



**ULTRA DASH** XTREME

*Racepak*

Ultra Dash

Installation and Operation Instructions

300-DS-UDX6S



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## Table of Contents

<b>Introduction .....</b>	<b>1</b>
Six Button Dash Features .....	1
Package Contents.....	1
Optional Items: .....	1
<b>Ultra Dash Installation .....</b>	<b>3</b>
Selecting a Mounting Location.....	3
Dash Mounting .....	3
Port Descriptions .....	3
<b>Port A Wiring .....</b>	<b>4</b>
<b>Port B Wiring .....</b>	<b>6</b>
<b>Port B Wiring .....</b>	<b>6</b>
<b>Sensor Installation.....</b>	<b>7</b>
EGT Probe Installation.....	7
Water Temperature Sensor Installation.....	7
Removing Wires from the Connector and/or changing EGT Probes.....	7
Jack Shaft Sensor and Collar Installation .....	7
Remote Switch .....	8
External Battery.....	8
Installing V-Net Channels .....	9
<b>Programming and Operation Using the Dash Buttons.....</b>	<b>11</b>
How the Buttons Work: .....	11
Display Modes .....	12
Setup Mode .....	12
Speedometer Calibration .....	15
Fuel Level Calibration.....	15
Real-time Mode.....	16
Scroll Mode.....	17
Min – Max Recall Mode .....	19
Record Mode.....	19
Playback Mode.....	19
Warning Indicators .....	20
Clearing Alpha Display Warnings .....	21
<b>Programming Using the DataLink PC software .....</b>	<b>23</b>
Installing the DataLink Software .....	23

DataLink Software CD Installation .....	23
Installing the License Disk.....	23
Connecting the Data Logger Serial Communications Cable .....	23
Modifying the Dash Configuration.....	24
Changing Display Page Properties .....	<b>Error! Bookmark not defined.</b>
Adding or Removing V-Net Devices to your System.....	28
Configuring Record Parameters .....	29
Setting the Record Length .....	30
Setting the Record Enable Channel.....	30
Setting the Record Start Threshold .....	30
Sending the Record Parameters.....	31
<b>Transferring Data to a PC .....</b>	<b>33</b>
Using the Serial Communications Port to Transfer Data to your PC.....	33
Naming and Storing the Run Data File .....	33
<b>Viewing Real Time Data on a PC.....</b>	<b>35</b>
Setting up the Real Time Telemetry Parameters.....	35
Entering the DataLink Telemetry Parameters.....	35
Starting a Telemetry Session .....	36

## Introduction

This manual contains the information required to install and program your Ultra Dash. If you have purchased the PC download kit, you should have received a DataLink manual as well. Refer to the DataLink manual for information on using the DataLink software to view the data from your dash.

### Six Button Dash Features

- Engine and jack shaft RPM.
- Speedometer
- Four exhaust gas temperature inputs. (sensors sold separately)
- One water temperature.
- Ace M10 setting input.
- Warning indicator inputs for the following items:
  - Low oil
  - Water temperature
  - High beam
  - Detonation
  - Premium fuel
- External warning indicator output.
- Internal warning indicator light.
- Internal high beam indicator light.
- V-Net port for expansion of up to 5 additional channels.
- Ten minutes of record and playback memory.
- Minimum and Maximum recall.
- Electro luminescent(EL) back light.

### Package Contents

The Ultra Dash kit should contain the following components:

- 1 – 6 Button Ultra Dash Display
- 1 – 12 position connector and wires
- 1 – 15 position connector and wires
- 1 – Water temperature sensor
- 1 – Jack shaft RPM sensor (jack shaft collar and magnet sold separately)
- 1 – Remote switch
- 1 – Wire terminal kit
- 1 – Instruction manual
- 1 – Cut out template

If you are missing any of the above components please contact your dealer immediately.

### Optional Items:

- Jack shaft collar. Required for speedometer. Available sizes: 0.75”, 1.00”, 1.125”, 1.25”
- Data transfer to DataLink PC analysis software.



## Ultra Dash Installation

### Selecting a Mounting Location

Select a mounting location that does not expose the Ultra Dash to high temperatures. Avoid exposing the front LCD to direct sunlight. Extreme overheating from the sun can temporarily cause the LCD to turn entirely black. Although the dash is water resistant (i.e. rain, snow), you should never submerge any part of the dash under water.

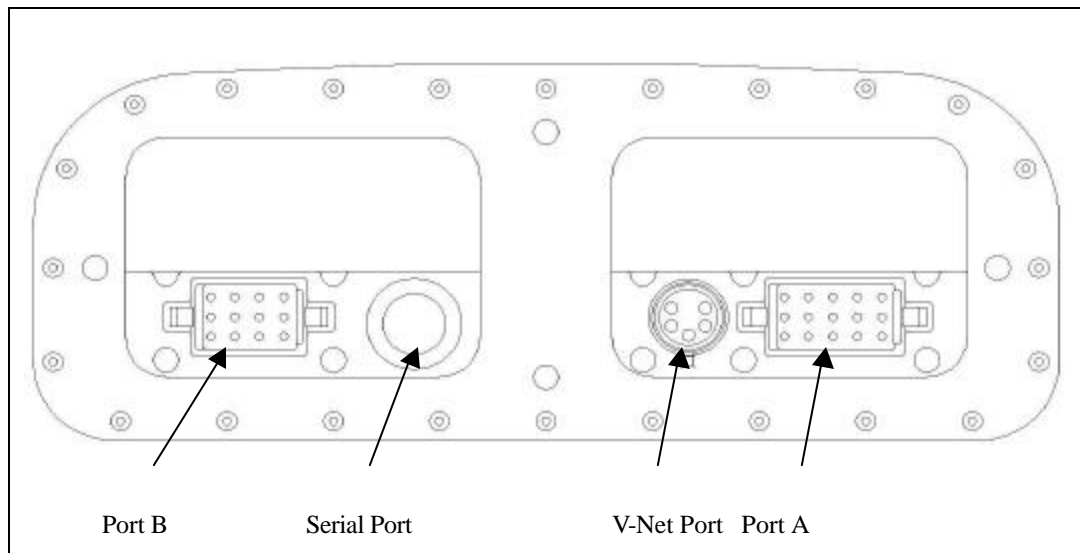
### Dash Mounting

Once you have decided on a mounting location use the supplied template to cut out the rear dash inserts and drill holes for the mounting studs.

Use the supplied machine nuts and locking washers to bolts in the dash. Do not use thread lock or nylock nuts on the mounting studs.

### Port Descriptions

Connector Locations



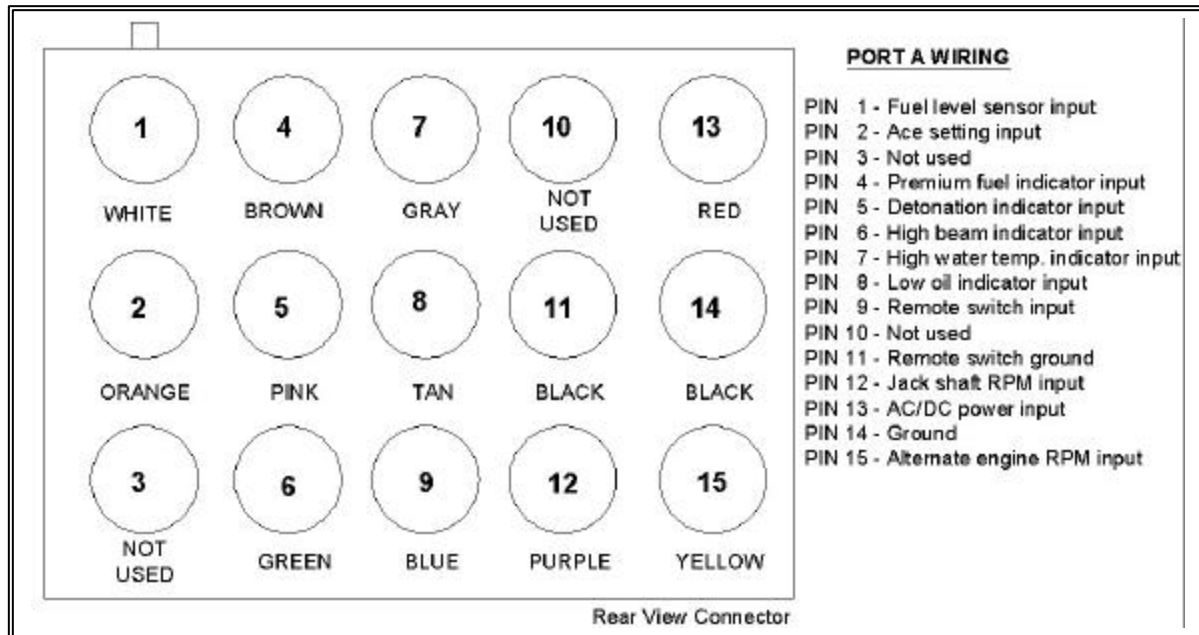
**Port A** --- Port A is used to connect the main power source, warning indicator inputs, Ace setting input, engine RPM and jack shaft rpm inputs. See the section **Port A Wiring** for complete instructions.

**Port B** --- Port B is used to connect the 4 EGT probes, water temperature sensor, external warning output and external battery. The EGT probes are sold separately and are not factory installed in the connector. You must install the probes in to the appropriate connector position yourself. See the section **Port B Wiring** for complete instructions.

**Serial Port** --- The serial port is used to program the dash and download data using the DataLink PC software.

**V-Net Port** --- The V-Net can be used to install up to 5 additional analog or digital inputs.

## Port A Wiring



Port A uses the 15 position connector. The only factory installed wires in the port A connector are the ones required for power and ground. All other wires are provided with the pins crimped and ready to install if needed. A description of each wire and its function is described below. If you decide not to use an input you may leave the wire uninstalled.

**Pin 1 – Fuel Level Sensor Input** – 0-5 volt input. Not used in most applications. Can be connected to any standard fuel level sensor.

**Pin 2 – Ace M10 Suspension Control Input** – When the orange wire is connected the Ace setting will be displayed in the upper left hand corner of the dash. Insert the orange wire in pin position 2. Connect the other end of the orange wire to the Ace M10 controller gauge output wire.

**Pin 3 – Not Used.**

**Pin 4 – Premium Fuel Indicator Input** – Grounding the brown wire will cause the premium fuel indicator to activate. Insert the brown wire in pin position 4. Connect the other end of the brown wire to the factory installed premium fuel indicator wire.

**Pin 5 – Detonation Indicator Input** – Grounding the pink wire will cause the Detonation indicator to activate. Insert the pink wire in pin position 5. Connect the other end of the pink wire to the factory installed detonation indicator wire.

**Pin 6 – High Beam Indicator Input** – Applying power to the green wire will cause the high beam indicator light in the upper right corner of the dash to activate. Insert the green wire in pin position 6. Connect the other end of the green wire to the high beam wire.

**Pin 7 – High Water Temperature Indicator Input** – Grounding the gray wire will cause the high water temperature indicator to activate. Insert the gray wire in pin position 7. Connect the other end of the gray



wire to the factory installed water temperature switch wire. Do not confuse a water temperature switch with a water temperature sensor. If you are using a water temperature sensor do not use this input. See **Port B Wiring** pin 1 for instructions.

**Pin 8 – Low Oil Indicator Input** – Applying power to the tan wire will cause the low oil indicator to activate. Insert the tan wire in pin position 8. Connect the other end of the tan wire to the factory installed low oil switch. If your oil level switch goes to ground when activated you will need to install the ground logic level converter contained in the port A wire harness kit. Follow the installation instructions provided in the package.

**Pin 9 – Remote Switch Input** – When the blue wire is grounded the remote switch input will activate. Insert the blue wire in pin position 9. Trim the other end of the blue wire to the desired length and connect it to the blue wire on the remote switch using the connectors provided in the remote switch package.

**Pin 10 – Not Used.**

**Pin 11 – Remote Switch Ground** – Insert the black wire from the remote switch in pin position 11. Alternately, you can connect the black wire from the remote switch to a good chassis ground instead of running the wire back to pin 11 on the dash.

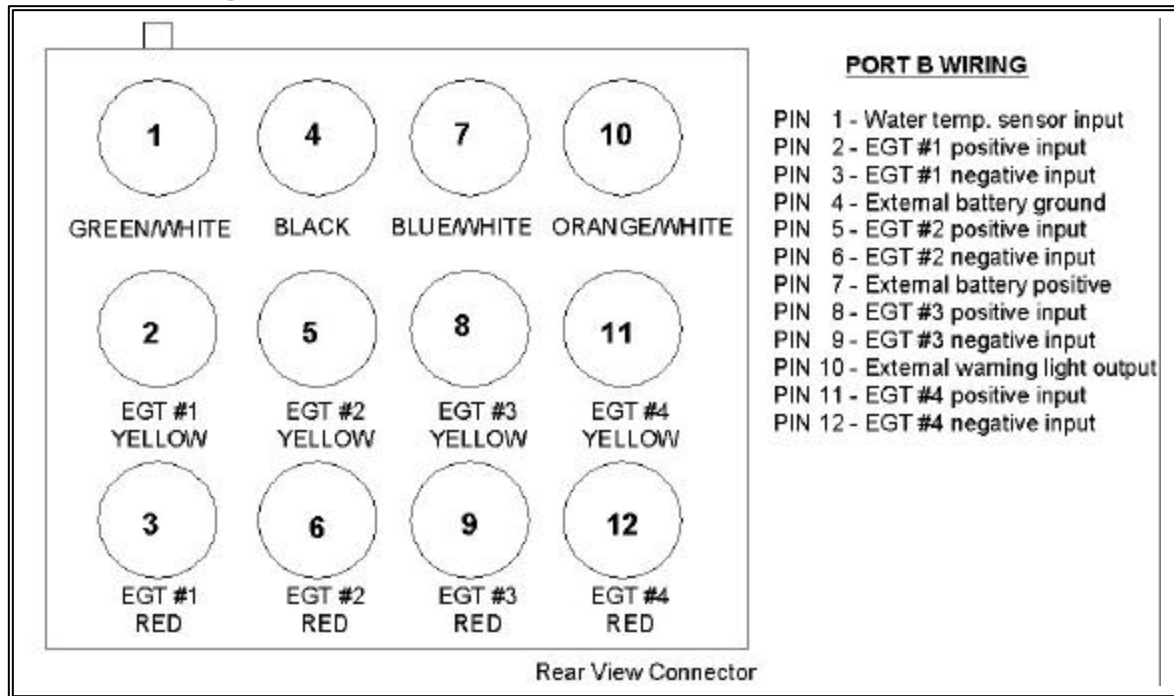
**Pin 12 – Jack shaft RPM and Speedometer** – Insert the purple wire in pin position 12. Connect the other end of purple wire to the red connector on the jack shaft sensor. See the section **Jack Shaft Sensor and Collar Installation** for complete instructions on installing the jack shaft sensor.

**Pin 13 – AC/DC power and Engine RPM input** – When AC or DC power is applied to this wire the dash will automatically turn on. Connect the red wire to the engine lighting coil. Using this method will get power and the engine RPM signal from this single wire. If only DC power is available then connect the red wire to a DC power source. Using a DC power source will require connecting the yellow wire on pin 15 to get an engine RPM signal. See below for details.

**Pin 14 – Ground** – Connect the black wire to a solid chassis ground.

**Pin 15 –Alternate Engine RPM input** – If the red wire is connected to a DC power source you must connect the yellow wire to a valid square wave tachometer output signal in order to get a proper engine RPM reading. Do not connect this wire if the red wire is connected to the AC voltage output from the engine lighting coil.

## Port B Wiring



Port B uses the 12 position connector. Since all port B inputs are optional the wires are provided with the connector pins crimped but the wires are not installed in the connector. A description of each wire and its function is described below. If you decide not to use an input you may leave the wire uninstalled.

**Pin 1 – Water Temperature Sensors** – Insert the green/white wire in pin position 1. Connect the green/white wire to the optional water temperature sensor. This sensor is used to read the actual temperature in degrees F or C. Do not confuse this input with a high water temperature alarm switch input. If you would like to use the factory installed temperature alarm switch do not use this wire. See **Port A Wiring** pin 7 for instructions.

**Pin 2 – EGT #1 Probe Positive** – Insert the yellow wire from EGT #1 probe in pin position 2.

**Pin 3 – EGT #1 Probe Negative** – Insert the red wire from EGT #1 probe in pin position 3.

**Pin 4 – External Battery Ground** – Connect this wire only if you plan to use an external DC battery to power the dash when the engine is not running. Insert the black wire in pin position 3. Connect the black wire to the ground wire on the external battery.

**Pin 5 – EGT #2 Probe Positive** – Insert the yellow wire from EGT #2 probe in pin position 5.

**Pin 6 – EGT #2 Probe Negative** – Insert the red wire from EGT #2 probe in pin position 6.

**Pin 7 – External Battery Positive** – Connect this wire only if you plan to use an external DC voltage Ni-Cad battery to power the dash when the engine is not running. Insert the blue/white wire in pin position 7. Connect blue/white wire to the positive wire on the external battery. Note: A minimum of 9 volts is required to properly power the dash. DO NOT CONNECT THIS WIRE TO THE ENGINE LIGHTING COIL OR ANY OTHER AC VOLTAGE SOURCE. DOING SO WILL CAUSE SEVERE DAMAGE TO YOUR DASH AND WILL VOID YOUR WARRANTY!!!

**Pin 8 – EGT #3 Probe Positive** – Insert the yellow wire from EGT #3 probe in pin position 8.

**Pin 9 – EGT #3 Probe Negative** – Insert the red wire from EGT #3 probe in pin position 9.

**Pin 10 – External Warning Light Output** – Connect this wire only if you plan to use an external warning light. Insert the orange/white wire in pin position 10. Connect the other end of the orange/white wire to the ground side of your warning light. Connect the other side of the warning light to power.

**Pin 11 – EGT #4 Probe Positive** – Insert the yellow wire from EGT #4 probe in pin position 11.

**Pin 12 – EGT #4 Probe Negative** – Insert the red wire from EGT #4 probe in pin position 12.

## Sensor Installation

### EGT Probe Installation

Instructions for the installing the EGT probes in the pipe are provided in the EGT probe package. Follow the instructions provided in the package.

### Water Temperature Sensor Installation

The water temperature sensor is typically installed in place of the OEM temperature switch. The water temperature sensor provided uses 1/8" NPT thread. An adaptor will be required if your current temperature switch uses a larger thread. Make sure to use thread sealer when installing the sensor to prevent water leaks.

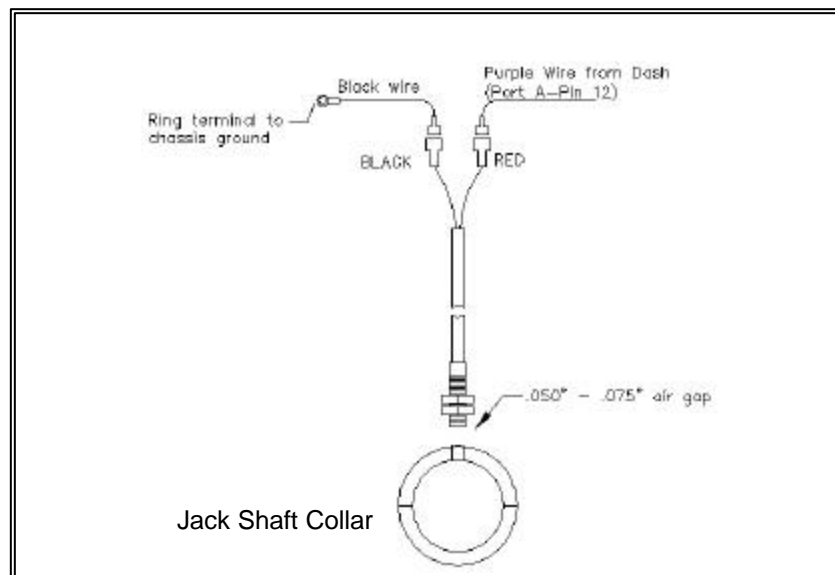
### Removing Wires from the Connector and/or changing EGT Probes

Removing a wire from the connector or changing an EGT probe requires a special tool which can be purchased from your dealer. Carefully follow the instructions provided with the tool if you need to remove a pin from the connector.

### Jack Shaft Sensor and Collar Installation

Due to the various jack shaft diameters the collar which holds the magnet must be purchased separately. If you did not purchase a jack shaft collar contact your dealer for more information.

Install the collar on the jack shaft. Make sure the collar fits snug and cannot slip. If the collar does not fit properly contact your dealer to obtain a correctly sized collar. Mount the sensor so that it is directly over the collar and has 0.050" to 0.075" air gap. Connect the purple wire from the dash port A pin 12 to the red connector on the sensor. Connect the sensors black wire to chassis ground.




### Remote Switch

The remote switch is used to change dash displays and start recording data without the rider having to remove their hand from the bars. The remote switch also used to record data for playback. If you do not wish to use these functions you may leave the remote switch uninstalled if desired.

<u>ACTION</u>	<u>FUNCTION</u>
Press and release button	Scroll between the three display pages
Press and hold button until the word REC appears below the swept tach.	Dash will begin recording. (See <b>Recording Mode</b> )

### External Battery

An external Ni-Cad battery can be used to power the dash when the engine is not running and power is not available to the main power input at port A pin 13. When the engine is shut off or the main power is disconnected the dash will remain powered on the external battery until the max. on time has expired without any button presses. (see **Setup mode** MXON). To turn the dash on without main power, press and hold the  button until the dash completely turns on. See **Port B Wiring** for information on wiring an external battery.

#### **WARNING!!**

**While the engine is running the dash will slowly charge the external battery. Make sure to only use a 9–18 volt Ni-Cad battery. Attempting to use and charge other types of batteries could cause them to leak and/or explode.**

## Installing V-Net Channels

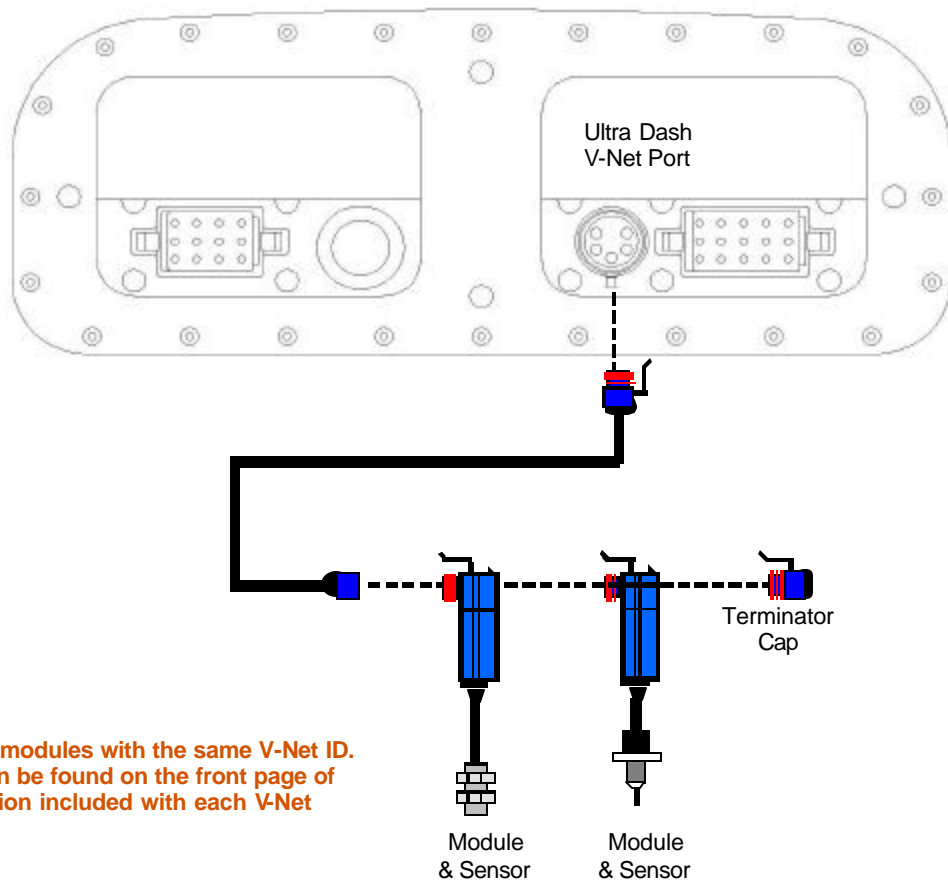
You can add up to five additional channels to your Ultra Dash by installing modules on the V-Net port. For instance, if you wanted to monitor turbo boost pressure you would need to purchase a boost pressure V-Net module. Follow the steps below to add V-Net modules to your Ultra Dash.

**Step #1** — Unplug the factory installed terminator cap from the V-Net port on the back of the dash.

**Step #2** — Plug the V-Net extension cable in the V-Net port.

**Step #3** — Plug the other end of the V-Net cable in to the first V-Net module. You can install up to five V-Net modules. You can plug the V-Net modules in any order that is convenient. The modules can be plugged directly in to each other or a V-Net extension cable can be used between modules if necessary.

**Step #4** — Plug the terminator cap removed in step #1 in to the last V-Net module.



**IMPORTANT!!**  
Do not use two modules with the same V-Net ID. The V-Net ID can be found on the front page of the documentation included with each V-Net module.



## Programming and Operation Using the Dash Buttons

After installation the first thing you should do is configure the setup parameters. Although the factory defaults will work fine for most users, you should run through the configuration setup and adjust the engine rpm pulses per revolution, EGT warning levels and speedometer calibration. There are two methods that can be used to configure the dash. The first method uses the buttons on the front of the dash. Using this method you can program the basic features required for most users. However, if you would like to add a fourth display set or reconfigure any of the factory default display sets you must use the second method, which is the DataLink PC software. Instructions for using both methods is describe below in this chapter.

### How the Buttons Work:

Each button can perform three different functions depending on how long the button is held down. In this manual we will refer to the three different button press types as SHORT, MED and LONG. To help determine when to release the button, and as a result the type of button press, you need to look at the warning indicators in the upper corners of the dash. If you release the button after one flash a SHORT button press will be entered. Releasing the button after two flashes will result in a MED button press and three flashes will result in a LONG button press. Table 1 list the three different button press types.

Type	Warning Flashes	Time in Seconds
SHORT	1	Less than 2
MED	2	2
LONG	3	3 or more

Table 1

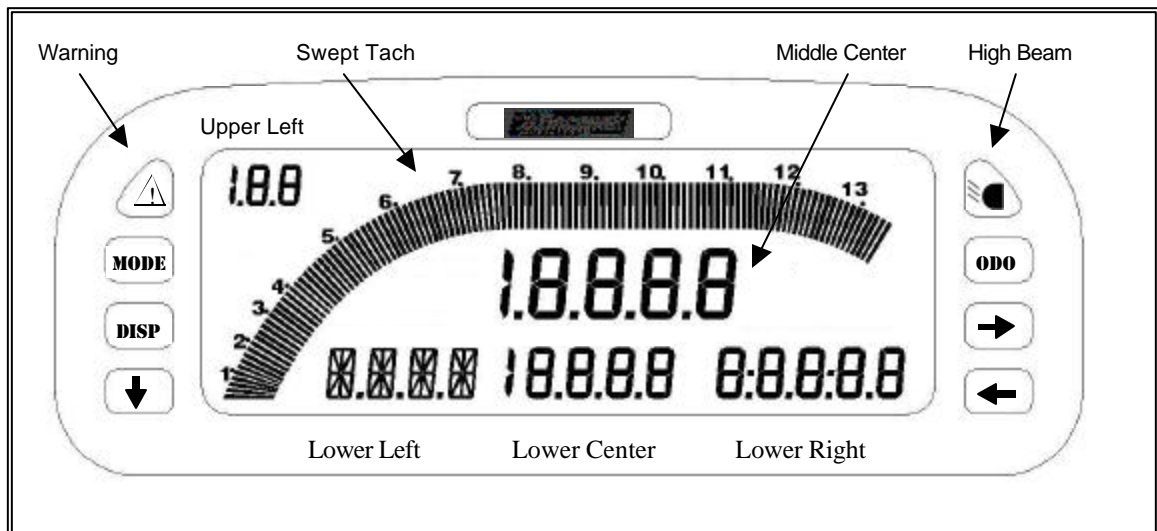


Figure 1

Figure 1 illustrates the channel positions and labels the terminology used in this manual to describe each position on the LCD display. There are six channel positions on the LCD and two indicator lights in each upper corner. The lower left channel position can display both numbers and letters. The other five positions can only display numerical values.

## Display Modes

The behavior of each button press depends on the mode the dash is currently in. See the appropriate mode section below for a list of button behaviors in each mode.

There are 6 different modes.

- Setup Mode
- Real-time Mode
- Scroll Mode
- Min – Max Recall Mode
- Recording Mode
- Playback Mode

### Setup Mode










Turn the dash on by either starting the engine or, if you have an external battery connected, pressing and holding the  button until the display turns on. Enter a MED press on the  button by pressing and holding for two warning light flashes. While in setup mode a SHORT press on the  button will change to the next setup parameter. A MED press on the  button will step back to the previous setup parameter. A SHORT press on the  and  buttons will increase or decrease the parameter value in small increments. A LONG press on the  and  buttons will increase or decrease the parameter value in large increments. To exit setup mode enter a LONG press on the  button until the word **WAIT** is displayed in the lower left LCD position. Make sure you do not turn the dash off until the word **WAIT** has disappeared and the dash has reset.

Table 2 shows the behavior of each button while in Setup mode.







Button	SHORT Button Press (one light flash)	MED Button Press (two light flashes)	LONG Button Press (three light flashes)
	Does nothing	Does nothing	Exit Setup mode
	Does nothing	Does nothing	Does nothing
	Change to next setup parameter	Change to previous setup parameter	Does nothing
	Does nothing	Does nothing	Does nothing
	Increase parameter value in small step	Increase parameter value in large step (where appropriate)	Increase parameter quickly
	Decrease parameter value in small step	Decrease parameter value in large step (where appropriate)	Decrease parameter quickly

Table 2



*Table 3 shows each setup parameter and the available options.*

<b>#</b>	<b>Parameter Description</b>	<b>Lower Left LCD Code</b>	<b>Available Options (Lower Right LCD)</b>	<b>Factory Default</b>
1	Default back light intensity level	bLI T	Level 0-9 9 = highest level 6 = factory default	6
2	Default Display Page (see Real-time section for info)	dI SP	1, 2, 3	1
3	Units of Measure	UNI T	0=English 1=Metric	0
4	Engine RPM odd fire	OddF	0 – 8 Set to 0 if your engine is not an odd fire	0
5	Engine RPM pulses per revolution	R1 P	0 – 20 6 is correct for most snowmobiles.	6
6	Swept tach engine rpm scale	SCAL	0 = 11,500 rpm max 1 = 13,500 rpm max	0
7	Engine RPM rev warning	REVL	0 – 20,000 RPM	8,500
8	Jack shaft sensor type	R2TY	0 = Magnet switch 1 = Zero crossing	0
9	Number of magnets in jack shaft collar (pulses per rev)	R2 P	0 – 20 1 is standard setting	1
10	Jack shaft pulses in 1/8 <sup>th</sup> mile/km (see <b>Speedometer Calibration</b> section)	P8MI	0 – 10,000	660
11	Jack shaft pulses in 1 mile/km (see <b>Speedometer Calibration</b> section)	P1MI	0 – 10,000	5280
12	Odometer Starting Value	OdOS	0 – 320,000	0
13	Water temp. sensor type	WTYP	0 – 6 4 = standard sensor provided with kit	4
14	Fuel tank empty value. (see <b>Fuel Level Calibration</b> section)	FTLO	0 – 5,000	0
15	Fuel tank full value. (see <b>Fuel Level Calibration</b> section)	FTHI	0 – 5,000	5000

**Programming and Operation Using the Dash Buttons**

16	Remote switch input value when ON.	SWON	0 = input is grounded when ON 1 = input has voltage when ON	0
17	High beam indicator input value when ON.	HbON	0 = input is grounded when ON 1 = input has voltage when ON	1
18	Detonation indicator input value when ON.	SWON	0 = input is grounded when ON 1 = input has voltage when ON	0
19	Premium fuel indicator input value when ON.	PFON	0 = input is grounded when ON 1 = input has voltage when ON	0
20	Low oil level indicator input value when ON.	OLON	0 = input is grounded when ON 1 = input has voltage when ON	1
21	High water temp. switch indicator input value when ON.	HWON	0 = input is grounded when ON 1 = input has voltage when ON	0
22	EGT #1 alarm level	EGT1	0 – 1700 Deg.	1350
23	EGT #2 alarm level	EGT2	0 – 1700 Deg.	1350
24	EGT #3 alarm level	EGT3	0 – 1700 Deg.	1350
25	EGT #4 alarm level	EGT4	0 – 1700 Deg.	1350
26	High water temp alarm level	H2OT	0 – 300 Deg.	170
27	Auto off time.	MXON	0 – 100 minutes	5

**Table 3**

### ***Speedometer Calibration***

The speedometer, odometer and trip odometer will not read correctly you perform the following calibration procedure.

- 1) Turn on the dash and enter setup mode by entering a MED press on the **MODE** button.
- 2) Step through each setup parameter by entering a SHORT press on the **↓** button until you reach the **P8MI** parameter in the lower left LCD position.
- 3) Drive exactly 1/8 of mile (660 ft) and stop.
- 4) Enter a SHORT press on the **ODO** button to set the calibration factor.
- 5) Exit setup mode by entering a LONG press on the **MODE** button until the word **WAIT** is displayed in the lower left LCD position. Make sure you do not turn the dash off until the word **WAIT** has disappeared and the dash has reset.

### ***Fuel Level Calibration***

From the factory, the fuel level will read from 0 to 5000. If you would like the fuel level to read from 0 to 100 percent you must properly perform the following calibration procedure.

- 1) Empty the fuel tank to the level you wish to call %0.
- 2) Turn on the dash and enter setup mode by entering a MED press on the **MODE** button.
- 3) Step through each setup parameter by entering a SHORT press on the **↓** button until you reach the **FTLO** parameter in the lower left LCD position.
- 4) Enter a SHORT press on the **ODO** button to set the tanks empty value.
- 5) Enter a SHORT press on the **↓** button to reach the next parameter **FTHI** .
- 6) Fill the fuel tank to the level you wish to call %100.
- 7) Enter a SHORT press on the **ODO** button to set the tanks full value.
- 8) Exit setup mode by entering a LONG press on the **MODE** button until the word **WAIT** is displayed in the lower left LCD position. Make sure you do not turn the dash off until the word **WAIT** has disappeared and the dash has reset.

***Real-time Mode***

The dash will power up in Real-time mode each time it is turned on. While in Real-time mode you can scroll between the three main display pages by entering a SHORT key press on the **DISP** button. To change the lower right display enter a SHORT press on the **ODO** button.

*Table 4 shows the channel positions for each of the three display pages. These are the factory defaults. They can be changed using the DataLink PC software.*

	<b>LCD Section</b>	<b>Channel Displayed</b>
<b>DISPLAY #1</b>	Swept Tach	Engine RPM
	Middle Center	Speedometer
	Upper Left	Fuel Level
	Lower Left	Water Temperature
	Lower Center	Maximum Exhaust Gas Temperature Value and Cylinder Number
	Lower Right	Odometer/ Trip / EGT 3 / EGT 4 (see note below)
<b>DISPLAY #2</b>	Swept Tach	Speedometer
	Middle Center	Engine RPM
	Upper Left	Ace Setting
	Lower Left	Water Temperature
	Lower Center	Maximum EGT Value and Cylinder Number
	Lower Right	Odometer/ Trip / EGT 3 / EGT 4 (see note below)
<b>DISPLAY #3</b>	Swept Tach	Engine RPM
	Middle Center	Speedometer
	Upper Left	Water Temperature
	Lower Left	EGT 1
	Lower Center	EGT 2
	Lower Right	Odometer/ Trip / EGT 3 / EGT 4 (see note below)

**Table 4**

**Note:** The number 4 will not show in the channel tag when EGT four is displayed in the lower right corner. Only the tag EGT will display for channel four.

*Table 5 shows the behavior of each button while in Real-time mode.*













<b>Button</b>	<b>SHORT Button Press (one light flash)</b>	<b>MED Button Press (two light flashes)</b>	<b>LONG Button Press (three light flashes)</b>
	Switches between Real-time, min, max & playback modes	Enter setup mode	Reset minimum & maximum recall values
	Change display pages	Does nothing	Turn the back light on or off
	Enter scroll mode	Does nothing	Does nothing
	Toggle lower right display between odometer, trip, EGT 3, and EGT 4	Does nothing	Reset trip odometer
	Does nothing	Does nothing	Does nothing
	Does nothing	Does nothing	Does nothing

Table 5

***Scroll Mode***

Scroll mode allows you to scroll through all of the available channels. For instance, the speedometer is shown on all three display pages, but the actual jack shaft rpm and engine / jack shaft ratio are not. Also, if you have added any channels on the V-Net port you can use scroll mode to view them. The only way to view these channels is to enter scroll mode. To enter scroll mode, enter a SHORT press on the  button while in Real-time mode. Entering scroll mode will cause the lower left channel position to display the abbreviated channel name or channel tag. The lower middle position will display the channel value. To exit scroll mode, enter a LONG press on the  button.

*Table 6 shows the behavior of each button while in scroll mode.*

<b>Button</b>	<b>SHORT Button Press (one light flash)</b>	<b>MED Button Press (two light flashes)</b>	<b>LONG Button Press (three light flashes)</b>
	Switches between Real-time, min, max & playback modes	Enter setup mode	Reset minimum & maximum recall values
	Change display pages	Does nothing	Turn the back light on or off
	Scroll to next channel	<b>Scroll to previous channel</b>	Does nothing
	Toggle lower right channel position between odometer, trip & EGT 3	Does nothing	Reset trip odometer

**Programming and Operation Using the Dash Buttons**



	Does nothing	Does nothing	Does nothing
	Does nothing	Does nothing	Does nothing

Table 6

Table 7 shows the channel tags appearing in the lower left position while in scroll mode.

Abbreviation	Description
ERPM	Engine RPM
DRPM	Jack shaft RPM
MPH	Speedometer in MPH or KPH units
RMSW	Remote switch state. 0 = open 1 = closed
EGT1	Exhaust Gas Temperature 1
EGT2	Exhaust Gas Temperature 2
EGT3	Exhaust Gas Temperature 3
EGT4	Exhaust Gas Temperature 4
H2OT	Water temperature
VOLT	External battery volts when running on external battery power. Rectified volts when running on main AC/DC power.
RAT	Engine to jack shaft ratio. Engine RPM divided by Jack Shaft RPM
TI ME	Real-time mode = Seconds since unit was turned on or recording was started Playback mode = Seconds since recording was started

Table 7

In addition to the channels built in to the dash, which are listed above, you can use scroll mode to view channels that have been added using the V-Net port. Refer to the information provided with the V-Net module for the channel tag.

*Note:* The channel tags listed in table 7 are the factory defaults. The tag can be changed using the DataLink PC software.

***Min – Max Recall Mode***

The min – max recall mode displays the minimum and maximum reading on all channels since the dash was turned on or the min – max values have been manually cleared. The dash does not need to be in Record mode for the min-max values to update. To display the minimum values enter a SHORT press on the **MODE** button. The word MIN will be displayed under the swept tach. To display the maximum values enter a SHORT press again on the **MODE** button. The word MAX will be displayed under the swept tach. While you are in min – max mode you may change displays or enter in to scroll mode to see additional channels if needed. To return to Real-time mode and exit min – max mode, again enter a SHORT press on the **MODE** button. The word PLAY will appear. This puts you in Playback mode which we will discuss in the next section. Again enter a SHORT press on the **MODE** button to return to Real-time mode. To clear the minimum and maximum values enter a LONG press on the **MODE** button in any mode except Setup mode.

***Record Mode***

The Ultra Dash has up to 10 minutes of record time. While in record mode all channels except the warning indicators will be recorded. After a recording you may playback the data on the dash or download it to our optional DataLink PC software. Recorded data will remain in memory, even if the dash is turned off, for up to 2 days or until a new recording has been made. To enter Record Mode, press and hold the remote switch button until the word REC is displayed below the swept tach position. To exit Record, mode enter three consecutive SHORT button presses on the **MODE** button.

***Playback Mode***

Playback mode allows you to playback recorded data on the dash. To enter Playback mode, enter a SHORT press on the **MODE** button while in Real-time mode. This will put you in Min mode. Enter a second SHORT press on the **MODE** button to enter Max mode. Enter a third SHORT press on the **MODE** button to enter Playback mode. The word PLAY will display under the swept tach to indicate you are in Playback mode. Once in Playback mode use the **←** and **→** buttons to move forward and backward in time according to the table below.

*Table 8 shows the behavior of each button while in Playback mode.*

Button	SHORT Button Press (one light flash)	MED Button Press (two light flashes)	LONG Button Press (three light flashes)
<b>MODE</b>	Exit Playback Mode	Enter setup mode	Reset minimum & maximum recall values
<b>DISP</b>	Change display pages	Does nothing	Turn the back light on or off
<b>↓</b>	Enter scroll mode	Does nothing	Does nothing

## Programming and Operation Using the Dash Buttons




	Toggle lower right channel position between odometer, trip, EGT 3 & EGT 4	Does nothing	Reset trip odometer
	Step recoded data forward .02 seconds If playing real-time - Stop	Start playing recorded data at real-time speed.	Fast forward through recorded data (press and hold)
	Step recorded data backward .02 seconds If playing real-time - Stop	Rewind recorded data to beginning	Fast reverse through recorded data (press and hold)

Table 8

## Warning Indicators

Your Ultra Dash has three types of warning indicators.

- Internal warning light in the upper left and right hand corners.
- Alpha display in the lower left position on the LCD.
- External warning light output. (see **Wiring Port B**).

All of the warning inputs do not activate all three warning indicator types. Some only activate the alpha display, while others activate all three.

Table 9 shows which warning types are activated by each warning indicator.

Warning Cause	Alpha Warning Tag	External Warning	Upper Left Internal Warning	Upper Right Internal Warning
Water Temp. Sensor	H2OT	X	X	
Water Temp. Switch	H2OT	X	X	
Low Oil Level	OIL			
Detonation	DET	X	X	
Premium Fuel Required	PREM			
High Beam				X
EGT 1	EGT1	X	X	
EGT 2	EGT2	X	X	
EGT 3	EGT3	X	X	
EGT 4	EGT4	X	X	
Engine Rev Limit	RPM	X	X	

Table 9

*Note:* The warning indicators setting listed in table 9 are the factory defaults. The warning tag and type of warning indicator activated can be changed using the DataLink PC software.



### *Clearing Alpha Display Warnings*

When an alpha warning is activated in the lower left position on the LCD, the display will toggle back and forth between the alpha warning tag and channel data that is normally displayed in that position. You may clear the alpha warning by entering a MED press on the **DISP** button. This will clear the warning only for that occurrence. If the input that activated the warning falls below the warning limit and is later activated again, the alpha warning will turn back on.

#### **IMPORTANT WARNING!!:**

**If you manually clear an alpha warning it is up to you to remember there was problem. For instance, if you clear the low oil warning there may be no further warnings to remind you of the condition. If you damage your engine Racepak cannot be held responsible. USE THE CLEAR FEATURE AT YOUR OWN RISK!!**



## Programming Using the DataLink PC software

The first step is to install the DataLink software in you PC computer. The DataLink software is used to program and configure your Ultra Dash. If you have purchased the PC download package you can also view real time data and upload recorded data from the dash for analysis.

### Installing the DataLink Software

The DataLink software manual will guide you through the installation of the software. Before you begin, please read the following notes.

#### *DataLink Software CD Installation*

Insert the disk in you CD drive and close the bay door. The installation program should run automatically. If it does not, follow the instructions printed on the CD label.

#### *Installing the License Disk*

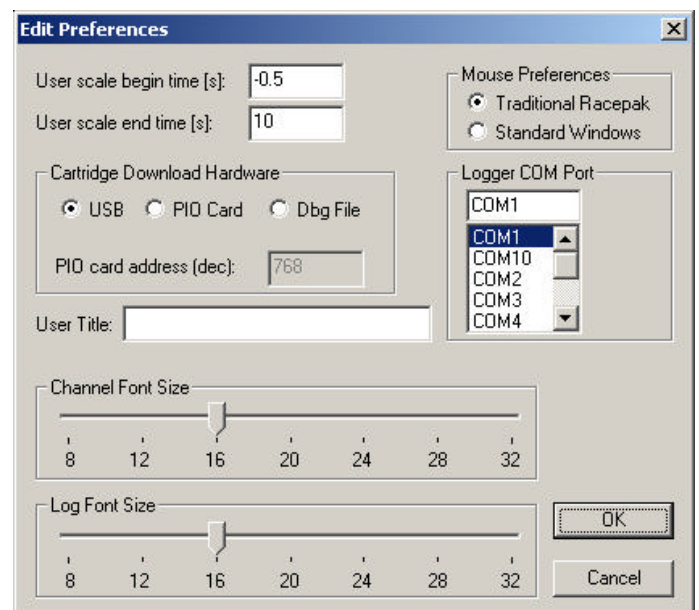
A software license disk (a 3.5-inch floppy) will have been supplied with the DataLink software only if you have purchased the PC download package. If you have only purchased the PC programming software then you will only get a DataLink CD and not a license disk. The license disk contains a default configuration file for your new system and the security keys required to properly use the DataLink software with your Ultra Dash.

The DataLink software should ask you for a license disk the first time you start the program after a new installation. If you have purchased the PC download package you will need to insert the disk and click on the OK button. If you have purchased the PC programming software then just click on the “Demo Only” button. If you are not prompted for a license disk or you are adding a new dash to an existing DataLink download installation you will need to select Read License Disk for the Security main menu item. When **the Select Items to Copy** dialog box appears make sure you check the **Copy Configuration Files** and **Copy License Keys** boxes before proceeding. This will add the new security keys, folder structure and configuration file to the existing DataLink installation.

### Connecting the Data Logger Serial Communications Cable

The next step is to connect the data logger’s serial communication cable (supplied with your data logger system) to the serial communications port on your PC. You will be connecting the DB9 female connector end of the logger serial communication cable to the mating connector on your PC. In most computer systems the mating connector will be labeled “Serial” or “COM”. If your PC does not have a serial port you can use a USB to serial port adaptor. These adaptors are available at most computer stores for around \$50.

The next step in the software installation is to tell the DataLink software which serial communications port on your PC you have connected to the serial communications cable. To do this, turn on your PC and start the DataLink program by clicking on the ICON on the Window’s desktop. Next click on



*Preferences* from the menu bar then select *Settings*. The dialog box on the right will be displayed.

Locate the **Logger Com Port** selection box and select the communications port to which the serial communications cable is connected. If the serial port you are using is built in to your PC the port should be marked near the connector. If you are using a USB to serial adaptor then you must follow the instructions provided with the adaptor to determine which port the adaptor software has installed itself on. Once you have selected the proper serial port select **OK** to accept your selection..

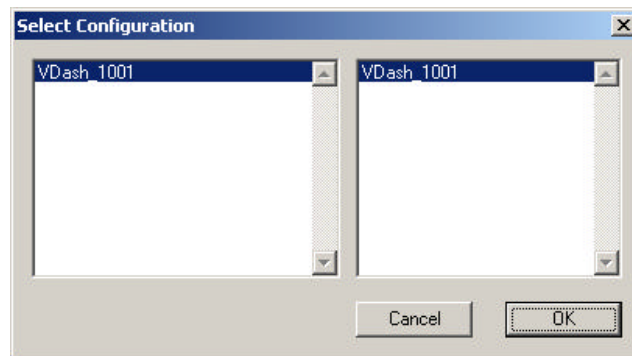
### Modifying the Dash Configuration

Each time you wish to modify the configuration of your dash you will need to perform the following steps;

1. Connect your PC to your data logger via the serial interface cable.
2. Start the DataLink program on your PC
3. Open the car configuration file by selecting **Open Car Configuration** under **File** from the menu bar.
4. Select the device/channel to be modified
5. Make the desired modifications to the device/channel
6. Apply power to your dash
7. Send the modified setup to the device
8. Save the modified car configuration file

The first step is to connect your PC to your dash using the serial interface cable supplied with the DataLink software.

The next step is to start the DataLink program by clicking on the DataLink icon located on the Windows desktop on your PC. If you selected your car configuration file as the default configuration file, the DataLink program will automatically open your car configuration file. If you did not select the car configuration file for your system as the default car configuration file you will need to open the car configuration file manually. To open your car configuration file select the **Open Car Configuration** menu item located in the **File** main menu selection. The following dialog box will appear.



The list on the left-hand side of the **Select Configuration** box will display all of the file folders in your RacePakData subdirectory that contain valid configuration files. **If you have purchased the PC download package then select the folder on the left that is named VDash and the serial number of your dash.** For instance, an Ultra Dash with the serial number 1001 would be named VDash\_1001. The list on the right will now contain the list of configuration files contained in this folder. The factory configuration file will be named using the same convention. **If you have not purchased the PC download package then select the configuration named UDX6S.** Select **OK** to open the select configuration file.

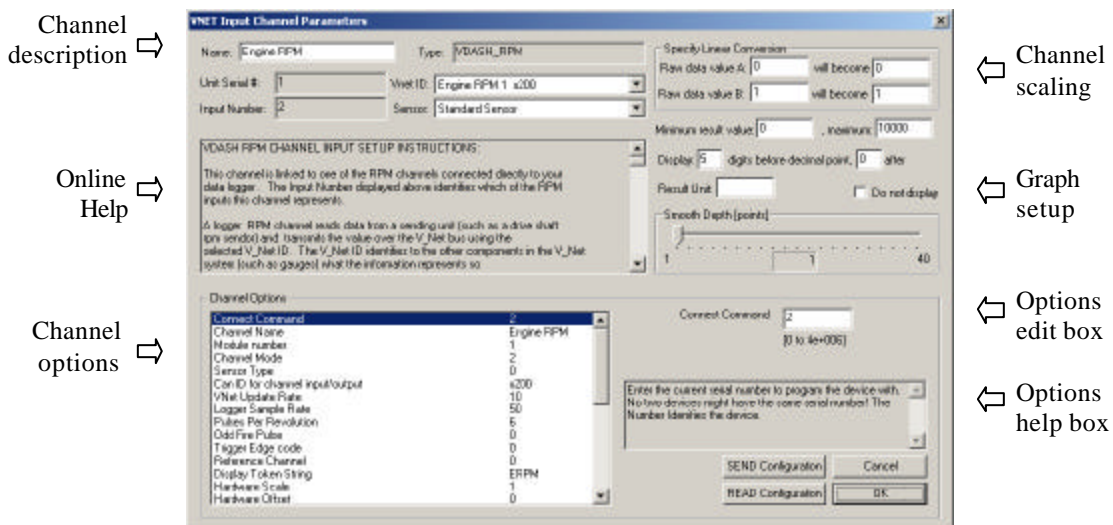
The next step is to read the current setting from the dash. To do this, connect the supplied serial cable between the dash and your PC and turn on the dash. Next, Start the DataLink software and click on **Edit** from the menu bar and select **Read VNET Config**. A status message box will appear, if everything is working correctly you see the message “Devices Read Successfully” when finished.

The wrench icon in the run file tab is used to indicate that this file is a car configuration file. Each of the buttons represents one of the devices/channels in your system. For instance the VDash Module button represents your Ultra Dash, the Engine Rpm button represents the engine rpm channel,



After you have opened the car configuration file the next step in modifying the setup of your system is to select the device/channel to be modified. To select a device/channel position the mouse cursor over the desired button, for instance VDash Module in our sample, and click the right mouse button. An edit dialog box, as shown below , will open to allow you to edit the parameters for that specific device/channel.

In addition to allowing you to edit the device/channels parameters the dialog box also contains online help to instruct you on the procedure for configuring the device and the options available for each of the parameters that can be modified. Although each of the dialog boxes for the different devices are slightly different, all of the dialog boxes have the same overall structure.



The first section to note is the **Channel Description** area. This area includes important information about the channel that you are editing. You should always check this area to be sure you are editing the correct channel. When you are sure you are editing the proper channel go to the **Online Help Scroll Box**. Read this section. It will give you step by step instructions on configuring the specific device/channel you are editing.

### Channel Description Area

The channel description area contains several fields that describe the channel that is represented by the button and the edit dialog box. The fields in order of importance are as follows:

**Name:** This is the user assigned name for the channel

**Type:** The type of device being edited

**Unit Serial #:** Displays the serial number of the device being edited.

**Input Number:** In devices with multiple input channels, this field displays the channel number in the device being edited.

**V\_Net ID:** Displays the channels V-Net ID.

**Sensor Type:** This field indicates the type of sensor connected to the channel.

The following describes the basic sections of the edit dialog box and their locations.

### Online Help Box

The online help box is a scrollable text area containing detailed instructions on how to configure this device. You should always read this section before editing any of the device parameters.

### Channel Scaling

This section is used to enter the calibration factors for the sensor connected to this channel. These factors are entered automatically by the system any time the Sensor type is selected. They must be entered manually only when a custom sensor calibration is required.

### Graph Setup

These fields are used to define how the DataLink program charts the data obtained by this channel. Please refer to the online help box for details.

### Options List Box

The options list box displays all of the user settable options for the device being programmed. To select an option to be edited, place the mouse cursor over the desired option and click the left mouse button. The options help box and the options edit box will be updated with appropriate information for the selected option.

### Options Help Box

The options help box displays detailed information on the option currently selected for editing.

### Options Edit Box

The option edit box will display an appropriate edit box for the option currently selected in the options list. The edit box will display the name of the option being edited, the current value of the option, and the range of values that can be entered for the option is appropriate. Enter the new value for the option here

After you have read the online help and have modified the setup parameters as desired, the next step is to send the new setup from the PC to the actual device being programmed. Be sure the dash is connected to your PC using the serial interface cable. Next apply power to your data logger system and wait for approximately 5 seconds for your system to enter normal operation. Next select the **SEND Configuration** button in the channel edit dialog box to send the information to the device being programmed. A progress box will be displayed to indicate whether the transfer is successful.

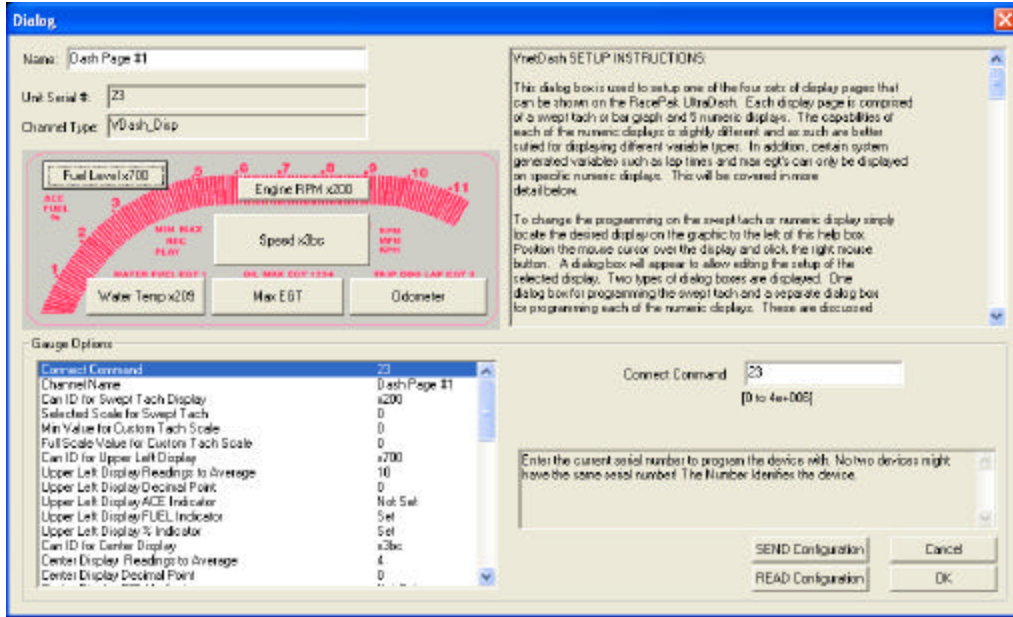
After you have successfully sent the new information to the device being programmed you should see the message Device Programmed Successfully at the bottom of the message log. Select the **OK** button to exit the dialog box. As a final step save the car configuration file to your disk by clicking on the save icon in the DataLink Toolbar or select the Save menu item located in the Files main menu selection.

You have completed the programming of the device/channel. Repeat the above process for each of the devices you wish to modify.

### Changing Dash Display Page Properties

The channel buttons labeled “Dash Page #1”, “Dash Page #2”, “Dash Page #3”, “Dash Page #4” represent the four LCD display pages that change when you press the **DISP** or **ODO** button on the dash. If you would like to change the variables displayed on a display page or change the characteristics of the displayed value perform the following.

- 1) Right click over the channel button of the display page you wish to change.
- 2) Review the instructions in the upper left dialog box.
- 3) Locate the graphic representation of the dash to the left of the help box and click on the button of the display to be modified.
- 4) Enter the desired parameters.
- 5) Click OK to accept the changes.
- 6) Repeat for all displays to be modified.
- 7) When you are finished editing each display page, click on the **SEND Configuration** button in the lower right corner.



### Adding or Removing V-Net Devices to your System

If you add or remove modules from you system, you will need to update your configuration file to match the configuration of your onboard system. If the changes are permanent you should edit your existing configuration file to match the new setup.

To update the configuration file load the appropriate configuration file by using the **Open Car Configuration File** menu selection located in the **File** main menu selection. Make sure the configuration file is the active file by positioning the mouse cursor over the file tab for the file and click the left mouse button.

Connect your PC to the dash using the serial communication cable and power up your system. Next select the **Read VNet Config** selection located in the **Edit** main menu selection. The DataLink software will now query the V-Net modules in your system and will read in the current configuration of the system. During this process a message log dialog box will be displayed. The progress of the read will be displayed in the message log box.

If a V-Net module that is included in the current configuration file is not found in the System, the following message will be displayed.



If you have removed the module from the system you should select **Yes** to remove the module from the configuration file. If you have not removed the module from the system you should select **No** and then inspect your system to be sure the module is properly installed. When you have corrected the problem you should repeat the process above.



If you have added modules to the V-Net system the DataLink software will automatically insert new channel buttons for the new modules. You should review the programming of the new modules as detailed above and change the setup of the new modules as required. Recording Data with your Data Logger

Anytime power is applied to your system the dash is ready to record data from the various sensors connected to the system. When the recording process actually begins and how much data is recorded is determined by how you program the setup features in your data logger. The factory default record length is 600 seconds or 10 minutes. The maximum record length will vary depending on the number of channels that that are recorded and the their sample rates. If you attempt to exceed the available memory by selecting high sample rates and long record times you will receive a warning message when attempting to send the configuration to the dash.

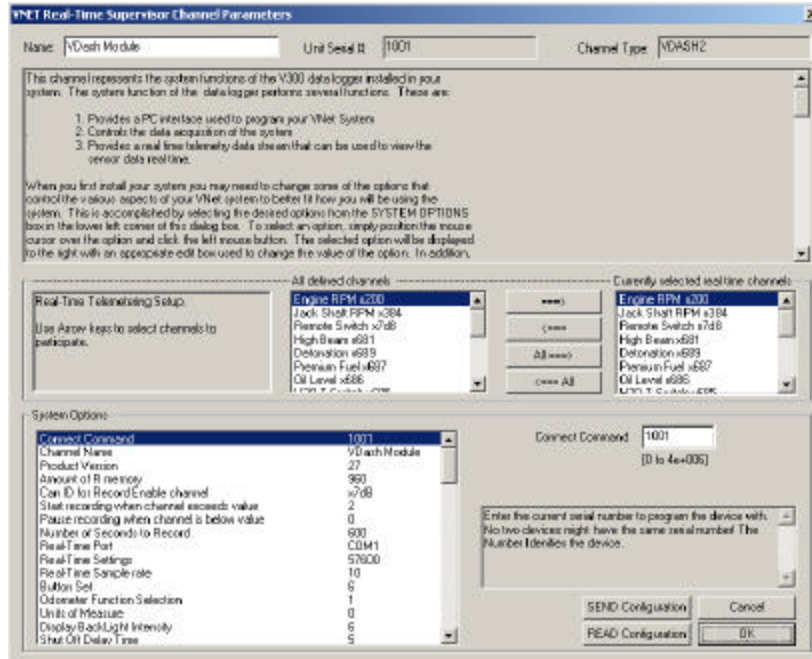
Anytime you press and hold the remote switch the dash will begin to record. In addition, you can select an alternate recording trigger such as engine rpm exceeding a certain threshold. In this mode the logger is programmed to begin recording only after one of the monitored data channels exceeds a preset threshold. For instance, the logger can be programmed to begin recording any time the Engine RPM exceeds 3000 rpm. Once the recording is started it will continue until the maximum record time is reached.

Once the recording is started all previously recorded run data is erased and the new recording is initialized. Please note approximately 5 seconds elapses from the time the recording is triggered and the time the first data point is recorded. This is the time required to initialize the recording. The following section will guide you through the setup of your data logger.

### **Configuring Record Parameters**

The first step in programming the record parameters in your dash is to connect the dash to your PC using the serial communications cable. Once connected turn on power to the dash.

Next start the DataLink program and open the car configuration file for your system. If you selected your car configuration file as the default car configuration file during the software installation the DataLink program will have automatically opened the configuration file when you started the program. Click on the file tab of the car configuration file to select the file for editing. Next position the mouse cursor over the VDash Module channel button and click the right mouse button. The logger edit dialog box will display on your screen.



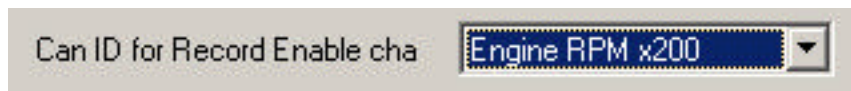
Located in the lower left-hand corner of the dialog box is the Systems Options section. Several options and their present value will be listed on the left-hand side of the Systems Options section. To select an option for editing simply position the mouse cursor over the option and click the left mouse button. The option will become highlighted and the options edit box and option help box located to the right of the list will be updated with appropriate information for the selected option. Read the help information and enter the new value for the selected option. The options for setting the record parameters are discussed in detail below.

### ***Setting the Record Length***

Locate the **Number of Seconds to Record** option and select it as described above. The options edit box will now display the currently programmed number of seconds to record. Enter the new desired value in the edit box.

### ***Setting the Record Enable Channel***

To program the record enable channel locate the **Can ID for Record Enable channel** option and select it as described above. The options edit box will be updated with the names and ID's of all of the currently parameters measured by your system. To enter a new value click on the down arrow located on the right end of the option edit box as shown below.



A list of the valid channel names and IDs will be displayed. Use the scroll buttons to display all of the values included in the list. When you have located the desired selection position the mouse cursor over the selection and click the left mouse button to accept the selection. The top line of the edit box will be updated with the newly selected value.

### ***Setting the Record Start Threshold***

The record threshold option is used in conjunction with the record enable channel to determine when the recording is started. Recording will start any time the value of the selected channel exceeds the value of

the record threshold. If you have selected a channel such as Engine Rpm enter the desired rpm above which to start the recording. For instance 3000 rpm. The recording will begin any time the engine rpm exceeds 3000 rpm.

To program the record threshold select the **Start recording when channel exceeds value** option as described above and enter the desired value in the option edit box.

### ***Sending the Record Parameters***

The final step in programming the record parameters on your dash is to send the configuration you just edited to from your PC to your dash over the serial communication cable. To send the information click on the **Send Configuration** button located in the lower left-hand section of the logger dialog box. A progress box will be displayed showing the information being transferred to your dash. When completed the last line in the progress box should read **Devices Programmed Successfully**.

After you have completed the programming of your dash the changes will become effective the next time you turn your data logger on.

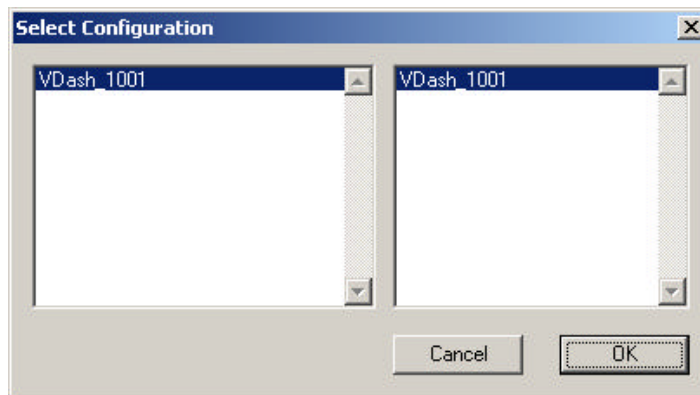


## Transferring Data to a PC

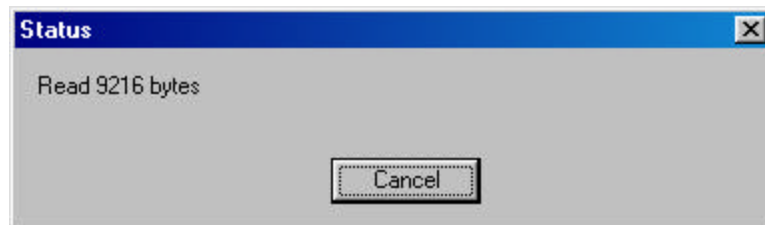
If you purchased the PC download option, the data from your Ultra Dash can be transferred to your PC for viewing and analysis using the Racepak DataLink program. In order to communicate with the Ultra Dash your PC must have serial port. If your PC does not have an onboard serial port you can purchase a USB to serial port adaptor from most computer stores.

### Using the Serial Communications Port to Transfer Data to your PC

To transfer data from the dash to your PC using the serial port, connect your PC to your dash using the serial communications cable provided with the DataLink software and turn on the power. Next select the **New** file icon in the program taskbar or the **New** menu item selection located in the **File** main menu. The following dialog box will be displayed and you will be asked to select which configuration file to use. Select the configuration file that contain VDash and your serial number as discussed the previous section.



The system will transfer the data from your data logger. While the data is being transferred the following progress box will be displayed to inform you of the systems progress.

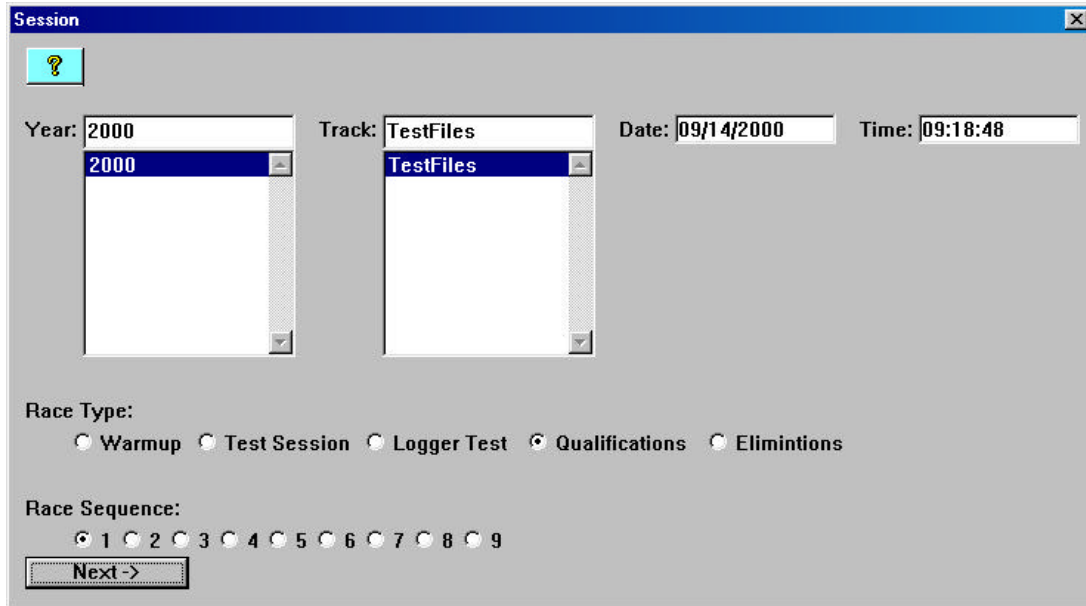


When the transfer process is completed select the **OK** button to proceed.

### *Naming and Storing the Run Data File*

After the data has been transferred from your dash a dialog box will be displayed to allow you to enter the session information. Enter the appropriate year and track by selecting the correct value from the selection lists. If the desired year and/or track is not on the corresponding selection list enter the new year or track by typing the name directly into the top selection box. The new year and/or track will be added to the selection list. Select the race type, and race sequence information by clicking on the desired radio button. The system will enter the date and time.

This information will be used to name the data file. The dialog box is shown below. If you need help on filling out the dialog box click on the help icon in the upper left hand corner of the dialog box.



Select **OK** or **Next** depending on your configuration file. Additional dialog boxes may be displayed. These are part of the Run Log sections that are user programmable to allow test information to be entered during the download process. Fill out the information as appropriate. The file save dialog box will then be displayed as shown below.



To save and view the file, select the **Save** button. To view the file only, select the **Cancel** button. If you select cancel you can save the file later if desired. A new file tab with the channel data will be opened. You are now ready to view the data.

Refer to the DataLink instruction manual for information on viewing the run data

## Viewing Real Time Data on a PC

Data from your Ultra Dash can be displayed and recorded real time on your PC computer using the DataLink program. Before you can view the data, however, you must first setup the real time parameters in your data logger. To setup your data logger's real time configuration, open your configuration file and right click on the VDash Module button. An edit dialog box will be displayed. In the center of the dialog box will be a Real – Time Telemetry section.

### Setting up the Real Time Telemetry Parameters

This section will contain two lists. The list on the left-hand side of the telemetry section will include all of the data channels currently being monitored by your data logger. The list on the right-hand side of the telemetry sections includes all those channels that will be displayed during a real time telemetry session.

To add a channel to the telemetry list highlight the name of the channel in the left-hand list and click on the right arrow → button to add the selected channel to the real-time channel list. To remove a channel from the real-time channel list highlight the name of the channel in the right hand list and click on the left arrow ←. Remember that only channels in the right hand list will be displayed during a real time telemetry session.

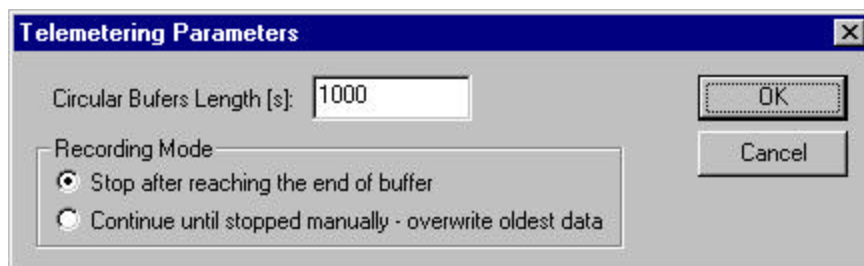
Next select the **Real Time Sample Rate** from the options list in the lower left-hand corner of the dialog box and select the desired real time sample rate. Note: the V-Net Sample rate of each of the modules to be monitored should be equal to or greater than the real time sample rate. If they are not the last data points will be repeated during the sample process.

Next select the **Real Time Communications Port** option and type in the name of the serial communications port on your PC you will be using to receive the real time data from the V\_Net system. Normally this is the same as the default Logger Com Port set in the initial software installation. Normally this is COM1.

After you have edited the options use the **Send Configuration** button to transmit the setup data to your data logger. Next select **OK** to exit the edit box. You will need to turn the power to your data logger off and then back on to allow the changes to take effect. When you have completed the edit, save the configuration file.

### Entering the DataLink Telemetry Parameters

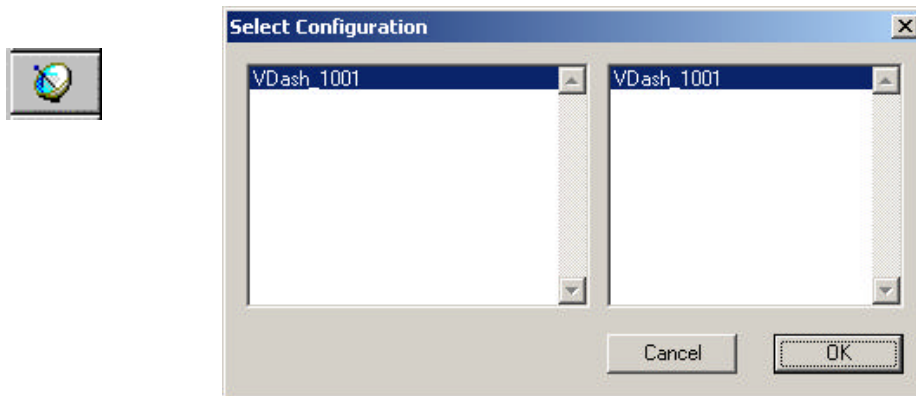
The final step in setting up the real time telemetry session is to set the DataLink real time recording parameters. These parameters are set by selecting the **Recording Parameter** menu item found in the **Telemetry** main menu selection. The following dialog box will be displayed.



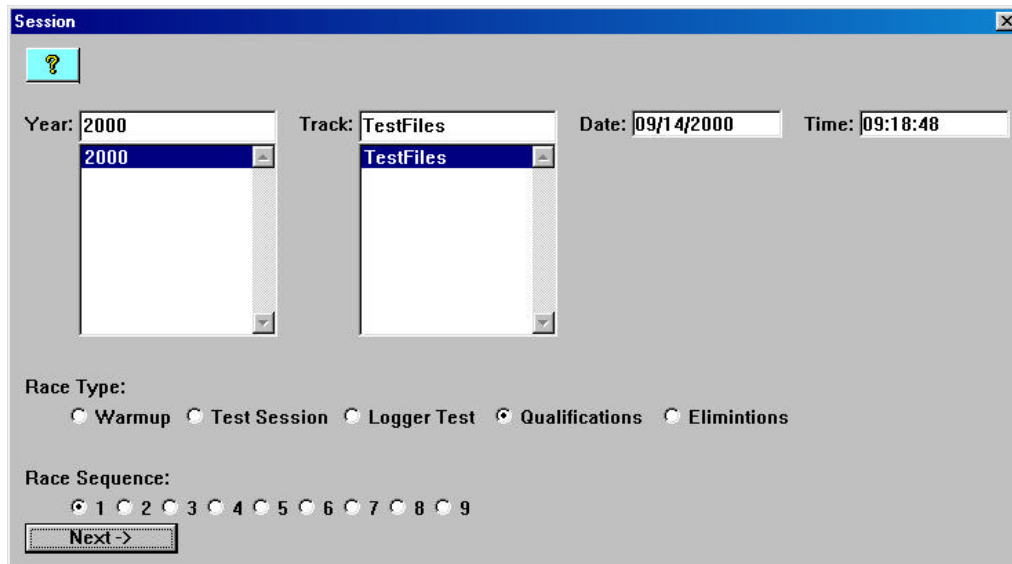
The first parameter **Circular Buffer Length** is used to set the amount of data to record in seconds. The **Recording Mode** is used to determine whether the recording will stop when the maximum record time is reached or whether the oldest data will be overwritten. For example if a Circular Buffer Length of 1000 seconds is entered and stop after reaching end of buffer is selected, the program will record data for 1000 seconds and stop. If continue until stopped manually-overwrite oldest data is selected the program will continuously record until stop by the operator. Only the last 1000 seconds of data will be stored.

### *Starting a Telemetry Session*

The next step is to start a telemetry session. Select the **Telemetry** icon shown below or the **New Telem Session** menu item located in the File main menu selection. A dialog box, as shown below will be displayed and you will then be asked to select the configuration file to use for this session.



Select the configuration file as setup above. A dialog box will then be displayed to allow you to enter the session information (the same as when uploading run data). Enter the appropriate year, track, race type, and race sequence information as shown below. The system will enter the date and time.



If you need help in filling out the dialog box click on the help icon located in the upper left-hand corner of the dialog box.

Select **OK** or **Next** depending on your configuration file. Additional dialog boxes may be displayed. These are part of the Run Log sections that are user programmable to allow test information to be entered during the download process. Fill out the information as appropriate.



The file save dialog box will then be displayed. Select the **Cancel** button. A new file tab with the channel data will be opened. Your real time data session is now ready.

The real time session is controlled via two icons located below the context sensitive help icon in tool bar. Only one icon will be active at a time depending on the status of the telemetry session. The Start Data Acquisition icon is shown active on the left. The Stop Data Acquisition icon is shown active on the right.



To start the real time data acquisition left click on the **Start Data Acquisition** Icon at the bottom of the tool bar. The data acquisition will start at time 0. Once the real time data acquisition has been started the value of the data channels will be displayed next to the channel button in the top portion of the display area. To display the data from a channel on the graphics screen simply select the channel by left clicking on the channel button in the same manner you display data from a recorded file.

To stop the data acquisition left click on the **Stop Data Acquisition** icon located at the bottom of the tool bar. The real time data acquisition session will be suspended.

If you wish to continue the real time data acquisition simply click on the **Start Data Acquisition** icon. The telemetry session will restart at the same point it was suspended. If you wish to restart the session from the beginning select **Erase** from the **Telemetry** main menu. All previously recorded data will be erased from the file.

If you wish to save the data, stop the data acquisition and use click the **Save** icon located in the tool bar or select **Save** located in the **File** main me

### Six Month Limited Warranty on Parts and Workmanship

Purchaser's only remedy and seller's only liability shall be to repair or replace materials provided by the purchaser to be defective and returned to seller with a copy of purchaser's receipt. Seller shall not be liable for any injury, expenses, profits, loss or damage, direct, incidental, or consequential, or any other pecuniary loss arising out of the use or inability to use the product in question even if seller has been advised of the possibility of such damages. Because some states do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.

It is purchaser's responsibility to notify seller of suspected defects as soon as purchaser becomes aware of them, and to follow seller's instructions to minimize further damage. Seller is not responsible for damage resulting from purchaser's inaction.

Exhaust gas temperatures are intended only for use as a tuning tool. Due to differences in installation and airflow the reported temperature at the probe may be substantially different from the temperature inside the cylinder. The determination of such differences is the sole responsibility of the user of the equipment.

**CSI assumes no liability for probes. Temperature probes are covered by 'Exhaust Gas Technologies' warranty. For warranty information on temperature probes contact EGT at 1-800-348-4678.**

Competition Systems, Inc./Racepak  
 30402 Esperanza, Rancho Santa Margarita, CA 92688  
 949-709-5555