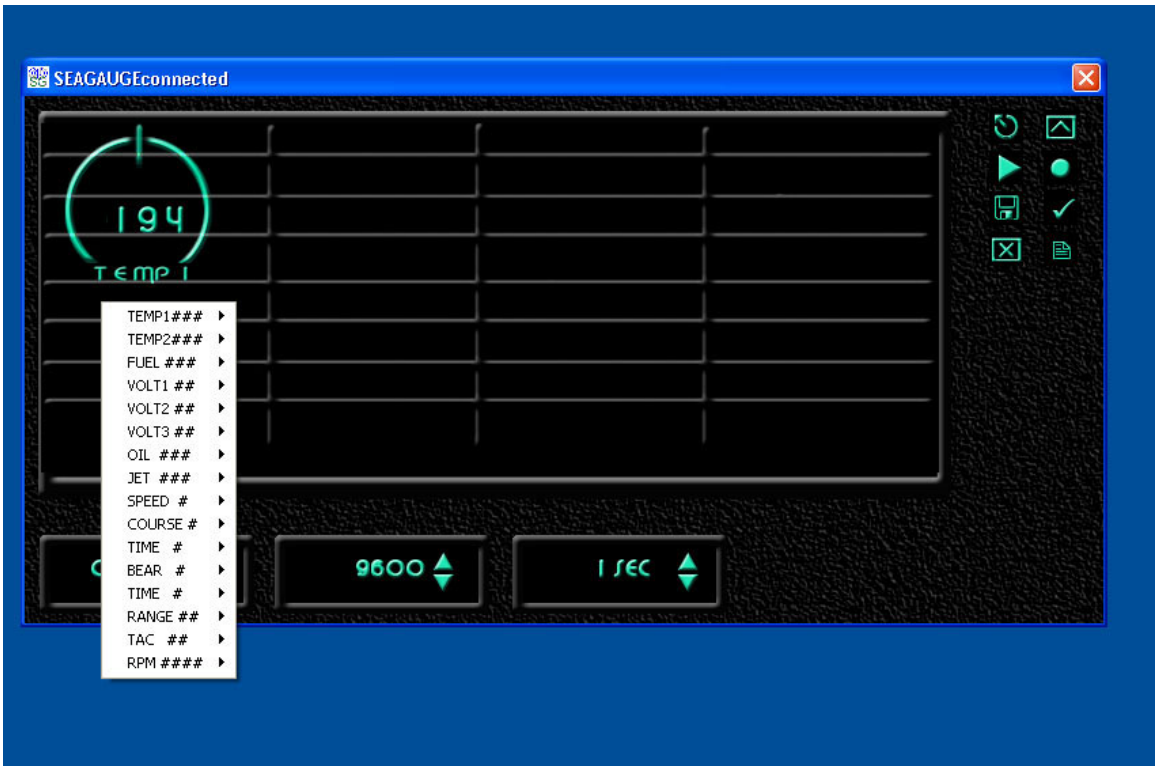
If no compatible SeaGauge™ or vGauge™ product is available, vDash™ can play back data from a previously recorded log file. To perform this function, simply select the data logging icon with out connecting to a device. The application will load the specified log file and playback data at the selected capture interval rate. **BE SURE THE LOG FILE IS READ ONLY** All virtual screen configuration operations are enabled during log file playback to simulate an attached SeaGauge™ or vGauge™ unit.

Virtual Data Screens

vDash is capable of displaying incoming data in a set of user configurable virtual screens using a variety of graphic display formats. The type of graphic formats available depends on the model of SeaGauge™ or vGauge™ being configured. From 1 to 8 pages can be configured by using drop-down menu selections via **right click** of the mouse button.

A grid pattern can be enabled by double-clicking the left mouse button to assist in locating the screen position to place a desired graphic display element. This grid can be toggled off by double click of the left button.

Once the cursor is placed in the desired location, a right click will enable a drop-down menu with available graphic display formats for the chosen sensor label.



In this example a Digital Dial was chosen to display temperature in the upper right position.

To place other elements, simply right-click in additional locations to choose the next sensor taking care not to place display elements on top of each other.

To remove a graphic element, right click and select **NONE** from the drop down list for the desired value.

Multiple display elements of different display types can be mixed on the same page.

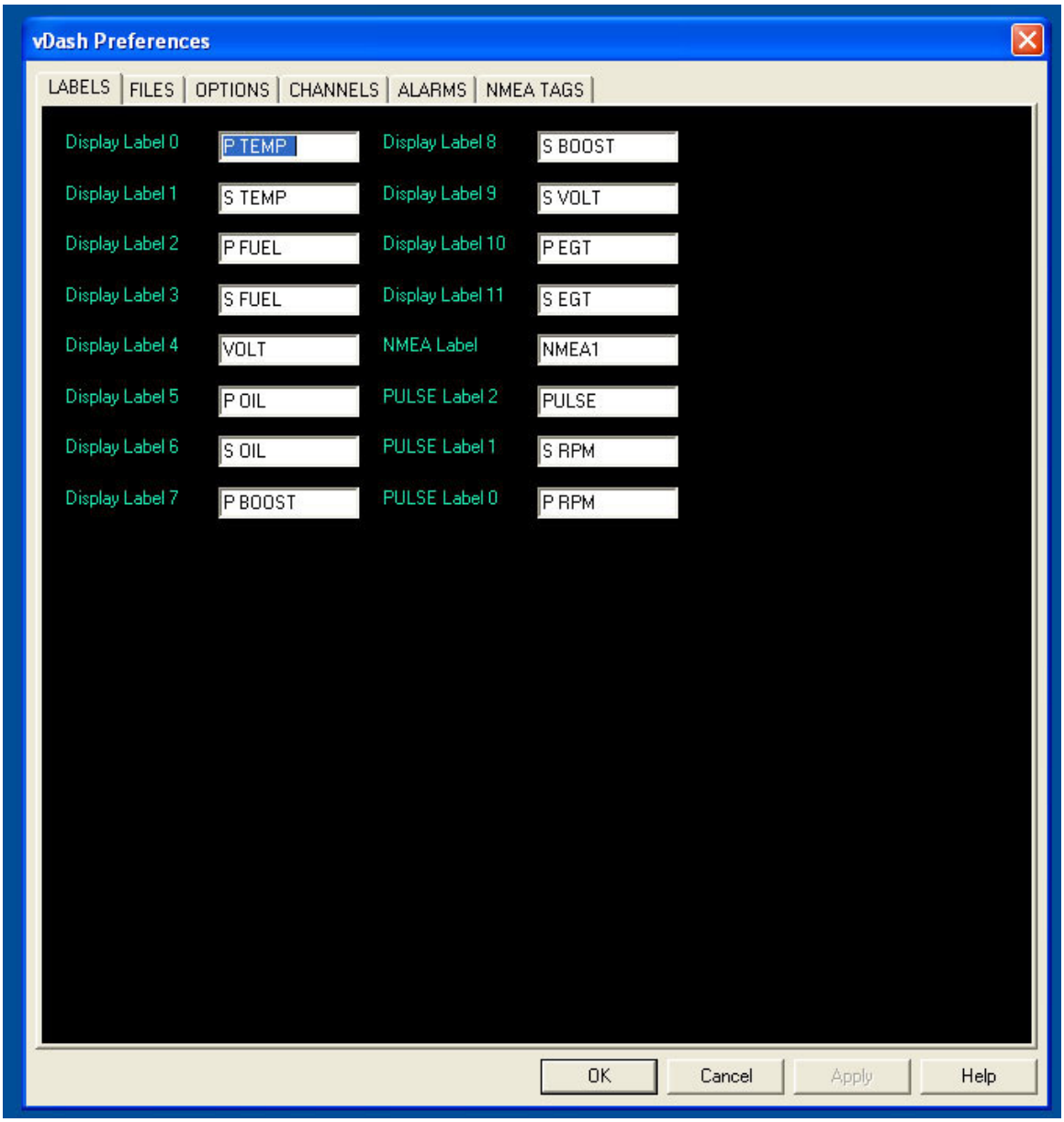
In this example a single page was constructed with a combination of large and small dials.

To construct another page, click the SCROLL PAGE symbol  (green arrow) and continue placement of desired elements. If the next page contains unwanted elements simply clear the entire page  (green X) and start over.

As items are assigned to selected pages, they are not permanently saved and will be lost if the application is closed. To save current sensor label definitions and display page assignments, select the SAVE FILE icon  (diskette symbol) and answer the prompts to overwrite the specified files.

Configuration Screens

vDash will allow for complete configuration and programming of SeaGauge™ or vGauge™ units. A series of configuration screens can be accessed via the SETTINGS icon  in the lower right corner of the tools palette.



After selecting the SETTINGS icon, a tabbed property sheet allows selection of the desired settings to view or modify.

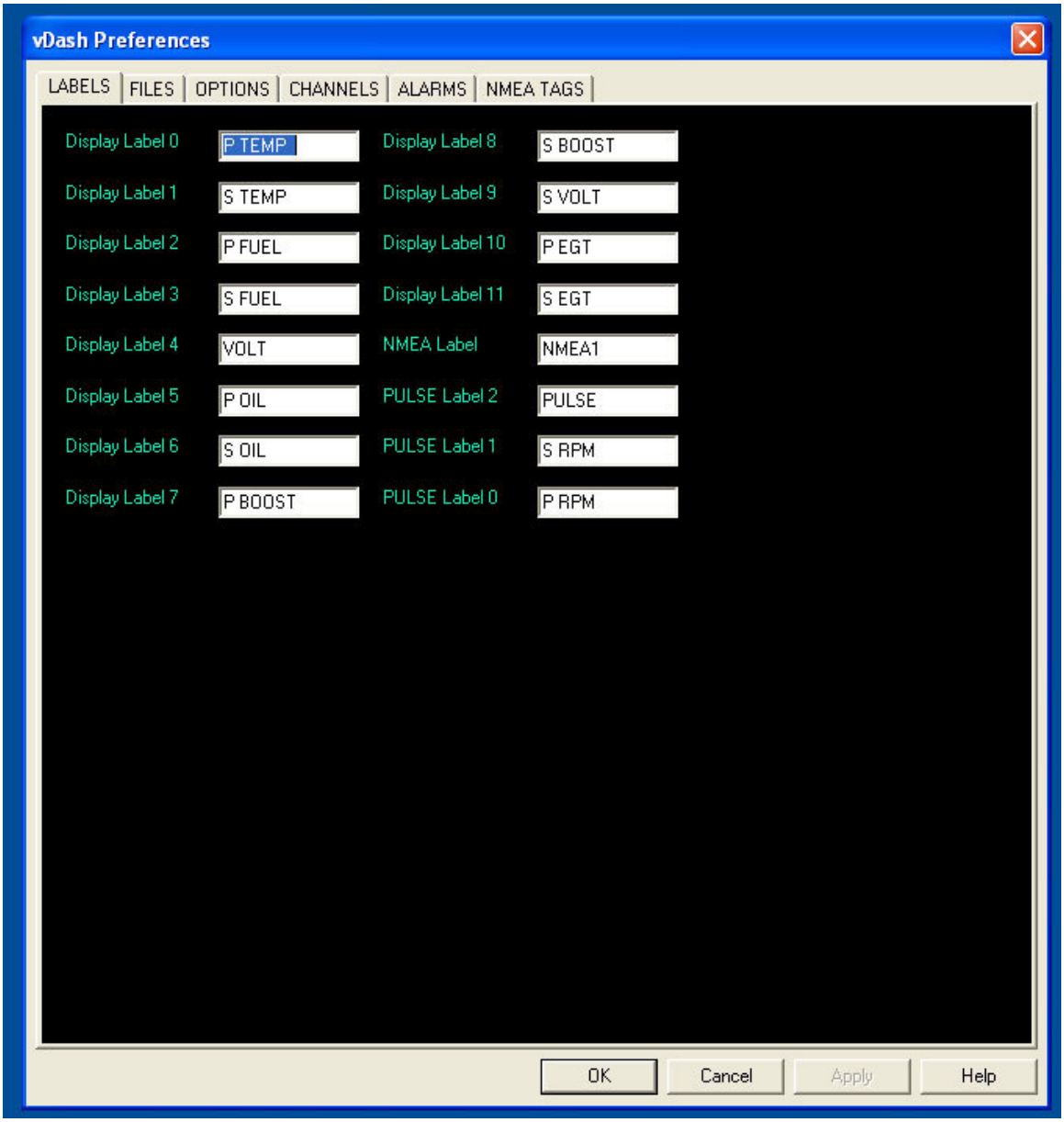
The following preference sheets are available.

The following table describes the basic functions of the vDash Utility.

Sheet	Function
Labels	Allows for choosing custom sensor labels up to 8 characters
Files	Allows choosing file locations and names for various configuration files and calibration tables used by SeaGauge and vGauge
Options	Creates an options file used by SeaGauge and vGauge and allows for choosing a file location and name of existing file
Channels	Creates an channels file used by SeaGauge and vGauge and allows for choosing a file location and name of existing file
Alarms	Creates an alarms file used by SeaGauge and vGauge and allows for choosing a file location and name of existing file
NEMA	Allows configuration of NMEA tags to search for and parsing information for data fields. Also provides for initialization of hour meters and date/time functions Information is stored in Display Labels file.

Labels Configuration Screen

vDash will allow for complete configuration and programming of SeaGauge™ or vGauge™ A series of configuration screens can be accessed via the SETTINGS icon in the lower right corner of the tools palette.



Sensor display labels are user configurable and can be up to 8 characters. The Labels Preference screen allows for entry of text via keyboard into appropriate fields for any of the 16 display label positions.

A special symbol "#" is used to skip spaces when displaying sensor labels. The "#" is not shown on the display but allows label string shorter the 8 characters by skipping space

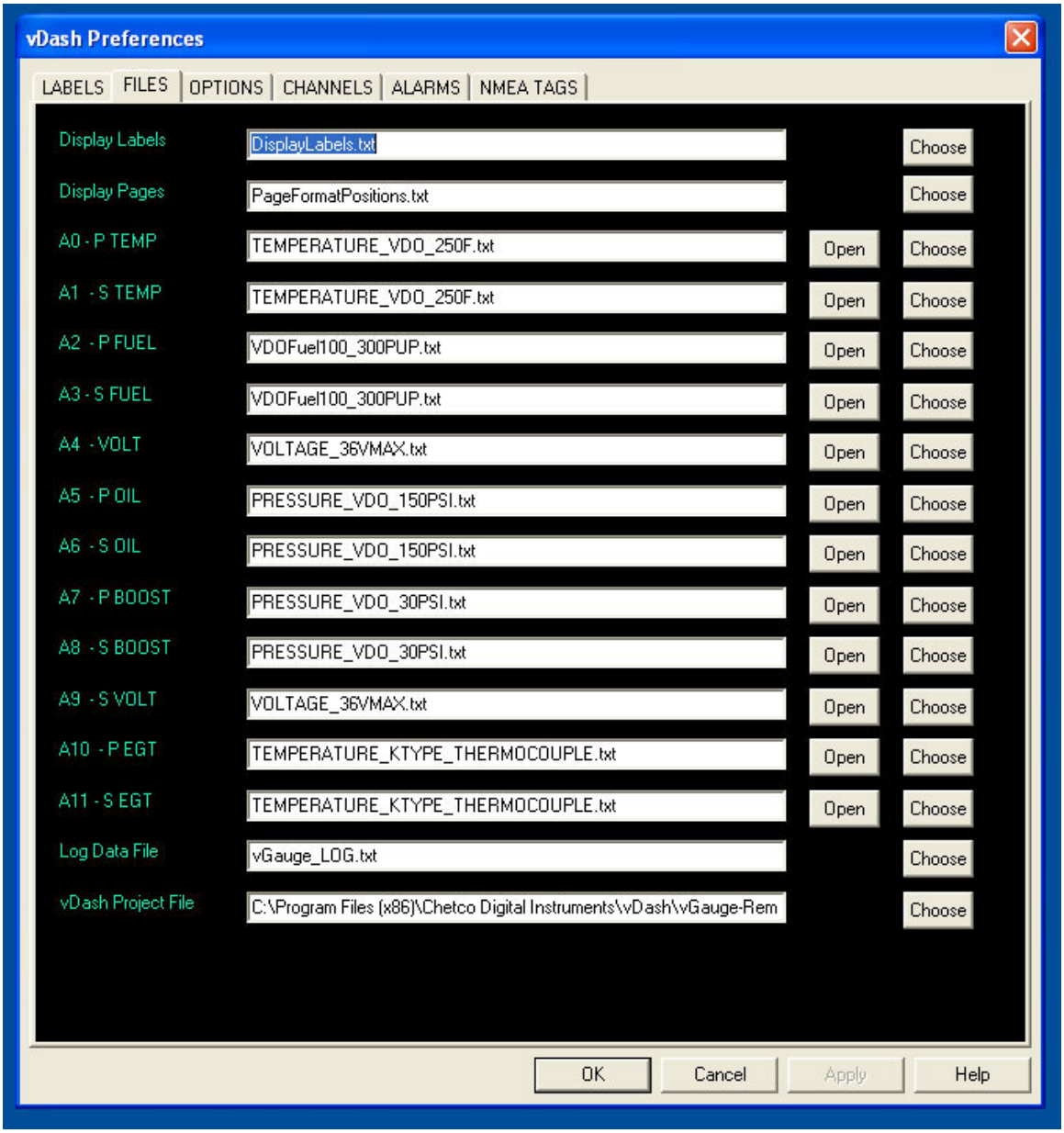
whenever the "#" symbol is encountered. This can useful in alignment of data values on display screens.

Text entry allows for upper and lower case letters, numbers, and other symbols such as +. -, ?, <, > and so on.

The Display Labels are stored in a configuration file specified in the Files Preference sheet but are not saved until the SAVE icon is selected. Any updates to Display labels on this sheet will appear in all configuration pop-up menus and other preference sheets after the sheet is closed.

Files Configuration Screen

SeaGauge™ and vGauge™ units are programmed by a set of configuration files. The Files configuration screen allows for choosing the location and names of the files.



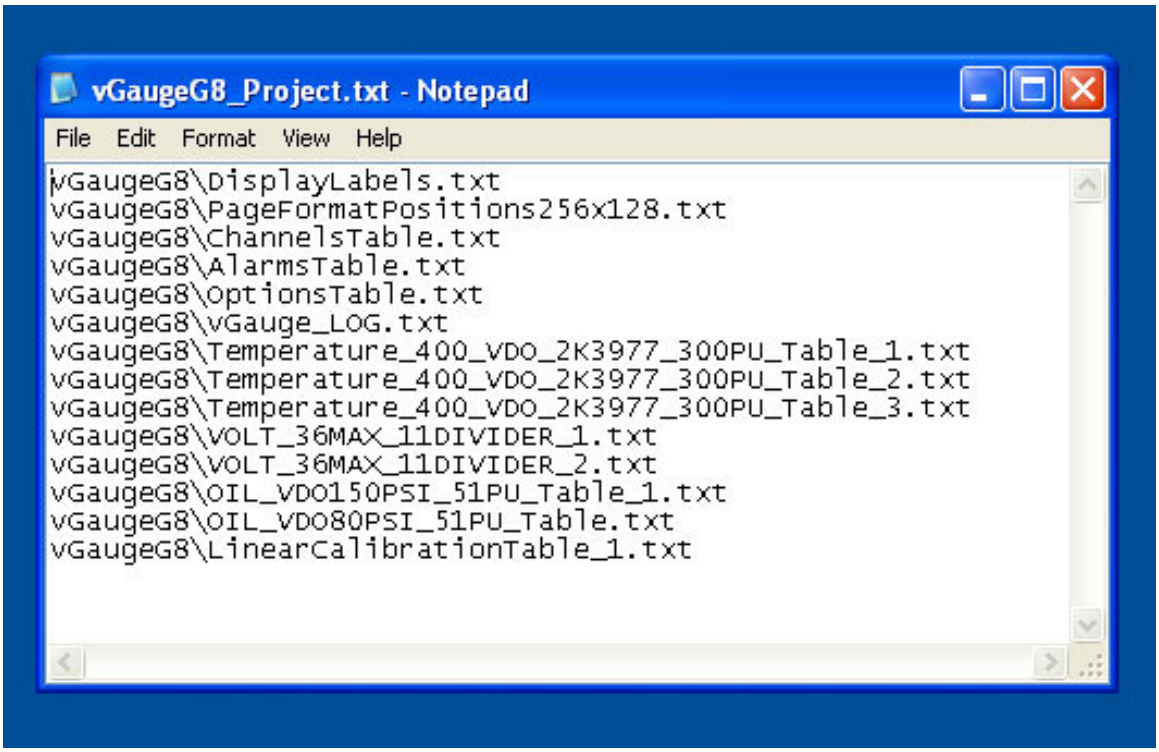
The CHOOSE button allows for selection of file location and specification of file names. Using the CHOOSE button will bring up a standard Save File dialog and update the file path field when completed.

The OPEN button allows choosing and opening a calibration file for editing.

The Log Data file is used for real time data logging and playback. The Choose button allows specifying a file location and name for this function.

Project File

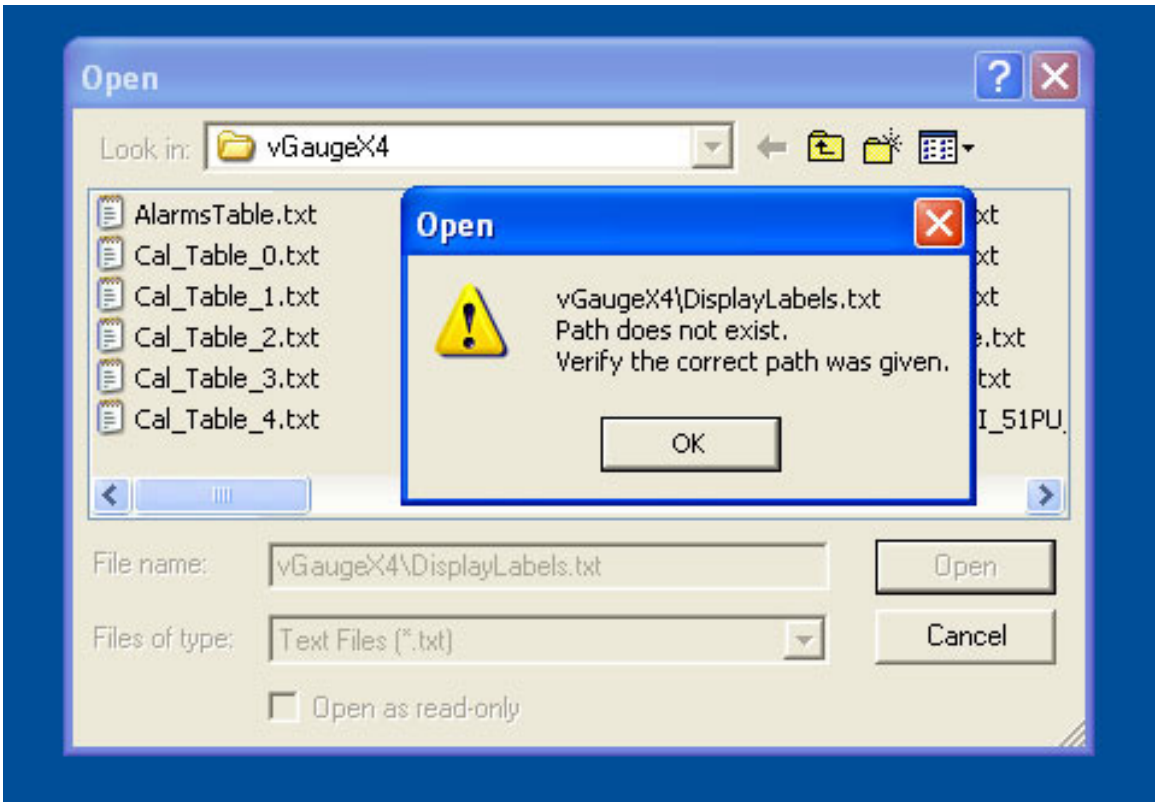
A vDash Project file is a text file that contains a list of all current configuration files. Choosing and saving a vDash Project file allows configuration of separate vGauge units without having to recreate the file list. You will be prompted for a Project file the first time the application is opened. If no Project file exists, simply enter a name and path and a new file will be created. After initial creation, the name and location of the current Project file will be stored.



When creating a new vDash Project file, you will be asked for the names and locations of all other configuration files

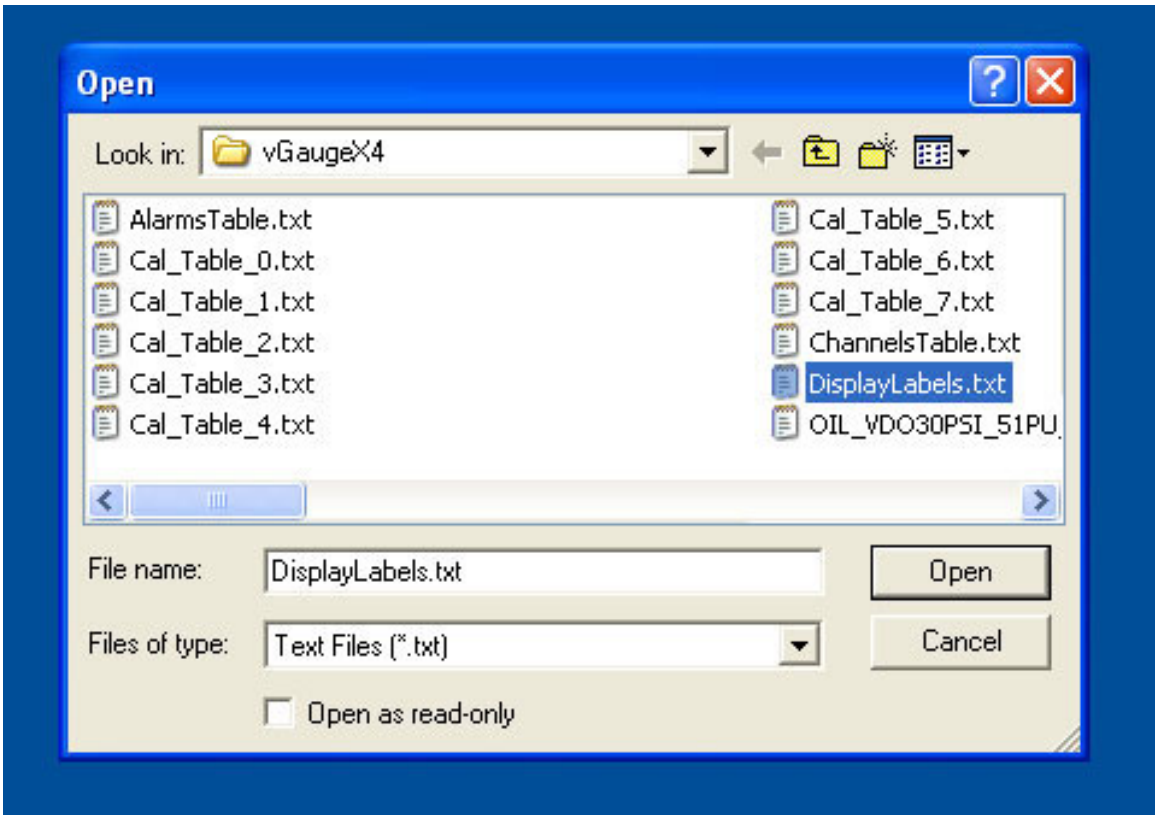
After creating a new Project File you should close the application and restart to ensure all changes take effect.

When changing vDash Project files, you may receive an error message indicating the path to a file does not exist.



This can happen because the current directory is pointing to the folder the application is stored in and not the folder for the configuration files. In this example the program is looking for a file called "DisplayLabels.txt" in a subfolder called "vGaugeX4" which doesn't exist in the directory "vGaugeX4".

To resolve the error, simple select the correct file name in the OPEN FILE dialog box

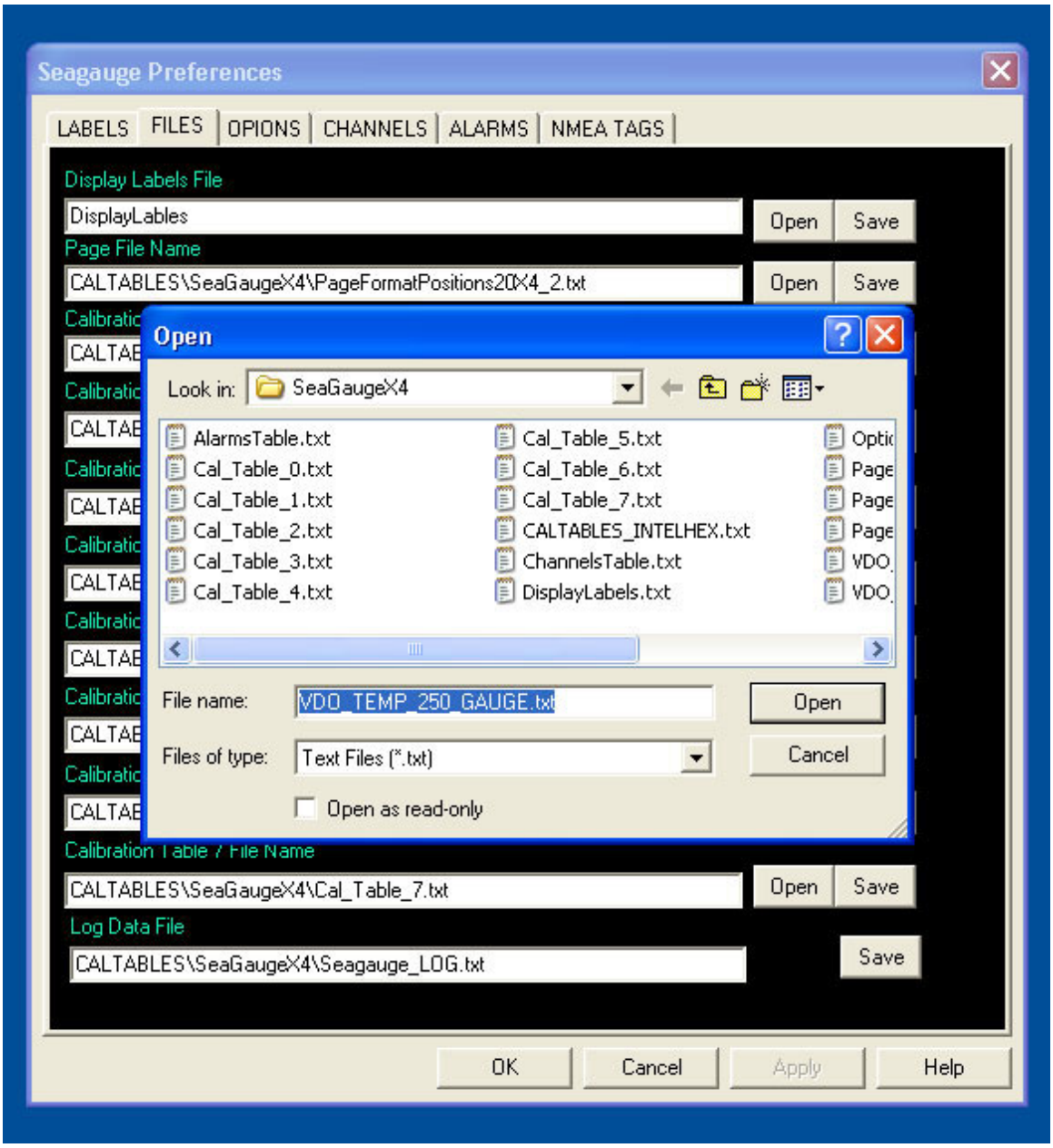


You may have to repeat this for all files in the project file list.

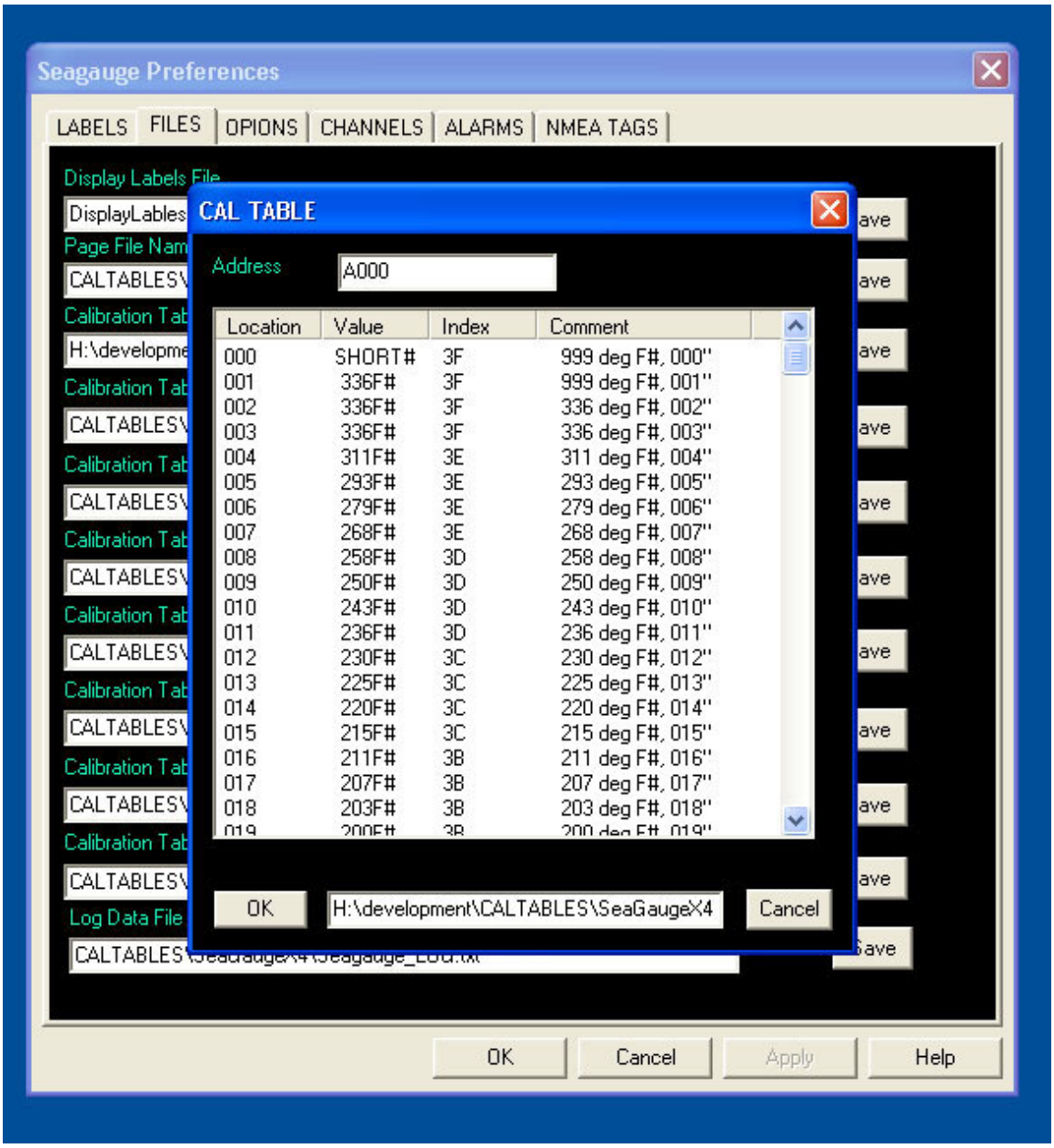
Editing Calibration Tables

Calibration tables are used to lookup display values for each of the 8 analog inputs. Use of separate calibration files allows for easy modification and great flexibility on the types of sensors that can be used with SeaGauge™ and vGauge™ units. The order of calibration files in the Files Dialog list must match the assignments of Display Labels. For example Calibration File 0 must match Display Label 0

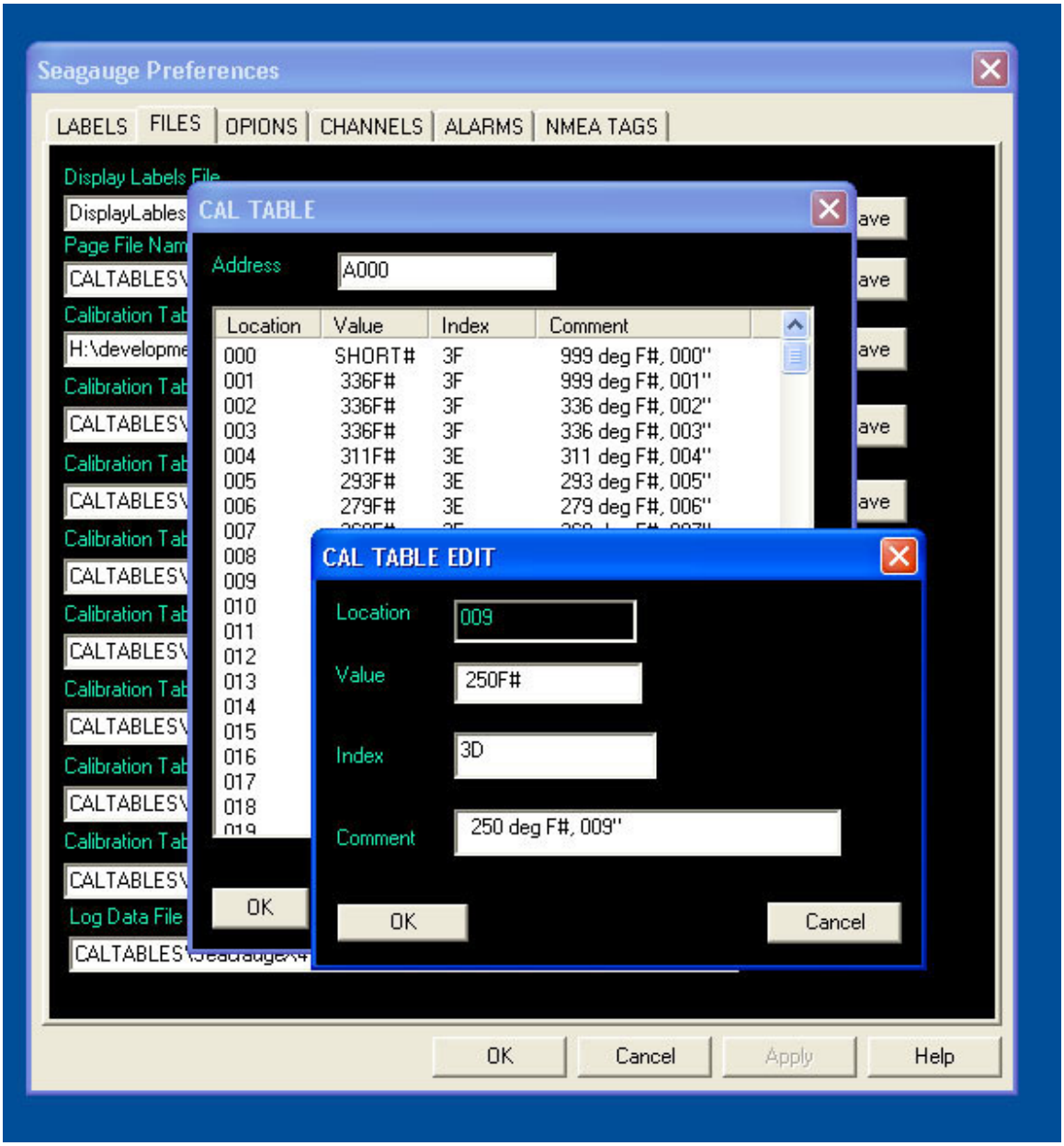
Calibration files can be directly edited from the Files Configuration screen by using the OPEN button for the selected file.



From the standard Open File dialog, pick the desired file for editing.



A new dialog will appear to allow scrolling through the select file and displaying the contents of the calibration table. Calibration files must be constructed in a proper format therefore changes can not be made directly. Instead **double click on the desired row** to initiate changing any values.



Each row in a calibration file contains a row index (can not be modified), a display lookup value (no more then 6 characters), a graphic index value (2 digit hexadecimal), and a comment field (16 characters max). Double clicking any row brings up an edit dialog to allow changes to fields in the selected row. Click **OK** to save any changes or **CANCEL** to discard any changes.

The Location value is the index vale from the analog converter that is used to lookup a 6 character display value and a 2 character hexadecimal value for a given sensor signal level. Using a table lookup procedure allows for easy adaptation to just about any type of sensor or sender. The hexadecimal value is used by Bar graph, Dial, and Histogram displays to calibrate full range display and adjust resolution. It has min value of 0 and a max value of 0x3F (63 decimal).

The "#" symbol can be used in the display value to skip spaces just as in setting Display Labels.

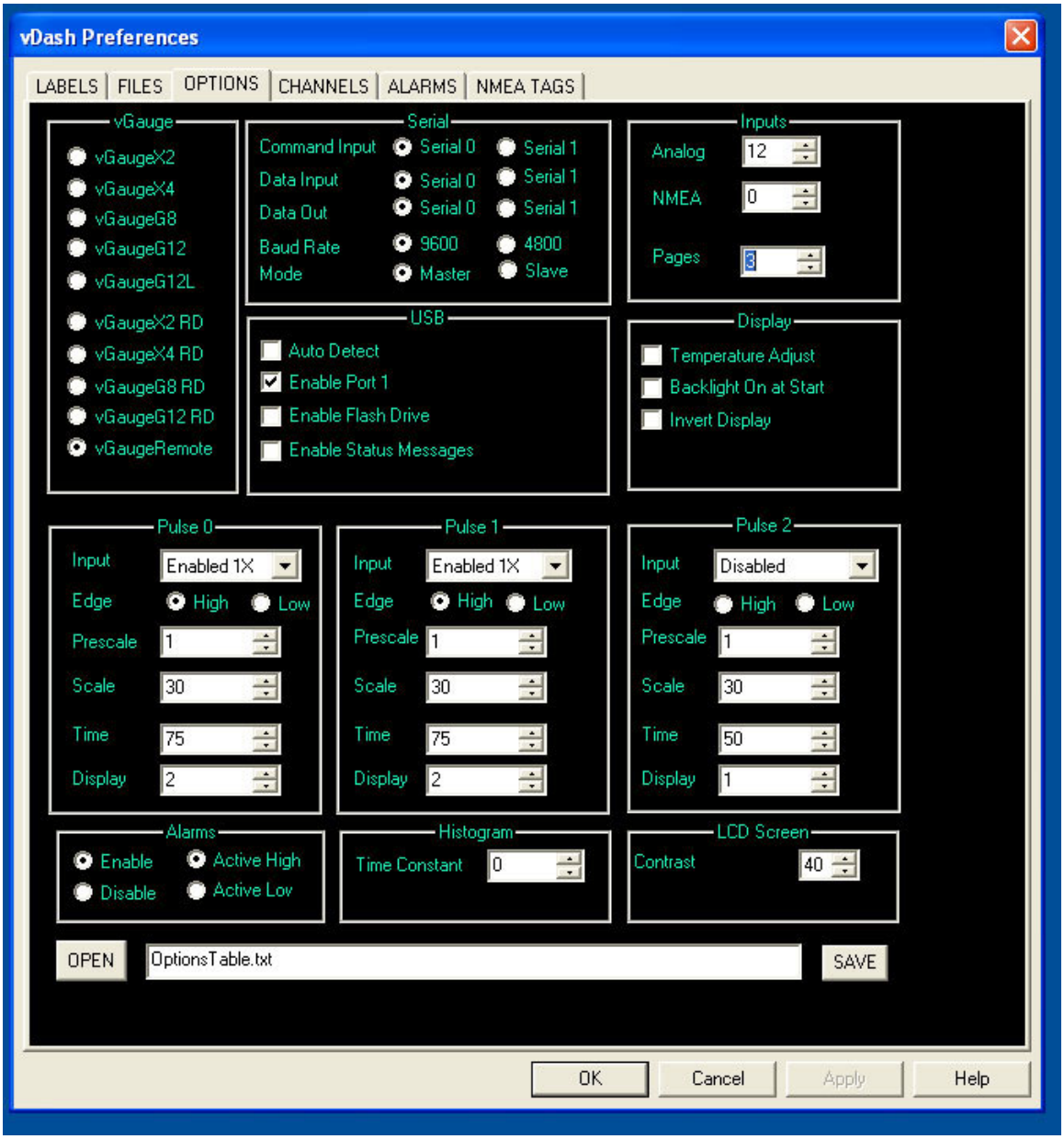
The address field is used to locate calibration table to the associated sensor/display label according to the following table.

Address	Sensor/Display Label
0800	Calibration Table 0
1000	Calibration Table 1
1800	Calibration Table 2
2000	Calibration Table 3
2800	Calibration Table 4
3000	Calibration Table 5
3800	Calibration Table 6
4000	Calibration Table 7
4800	Calibration Table 8
5000	Calibration Table 9
5800	Calibration Table 10
6000	Calibration Table 11

If changes are made to Calibration files, they must be saved or will be lost. Changes made to calibration table will be reflected until the vDash application is closed and restarted so the all files are reloaded.

Options Configuration Screen

Each SeaGauge™ or vGauge™ unit requires and OPTIONS file to be loaded for proper configuration. The Options Configuration screen allows for proper selection of various parameters and creates a properly formatted Options file for later loading (FLASH) to the unit. The dialog also allows for selection of an existing Options file.



The **vGauge** section selects the unit being programmed. Not all units use the same options so some settings may change depending on selection.

Normally selection is based on the unit being programmed but selection can be for any format regardless of the attached unit. All units output the same data stream, therefore a

vGaugeX4 can support the same virtual screen formats as the vGaugeG8. The only exception is that configurations for a vGaugeG8 can not be loaded on vGaugeX4.

The **Display Pages** determines the number of display screens to use. The arrow scrolls values from 1 to 8 pages.

There are two types of input sources, **Analog** and **NMEA**. The analog inputs can number from 1 to 12 with 12 being the standard. Setting the value less then 8 should be done only if less then 8 analog inputs are used. NMEA inputs number from 0 – 7. Select the minimum value based on the number of NMEA tags to search. Normal operation is set NMEA inputs to 0 if not using this feature to increase update rates. The sum total of Analog and NMEA can not exceed 13. If you which to display more then one NMEA tag, you will need to lower the number of analog channels.

Serial Ports are used for sending and receiving data from a connected unit. These settings are not related to the Personal Computer/Laptop but are only for the attached SeaGauge or vGauge unit. Most units will use the default SERIAL0 and baud rate of 9600. In some cases the baud rate may need to be changed to match other equipment such as GPS units.

The proper selection of **MASTER/SLAVE** is very important for operation of the vDash application. Setting a unit to SLAVE mode is only done when listening for NMEA data on the specified serial port. When in **SLAVE** mode, programming or downloading to a SeaGauge or vGauge unit can not be performed. To download or make any changes to a attached unit requires operating in **MASTER** mode

Each unit has one to three pulse inputs normally used for RPM or MPH functions. The calculated display value is based on the number of pulses received within a 0.5 second interval multiplied by the **PULSE SCALE** factor. The Pulse **TIME** Constant is used to control averaging pulses; larger value performs more averaging and can slow down update rates. If not using a Pulse Input, set the **INPUT** to disabled. Pulse inputs enabled with 2X to 8X multiplier increase the collection time interval from 0.5 seconds up 4 seconds thus increasing the resolution for slower pulse inputs.

PRESCALE is used to divide incoming pulses before measurement. This is very useful on inductive pickups witch count gear teeth on flywheels and can be 100 – 200 times the actual value. Use this setting to divide incoming pulses from 1 to 256.

PULSE DISPLAY scales the graphic indicators to a desired range without changing the actual digital readout. Tachometers can have display range from 3000 to over 10000 while speedometers may only go up to 100. To accommodate this wide range of display options, use the DISPLAY setting to scale the dial range. A higher value will max the display indicator sooner then a smaller value. Start with a setting of 1 and increase if the dial indicator does not travel full range.

Alarm functions can be globally enabled or disabled by setting the **ALARMS** radio buttons. If driving a pizo alarm directly then choose **ACTIVE HIGH**. Other wise if driving a high current alarm through a relay choose **ACTIVE LOW**.

Histogram displays allow data to be viewed over time in a amplitude vs time plot. **The TIME CONSTANT** controls how fast each update occurs. Larger values result in slower updates. This values is set to 0 by default.

Some vGauge units have an LCD display that allows for user adjustment of the screen contrast. **CONTRAST** can be incremented or decremented to change screen contrast.

Several USB parameters are available for units that have USB support. The **AUTO DETECT** feature can be used on some models to automatically configure the USB port. Otherwise manual configuration is required.

ENABLE PORT 1 allows instrumentation data out of USB port 1 and can drive a remote display head if attached.

ENABLE FLASH DRIVE will write data to a Flash Memory device on USB port 2 if attached. All NMEA data is appended to the file and will continue until the drive is full. The file must be located in the root directory of the drive and is a simple text format. Using this option will slow data outputs on all ports.

ENABLE STATUS MESSAGES writes USB status to the Serial port for logging or display. It should be used for diagnostics and disabled during normal operation.

Some vGauge models have options to configure LCD screen settings. The Display section allows control over temperature compensation and backlight state.

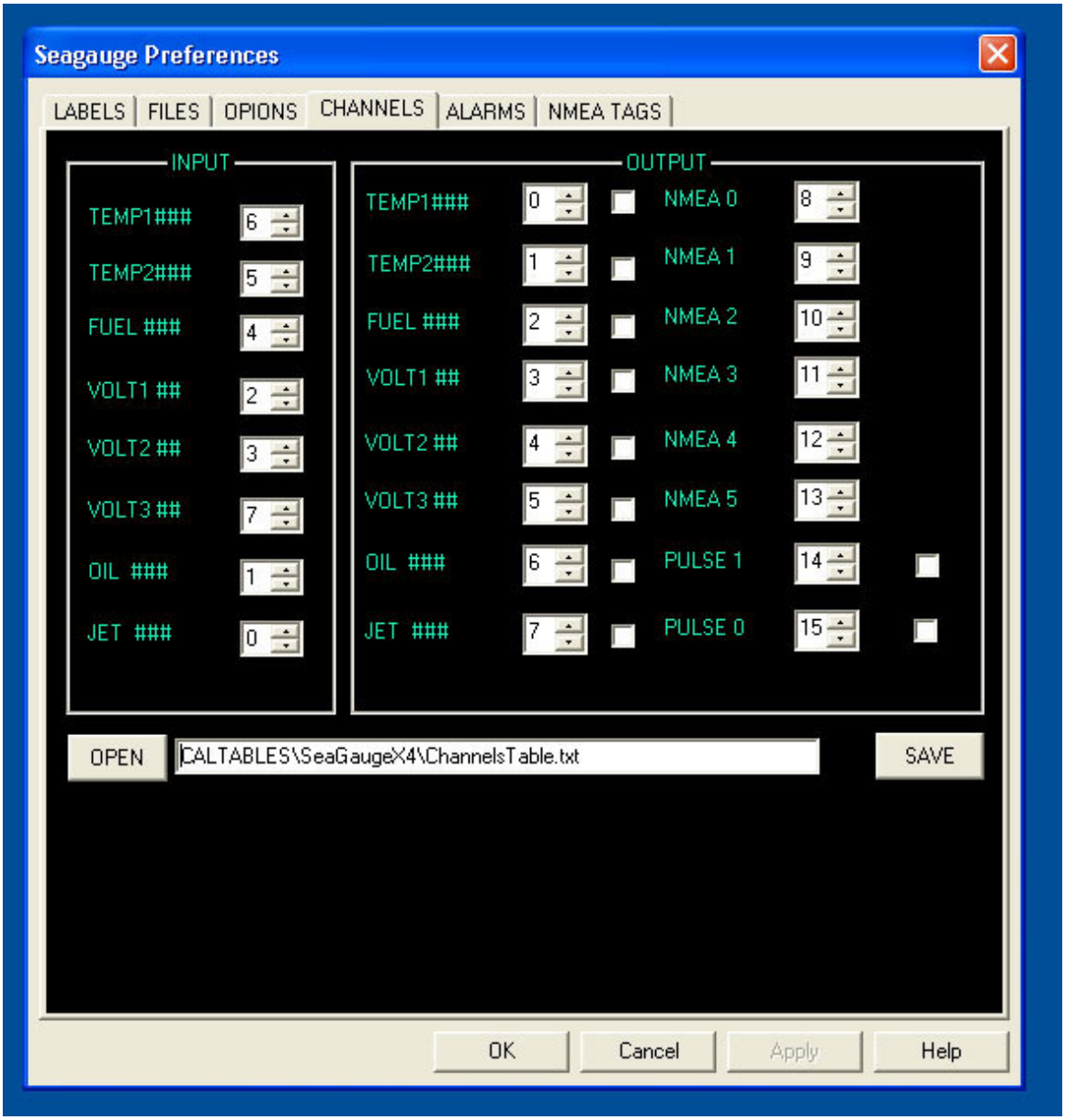
TEMPERATURE ADJUST will automatically alter LCD screen contrast on select models based on a user customizable calibration table. If disabled, LCD screen contrast be performed using standard calibration.

BACKLIGHT ON START is used on selected models to enable LCD backlight on power up if desired.

All option parameters are saved to to a user specified file for later loading to SeaGauge or vGauge unit. Any changes to the OPTIONS dialog must be **SAVED** before exiting the dialog or they will be lost. Use the **OPEN** button to select a new Options file. Use the **SAVE** button to change file location or rename a file.

Channels Configuration Screen

vDash can configure the input and output channel assignments for SeaGauge™ or vGauge™ units by generating a channels file for loading into attached units..



Input Channels can be assigned to each on the 8 analog inputs. These assignments map the sensor input pins to display label position and calibration tables. It is not normally required to make any changes to the input channel assignments due to factory adjustment for selected senders. For example a sensor input designed for voltage will mot work with a sensor input designed to measure temperature. However like temperature inputs can be exchanged if required. Consult with factory before making any changes to Input Channel assignments.

Output Channel assignments affect the order in which data is sent from the unit's serial port. Normally the first Sensor label is assigned channel index 0 and the next channel index 1 and so on. However in some cases it may be desired to change the order – for example to make a pulse input (RPM) the first item in the output string. Changing the channel index, changes the output order. Take care not to assign two outputs the came channel index.

Changes made in the CHANNELS dialog do not take effect until the file has been loaded into a attached unit using the FLASH programming procedure.

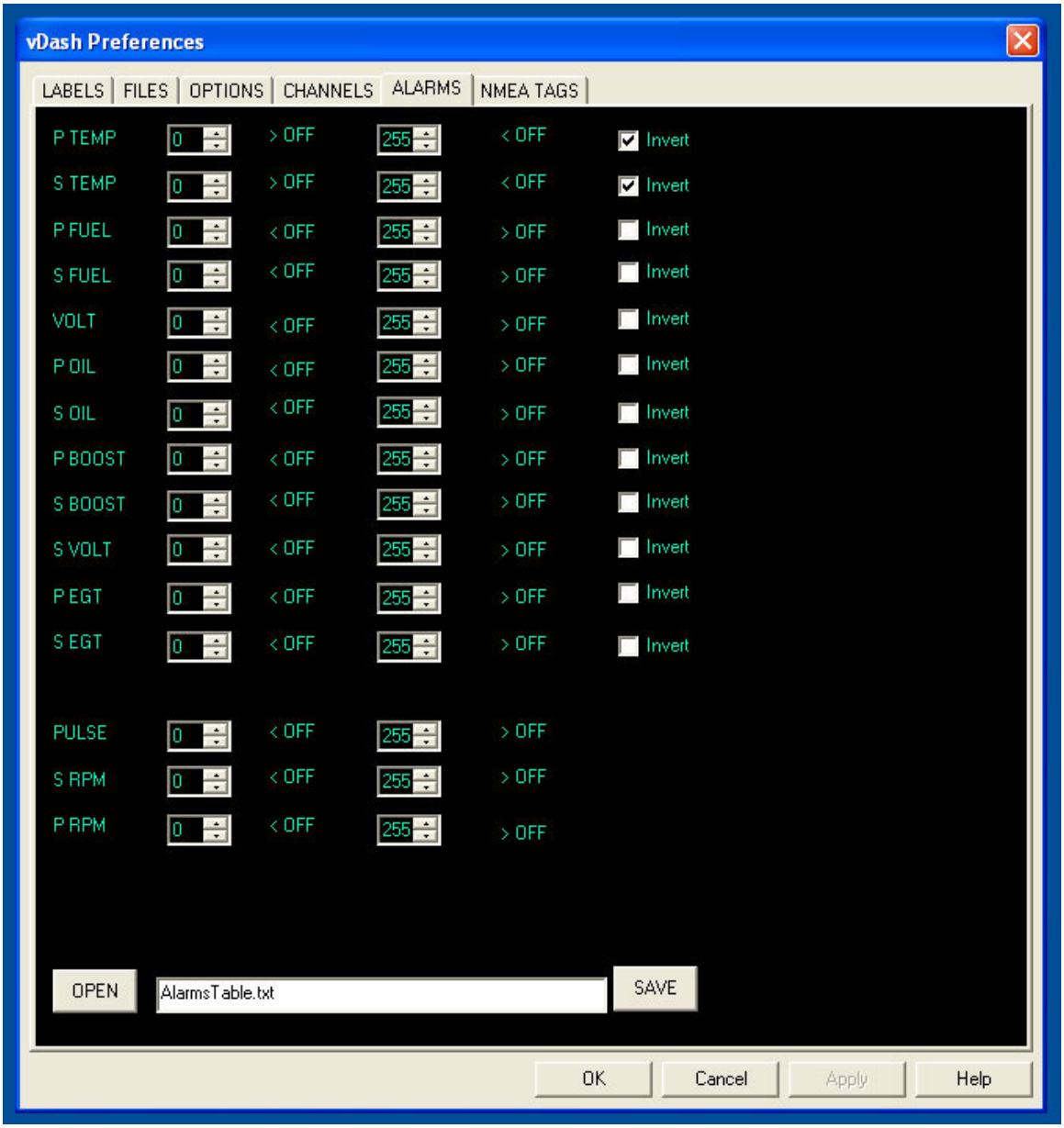
The check box next to each output channel index number is used to enable RAW data output. Normally, the output values are derived from calibration tables loaded on the unit. In some cases it may be desired to use the actual index value (0 – 255) from the analog converter to lookup values for calibration tables loaded in the vDash application or to create custom calibration tables. For example, it may be desired to test calibration tables and make adjustments before loading them into a unit. Since calibration tables can be easily edited within the vDash application, it will be easier to make changes if receiving RAW converter index values and use vDash calibration table for display lookup values. Enabling the check box will enable RAW data output and disabling the checkbox will output vales from the units internal calibration tables.

All Channels parameters are saved to a user specified file for later loading to SeaGauge or vGauge unit. Any changes to the CHANNELS dialog must be **SAVED** before exiting the dialog or they will be lost. Use the **OPEN** button to select a new Channels file. Use the **SAVE** button to change file location or rename a file

asdasdasdsdaasd

ALARMS Configuration Screen

vDash can configure High and Low alarms for each of the 8 analog inputs by creating an ALARMS file for later loading into an attached unit.



The ALARMS dialog allows adjustment of individual High and Low alarms for ach sensor input. The alarms are based on the analog converter index value (0-255) being greater then or less then a preset threshold. MIN alarms are based on index values LESS then specified. MAX alarms are based on index values GREATER then specified.

To make setting alarms easier, the ALARMS dialog will display the lookup value from the vDash calibration table assigned to the selected sensor input. As the ALARM index number is changed, the associated Calibration table lookup value is displayed to the right.

The lookup vales come from the calibration table loaded into the vDASH application and not an attached SeaGauge™ or vGauge™ unit. Care must be taken to assure unit calibration tables are synchronized with vDASH tables.

Some calibration tables – such as temperature – store lookup values in reverse order (High to Low). For these types of calibration tables the INVERT check mark must be selected to indicate the proper MIN/MAX alarm state.

Alarms for pulse inputs are based on graphic display values and not actual digital readout. Graphic Display values range from 0 to 255 and are scaled using the DISPLAY RANGE parameter in the OPTIONS dialog

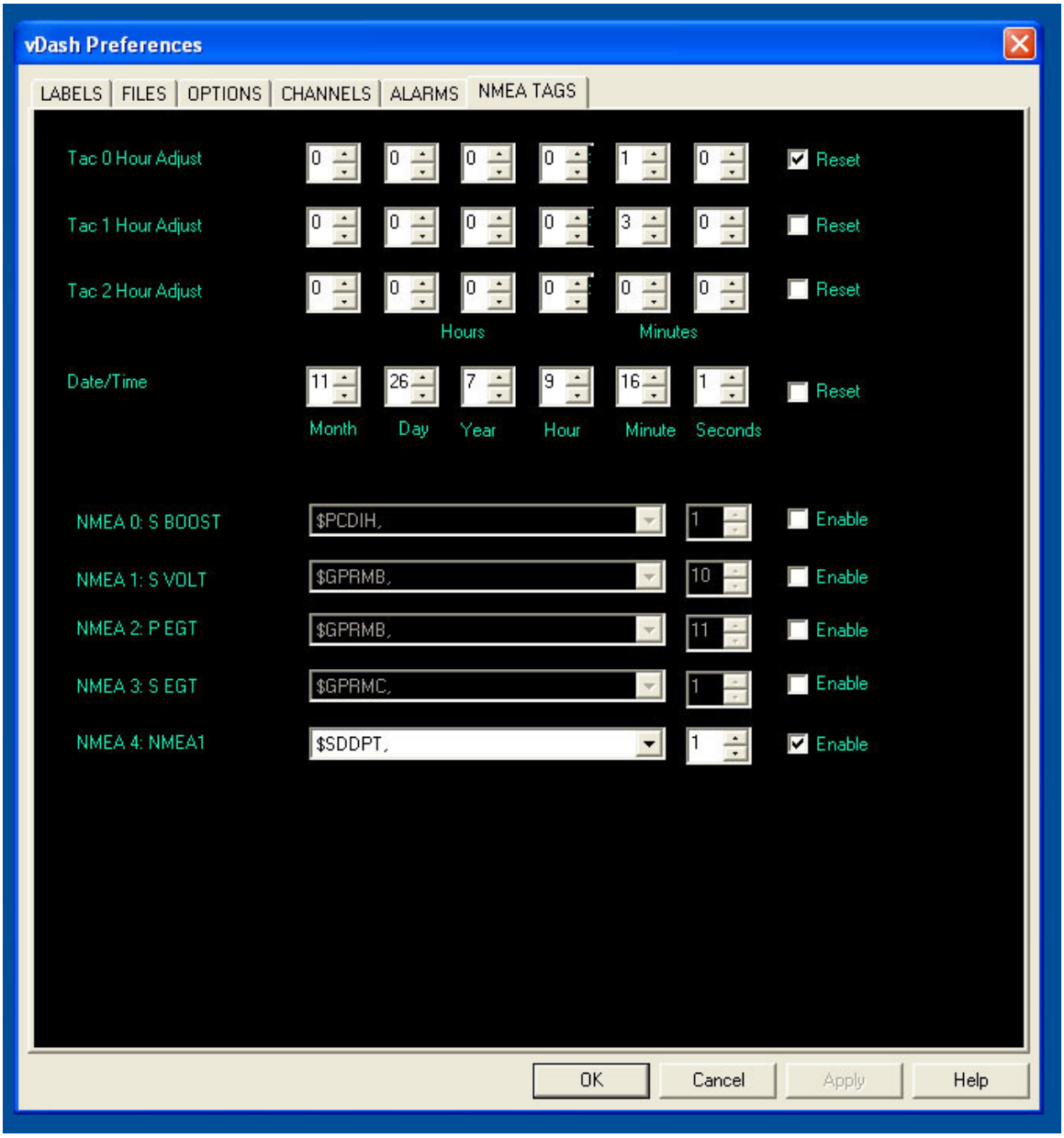
Changes made in the ALARMS dialog do not take effect until the file has been loaded into a attached unit using the FLASH programming procedure.

All Alarm parameters are saved to a user specified file for later loading to SeaGauge or vGauge unit. Any changes to the ALARMS dialog must be **SAVED** before exiting the dialog or they will be lost. Use the **OPEN** button to select a new Alarms file. Use the **SAVE** button to change file location or rename a file

NMEA Configuration Screen

SeaGauge™ and vGauge™ units can display data from GPS and Sonar equipment by parsing incoming NMEA data streams through built-in serial ports. The NEMA Configuration dialog allows for selection of which NMEA tags to listen for and which data fields to extract for display.

The dialog also allows for adjustment of the Date/Time functions and tachometer hour meters.



Each of the 5 possible NMEA inputs can listen for 16 possible NMEA tags selected from a drop-down menu to the right of each label. Individual data fields are comma separated in

each NMEA sentence. The index value on the right (0-15) is used to determine the number of commas to skip before selecting the data field.

For example, the following is a typical NMEA sentence for GPS position.

$GPRMC,233232,A,4204.6424,N,12411.5660,W,14.6,191.4,120905,16.6,E,A*3F

The first data field follows the first comma "233232" and represents the UTC time information. To display UTC time, set the tag drop-down to "$GPRMC" and the index to "1". To display GPS Speed (14.6), set the tag to "$GPRMC" and the index to "7".

The following table shows the NMEA tags and some common data field index. Consult you NMEA equipment manuals for complete list of NMEA data index values.

NMEA TAG	INDEX	Function
$IIXDR,G	2,4	Instrumentation Data
$GPGGA	1	UTC TIME, Position, Sat info
$GPVTG	1,5	Track and ground speed
$SDDBT	1	depth below transducer
$SDMTW	1	water temperature
$GPRMC	1,7,8	Time, Position, ground speed, true heading
$GPRMB	10,11	Destination WP position, Bearing to WP, Closing speed to WP, Distance to WP
$YXMTW		water temperature
$VWVHW		Speed and heading
$VWVLW		Water traveled distance
$SDDPT		depth below transducer
$GPGLL		Basic position
$SDVHW		Sonar Water Speed and heading
$SDVLW		Sonar Water traveled distance
$GPVHW		GPS Water Speed and heading
$GPRMC	1	Used for adjusted UTC time to local time

The last value in the NMEA Tag drop-down list is reserved for a special case of the GPS UTC time value that adds an adjustment for local time. The display local time, select the last NMEA tag and set eh **UTC ADJUST** value to the local time offset from UTC time. The UTC time adjust is a value from 0 to 23 that is added to the UTC time value.

vGauge units that feature 12 analog inputs have only one NMEA tag available without disabling some of the analog inputs. For these configurations, the extra tags will be disabled unless overridden by enabling them in this dialog. If enabled, the selected tag will overwrite the analog data in the output stream.

The HOUR TAC ADJUST field is used to set the starting value for the built-in Hour tachometer functions. The Hour Tachometer measures the total time (Hours and Minutes)

pulses are active up to 9999 hours. If there are no active pulses on the select input, the running time will not increment. Use this field to reset the Hour Tachometers to desired settings.

Selecting RESET for any of the Hour Meter or Date/Time settings marks that function for update the next time the DISPLAY FILES table is programmed into the target unit. Be sure to uncheck this option and save configuration after the update is performed.

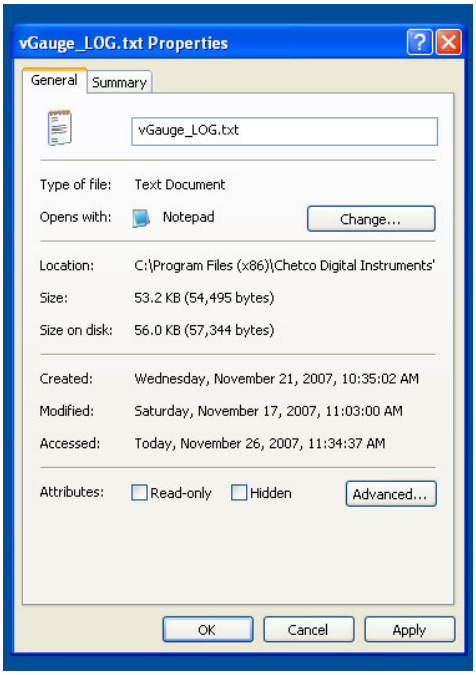
CHANGES WILL NOT BE MADE TO THESE SETTINGS UNTIL THE DISPLAY FILES IS REPROGRAMMED TO THE TARGET UNIT

All values in the NMEA Configuration dialog are written to the selected Display Labels file and the Page Descriptions file and are not saved until those files are updated using the Save Current Settings button  in the tool palette.

Data Logging

vDash will perform real time recording and playback of data from attached SeaGauge™ or vGauge™ units. The RECORD button will start data logging to a pre specified log file if vDash is connected to a unit and receiving data. Logging will continue until the RECORD button is clicked again.

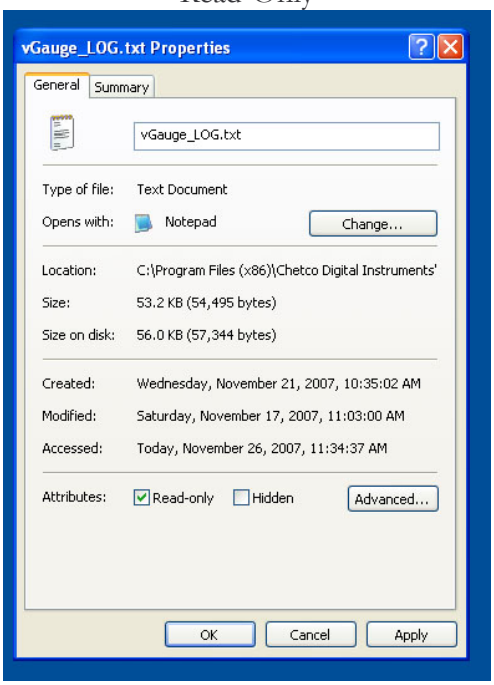
For data logging to occur, the selected file must be enabled for write access.



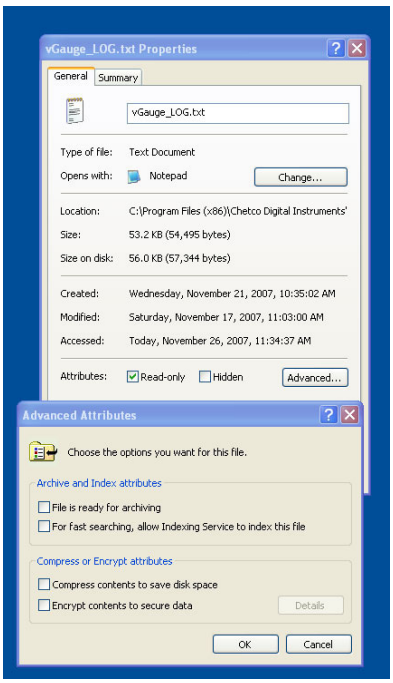
If vDash is not connected to a unit, clicking the RECORD button will start playback of previously recorded Log File as specified in the FILES Dialog under the Preferences tab 

For playback to occur, the selected file must be set for READ-ONLY access and no ARCHIVING

Read-Only



Advanced… Clear Archive



vDash is capable of logging received NMEA 0183 data to memory or drive storage. The log file contains the received NMEA 0183 sentences appended with a date stamp and record number. The log file is in simple TEXT format with each field separated by commas. It is easily imported to other applications.

An example of a short log file follows:.

20060531093905,000620,$IIXDR,G, 105F 2A, ,TEMP1###0*06
,$IIXDR,G, 65F 1C, ,TEMP2###1*12
$IIXDR,G, 43 0A, ,FUEL ###2*74
$IIXDR,G,17.3 37, ,VOLT1###3*16
$IIXDR,G,17.3 37, ,VOLT2###4*12
$IIXDR,G,17.3 37, ,VOLT3###5*12
$IIXDR,G, 150##3F, ,OIL ###6*17
$IIXDR,G, 150##3F, ,JET ###7*07
$IIXDR,G,--------, ,COURSE #8*0F
$IIXDR,G,--------, ,SPEED #9*74
$IIXDR,G,--------, ,TIME ##A*7D
$IIXDR,G,--------, ,BEAR ###B*7C
$IIXDR,G,--------, ,TIME ##C*7F
$IIXDR,G,--------, ,RANGE ##D*12
$IIXDR,G,001:2500, ,TAC   ##E*16
$IIXDR,G, 5830 2D, ,RPM ####F*78

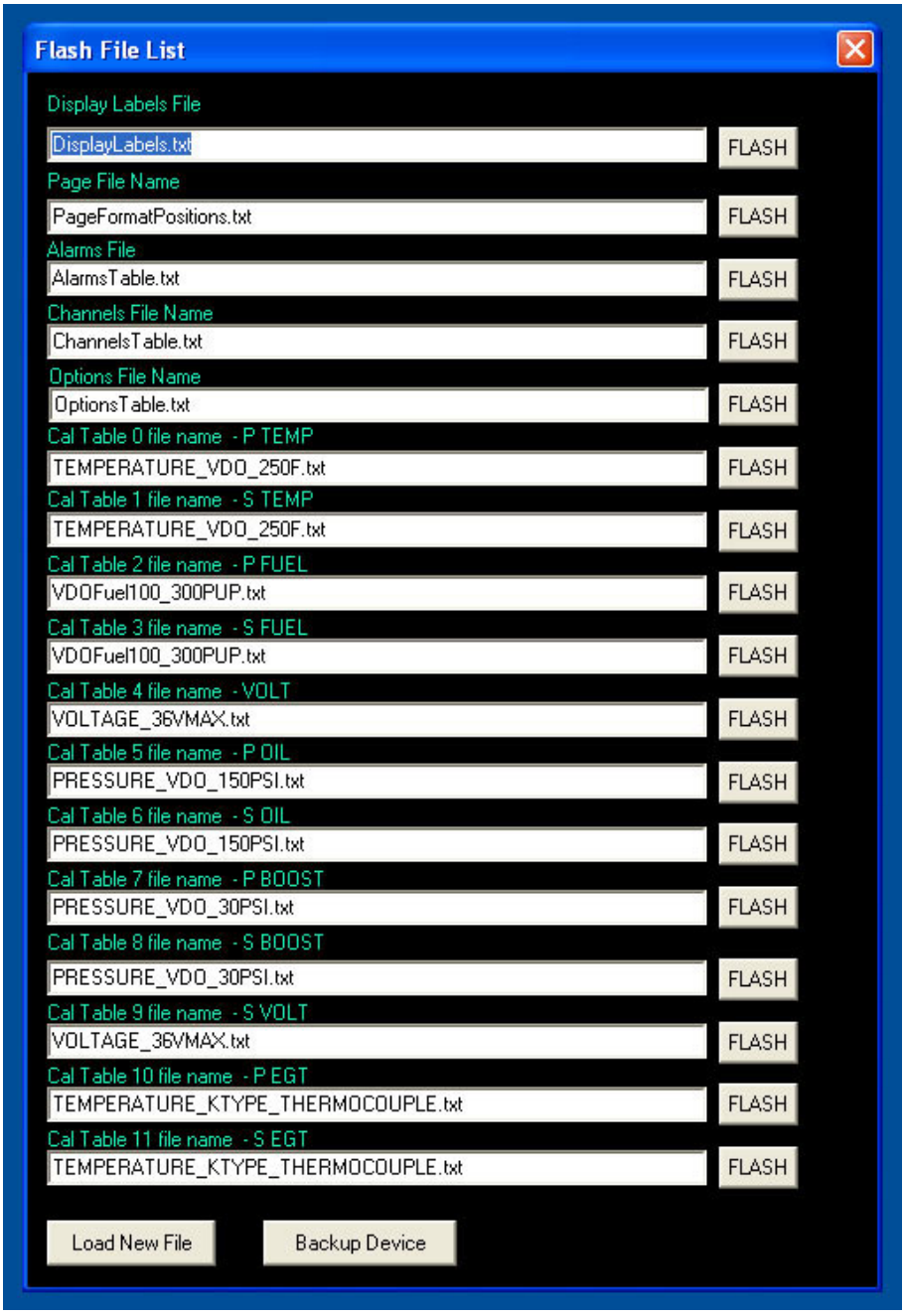
20060531093906,000620,$IIXDR,G, 105F 2A, ,TEMP1###0*06
,$IIXDR,G, 65F 1C, ,TEMP2###1*12
$IIXDR,G, 43 0A, ,FUEL ###2*74
$IIXDR,G,17.3 37, ,VOLT1###3*16
$IIXDR,G,17.3 37, ,VOLT2###4*12
$IIXDR,G,17.3 37, ,VOLT3###5*12
$IIXDR,G, 150##3F, ,OIL ###6*17
$IIXDR,G, 150##3F, ,JET ###7*07
$IIXDR,G,--------, ,COURSE #8*0F
$IIXDR,G,--------, ,SPEED #9*74
$IIXDR,G,--------, ,TIME ##A*7D
$IIXDR,G,--------, ,BEAR ###B*7C
$IIXDR,G,--------, ,TIME ##C*7F
$IIXDR,G,--------, ,RANGE ##D*12
$IIXDR,G,001:2500, ,TAC   ##E*16
$IIXDR,G, 5830 2D, ,RPM ####F*78

The current date and time is appended to each record with the following format "YYYYMMDDHHMMSS". This is followed by an 8 digit record count separated by a comma. This allows for a unique signature for each record collected.

Flash Programming

The vDash utility can be used to download new calibration tables to SeaGauge or vGauge Units using the FLASH COMMAND  option. The unit must be connected and receiving data before new information can be transferred.

..



The FLASH COMMAND will start a sequence of steps to copy a valid Calibration Table file to the selected unit. The fist step is a File Dialog used to select the desired formatted file. Only properly formatted Calibration Tables or INTEL HEX files can be used to reprogram the unit. If the utility finds an error in the selected file format, it will stop the process

The SeaGauge or vGauge unit must be MASTER MODE to support any Flash Programming via serial port.

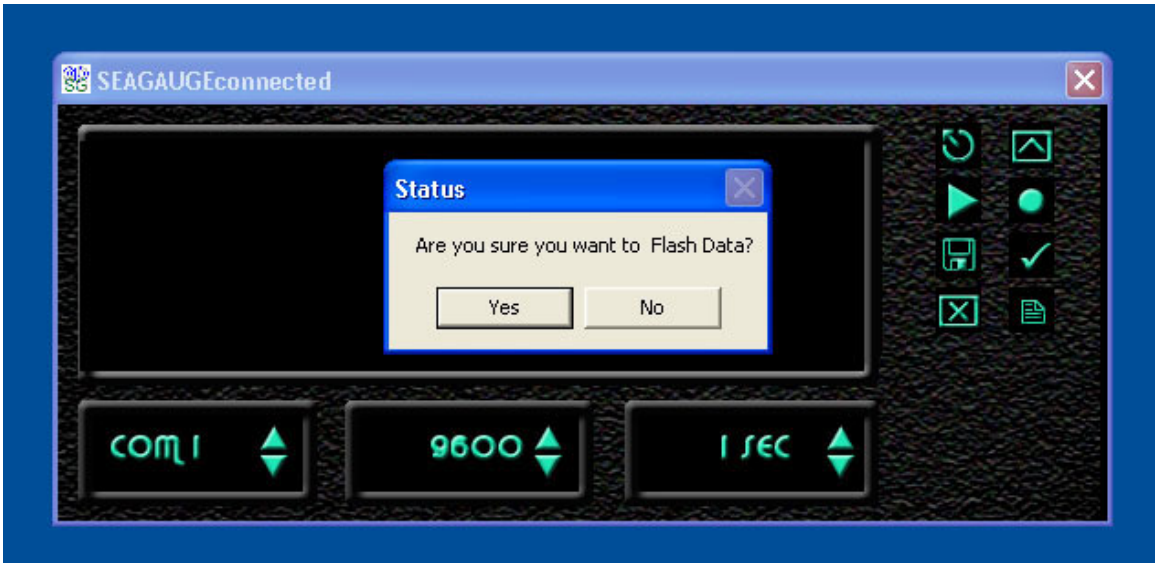
The list of possible files is populated from the property pages under the settings dialogs and can not be changed here with the exception of the NEW FILE button which can be used to pick a flash file not the current list.

The vDash application supports two types of Flash Files – TEXT and INTEL HEX. Text files are generated directly by the vDash application such as calibration files and Page definition files and are loaded via the serial port interface. INTEL HEX files are special files used for firmware upgrades only and can only be programmed using a special flash cable.

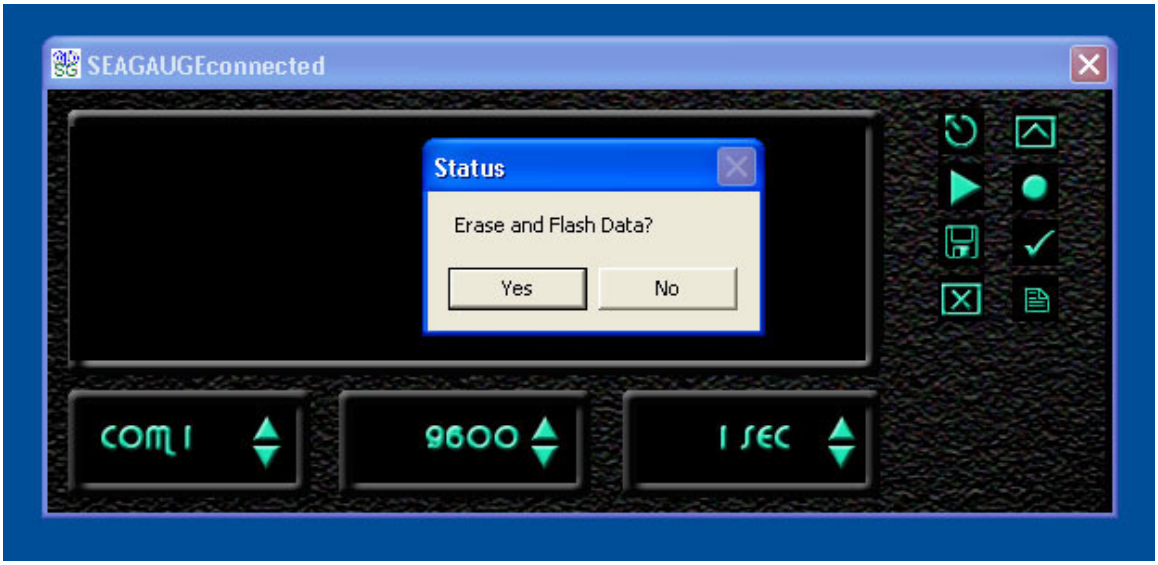
After a proper Calibration Table file or firmware file is selected, the second step is to confirm the operation and verify the SeaGauge or vGauge unit is ready for transfer. After the file is chosen the target unit will enter programming mode indicated by the display:

READY->

If the YES button on the confirmation dialog is not selected within 10 seconds, the target unit will terminate programming mode and reset. You must select the YES option within 10 seconds to continue.



The third step is to confirm erasure of the target memory before loading the new file. Again if the YES option is not chosen within 10 seconds, the target unit will exit programming mode and reset.

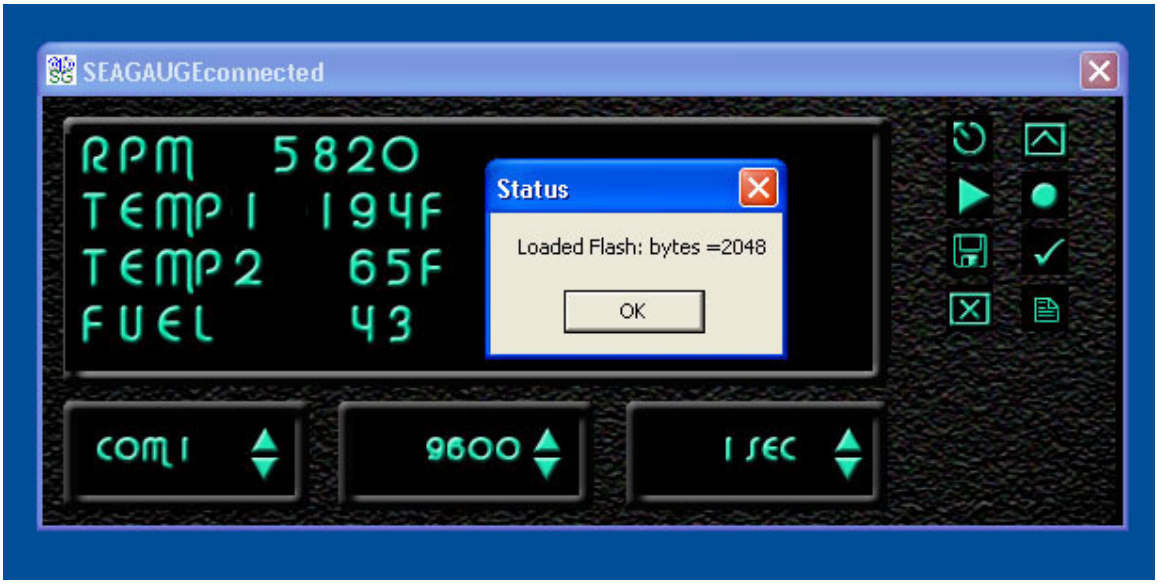


The forth step is to erase the target memory and wait for confirmation the erase is complete. Once the target memory is erased the unit will display

ERASED >

After it is confirmed the target memory is erased proceed by selecting the OK button. The fifth phase will start transferring file information to the target and display a progress indicator to indicate the memory locations being updated. The top row of the display will display the word "FLASH" and the data area will display the current address in hexadecimal notation. The address will update till all data is transferred.

The final step will confirm the number of bytes transferred and reset the target. After flashing a new file it is a good idea to restart both the target unit and the vDash utility to be sure both are back in sync.



Two buttons **LOAD NEW FILE** and **BACKUP DEVICE** can only be used with a FLASH programming cable to reprogram an attached vGauge or SeaGauge unit.

LOAD NEW FILE will erase and then reprogram all Flash memory of an attached unit and should only be performed if necessary and instructed by technical support. Before attempting to erase and reprogram a unit, be sure to backup all files using the **BACKUP DEVICE** option button first.

Com Ports

vDash listens to selected com ports for incoming NMEA data. If no recognized port is present, the current page will not update. Be sure to select the correct com port.

If making a connection with the supplied serial cable, most PC's will use COM port 1 or 2.

If making a connection via a Bluetooth device, be sure to get the properties of the Bluetooth interface to determine which virtual COM port it is using and set vDash to the indicated port (usually 5 – 8).

Baud Rates

vDash can be configured to listen at several BAUD rates. Select the Baud rate to match the sending device.

The default baud rate is 9600 and should be used unless other devices can not operate at that speed.

Capture Intervals

vDash can capture and playback data to a specified LOG file. The file capture and playback rate id controlled by the Capture Interval. Choose the interval appropriate to the desired data rate.

An interval of 1 seconds records or plays back one complete record per second. A single record is all 16 possible channels. For example:

20060531093915,000620,$IIXDR,G, 105F 2A, ,TEMP1###0*06
,$IIXDR,G, 65F 1C, ,TEMP2###1*12
$IIXDR,G, 43 0A, ,FUEL ###2*74
$IIXDR,G,17.3 37, ,VOLT1###3*16
$IIXDR,G,17.3 37, ,VOLT2###4*12
$IIXDR,G,17.3 37, ,VOLT3###5*12
$IIXDR,G, 150##3F, ,OIL ###6*17
$IIXDR,G, 150##3F, ,JET ###7*07
$IIXDR,G,--------, ,COURSE #8*0F
$IIXDR,G,--------, ,SPEED #9*74
$IIXDR,G,--------, ,TIME ##A*7D
$IIXDR,G,--------, ,BEAR ###B*7C
$IIXDR,G,--------, ,TIME ##C*7F
$IIXDR,G,--------, ,RANGE ##D*12
$IIXDR,G,001:2600, ,TAC   ##E*15
$IIXDR,G, 5820 2D, ,RPM ####F*79

Calibration Tables

SeaGauge utilizes eight modifiable calibration tables to convert sensor data into user readable display information. The internal Analog-to-Digital converter converts sensor voltages to 10-bit values. The converter can resolve voltages to 3.3/1024 = 3 mVolts. These values are averaged and then used to lookup 8 character values form a 256 point lookup table. The use of a lookup table allows for accurate readings from non-linear sensors like temperature senders. The lookup table also allows for easy modification of display values to suit individual preferences and senders.

Following is an example of a partial table used to display battery voltage. The actual table has 256 indexed values. The measured voltage has a range from 0 to 3.3 volts. In this example it is desired to measure battery voltage from 0 to 18 volts so the input voltage from the battery is scaled down using a voltage divider ratio of 3.3/18 = 0.1833. The scaled down voltage is converted to an averaged digital value and then used as an index lookup in the table. For example an Input voltage of 1.178 volts becomes index value 18 in the table which corresponds to the 8 character display value of 1.1 vdc. Using this method allows the SeaGauge to display just about any range of values form a large variety of sensors/senders.

Index	Input Voltage	Measured Voltage	Display value
1	0.065	0.012968	0 vdc
2	0.131	0.025936	0.1 vdc
3	0.196	0.038904	0.1 vdc
4	0.262	0.051872	0.2 vdc
5	0.327	0.06484	0.3 vdc
6	0.393	0.077808	0.3 vdc
7	0.458	0.090776	0.4 vdc
8	0.523	0.103744	0.5 vdc
9	0.589	0.116712	0.5 vdc
10	0.654	0.12968	0.6 vdc
11	0.720	0.142649	0.7 vdc
12	0.785	0.155617	0.7 vdc
13	0.851	0.168585	0.8 vdc
14	0.916	0.181553	0.9 vdc
15	0.981	0.194521	0.9 vdc
16	1.047	0.207489	1.0 vdc
17	1.112	0.220457	1.1 vdc
18	1.178	0.233425	1.1 vdc
19	1.243	0.246393	1.2 vdc
20	1.309	0.259361	1.3 vdc
21	1.374	0.272329	1.3 vdc
22	1.439	0.285297	1.4 vdc
23	1.505	0.298265	1.5 vdc
24	1.570	0.311233	1.5 vdc
25	1.636	0.324201	1.6 vdc
26	1.701	0.337169	1.7 vdc
27	1.767	0.350137	1.7 vdc

Each table has 2048 characters to modify and there are 88 choices for each character for a total of over 18,000 character choices for each table. For this reason the tables are much too large to be modified directly from the Setup Mode. However table files can be obtained and downloaded to the unit to allow for modification of any table. All that is needed is a computer interface (RS232 or Bluetooth) and a communication program such as HyperTerminal or the vDash utility. Contact Checto Digital Instruments for more information on obtaining additional table files to match particular senders/sensors.

Programming files are ACSII text with 2 or 8 characters per line. Each file is loaded into a specified starting location according to the following table.

Table	*Bytes /line*	*Address*	*Start Page*	*End Page*	*Erase Command*
Sensor Labels	8	E000	70	70	*7070
Groups	1	E200	71	71	*7171
Custom Graphics	1	E400	72	72	*7272
Alarms	1	E600	73	73	*7373
Channels	1	E800	74	74	*7474
Parameters	1	EA00	75	75	*7575
Lookup Table 0	8	A000	50	53	*5053
Lookup Table 1	8	A800	54	57	*5457
Lookup Table 2	8	B000	58	5B	*585B
Lookup Table 3	8	B800	5C	5F	*5C5F
Lookup Table 4	8	C000	60	63	*6063
Lookup Table 5	8	C800	64	67	*6467
Lookup Table 6	8	D000	68	6B	*686B
Lookup Table 7	8	D800	6C	6F	*6C6F

The first line of each file is used to specify the file type and the memory to erase before loading the new data. GREAT care must be taken to be sure the correct memory locations are erased else the unit may no longer function and will have to be completely reprogrammed.

ASCII TEXT Format

vDash supports only two types of table formats – 8 characters per line and 1 byte per line. Multiple characters per line are used for Strings such as display labels and calibration tables. Single byte per line are used for parameters such as alarms and display groups.

It is very important to use the correct format when editing a table.

The following is an example of the first few lines of a sensor calibration table that uses the 8 character per line format. All characters following the second quote mark "" are ignored and used as comments. String must contain 8 characters enclosed by single quotes.

```
[TABLE][8800][8][256]
db '   0.0  '          ; 000
db '   0.0  '          ; 001
db '   0.1  '          ; 002
db '   0.1  '          ; 003
db '   0.2  '          ; 004
db '   0.3  '          ; 005
db '   0.3  '          ; 006
db '   0.4  '          ; 007
db '   0.5  '          ; 008
db '   0.5  '          ; 009
db '   0.6  '          ; 010
```

- The string "TABLE" enclosed by "[" "]" indicates the file is a ASCII text
- The string "[8800]" indicated the starting address of "8800" HEX.
- The string "[8]" indicated there are 8 characters per line
- The string "[256]" indicates there are 256 lines in the file to download.

The following is an example of an Alarm table that uses the single byte per line format. All characters following the first comma are ignored and used as comments. A 2 character byte value in Hex format must follow the "db %" label on each line.

```
 [TABLE][E600][1][128]
db %00, 255       ;"OIL     " ;0
db %FF,
db %00, 255       ;"MPH     " ;1
db %FF,
db %00, 255       ;"WATER   " ;2
db %FF,
db %00, 255       ;"RTEMP   " ;3
db %FF,
db %00, 255       ;"LTEMP   " ;4
db %FF,
```

- The string "TABLE" enclosed by "[" "]" indicates the file is a ASCII text
- The string "[E600]" indicated the starting address of "E600" HEX.
- The string "[1]" indicated there are 8 characters per line
- The string "[128]" indicates there are 128lines in the file to download.

Intel Hex Format

An alternate format used to download program code and data files is the INTEL HEX format. This format can not be edited and is only used to download firmware updates via the serial port.

A sample listing is shown for informational purposes only. These files may be obtained from Checto Digital Instruments for firmware and maintenance updates.

```
[INTELHEX]0164
:1002000001E0E9000FFFE90F0FFE0C002C00A6E251
:10021000006B05B1E00E2AFB2C013C000C001C47D2
:10022000E4E0E442416B0BB0E496E4E2A0E280E05B
:10023000EBF70C001C003C004C0042336B04C34045
:100240003AFC0C011C472C4C3C7A4C005CEDE4E47D
:10025000E642656B0DC26296E6E0A0E0A0E280E4B3
:10026000EBF3B2FFB2EED618A68BFE50EA50EB705D
:10027000EF70EE84EFFE84FFFF84DFCF8F28EE9FC8
:10028000FF38EE8FFE94DFCF70EB70EAAF50EA508C
:10029000EB84DFCF8F94FFFF94EFFE94DFCF50EE1F
:1002A00050EF70EB70EAAF50EA50EB84DFCF8F94E1
```

- The string "INTELHEX" enclosed by "[" "]" indicates the file is a INTEL text
- The string "0164" indicates the start to end memory page to erase
- Data following the ":" symbol on each line is HEX program code data

vDash can accept and load INTEL HEX format files using the normal FLASH menu options.

One Year Warranty

"We", "our", or "us" refers to Chetco Digital Instruments, the manufacturer of this product. "You" or "your" refers to the first person who purchases this product as a consumer item for personal, family, or household use.

We warrant this product against defects or malfunctions in materials and workmanship, and against failure to conform to this product's written specifications, all for one year (1) from the date of original purchase by you. WE MAKE NO OTHER EXPRESS WARRANTYOR REPRESENTATION OF ANY KIND WHATSOEVER CONCERNING THIS PRODUCT. Your remedies under this warranty will be available so long as you can show in a reasonable manner that any defect or malfunction in materials or workmanship, or any nonconformity with the product's written specifications, occurred within one year from the date of your original purchase, which must be substantiated by a dated sales receipt or sales slip. Any such defect, malfunction, or non-conformity which occurs within one year from your original purchase date will either be repaired without charge or be replaced with a new product identical or reasonably equivalent to this product, at our option, within a reasonable time after our receipt of the product. If such defect, malfunction, or non-conformity remains after a reasonable number of attempts to repair by us, you may elect to obtain without charge a replacement of the product or a refund for the product. THIS REPAIR, REPLACEMENT, OR REFUND (AS JUST DESCRIBED) IS THE EXCLUSIVE REMEDY AVAILABLE TO YOU AGAINST US FOR ANY DEFECT, MALFUNCTION, OR NON-CONFORMITY CONCERNING THE PRODUCT OR FOR ANY LOSS OR DAMAGE RESULTING FROM ANY OTHER CAUSE WHATSOEVER. WE WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO ANYONE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR OTHER INDIRECT DAMAGE OF ANY KIND.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty does NOT apply in the following circumstances: (1) when the product has been serviced or repaired by anyone other than us, (2) when the product has been connected, installed, combined, altered, adjusted, or handled in a manner other than according to the instructions furnished with the product, (3) when any serial number has been effaced, altered, or removed, or (4) when any defect, problem, loss, or damage has resulted from any accident, misuse, negligence, or carelessness, or from any failure to provide reasonable and necessary maintenance in accordance with the instructions of the owner's manual for the product.

We reserve the right to make changes or improvements in our products from time to time without incurring the obligation to install such improvements or changes on equipment or items previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

REMINDER: You must retain the sales slip or sales receipt proving the date of your original purchase in case warranty service is ever required.

Chetco Digital Instruments, INC.
14377 Highway 101 South Unit C
Harbor, OREGON 97415
541-661-2051

VDASH SOFTWARE LICENSE AGREEMENT

THIS IS A LEGAL AGREEMENT BETWEEN THE END-USER WHOFIRST PURCHASES THIS PRODUCT AS A CONSUMER ITEM FORPERSONAL, FAMILY, OR HOUSEHOLD USE ("YOU") AND CHETCO DIGITAL INSTRUMENTS, INC., THE MANUFACTURER OF THIS PRODUCT. ("WE", "OUR", OR "US"). USING THE PRODUCT ACCOMPANIED BY THIS LICENSE AGREEMENT CONSTITUTES ACCEPTANCE OF THESE TERMS AND CONDITIONS.

1. This License Agreement applies to the microcode and one or more lookup tables that your product may contain. We refer to these singly as a "SOFTWARE".

2. The SOFTWARE that your product may contain are licensed, not sold. We grant to you the nonexclusive, non-assignable right to use these SOFTWARE for monitoring sensor/sender data, but only as long as you comply with the terms and conditions of this License Agreement. We reserve the right to terminate this license if you violate any aspect of this License Agreement.

3. The SOFTWARE housed in your product are protected by the copyright notices appearing on the product or its screen(s). You may NOT modify, adapt, translate, reverse engineer, decompile, disassemble, rent, lease, or resell any SOFTWARE, and you may NOT create derivative works based upon any SOFTWARE or its contents.. Any unauthorized reproduction, use, or transfer of a SOFTWARE may be a crime and may subject you to damages and attorney fees.

4. This License Agreement will terminate immediately without prior notice from us if you fail to comply with or violate any of the provisions of this Agreement. Upon termination, you will promptly return all products containing one or more SOFTWARE to us.

5. Prices and programs are subject to change without notice.

6. This License Agreement shall be governed by the laws of the State of Oregon and comprises the complete and exclusive understanding between you and us concerning the above subject matter.

How to Obtain Service

We back your investment in quality products with quick, expert service and genuine replacement parts. If you're in the United States and you have questions, please contact the Factory Customer Service Department using our number listed below. You must send the unit to the factory for warranty service or repair. Please call the factory before sending the unit. You will be asked for your unit's serial number (shown above). Use the following number:

541-661-2051

U.S.A.only. Monday through Friday, except holidays.

Your unit is covered by a full one-year warranty. (See inside for complete warranty details.) If your unit fails and the failure is not covered by the original warranty, Chetco Digital Instruments has a flat-rate repair policy that covers your unit and accessories packed with the unit at the factory. There is a 180-day warranty on all non-warranty repairs from the factory, which is similar to the original warranty, but is for 180 days rather than one year. For further details, please call us at the above number.

Remember, non-warranty repairs are subject to Chetco Digital Instruments published flat rate charges and 180-day warranty.

CHETCO DIGITAL INSTRUMENTS, INC

BOX 5359

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