



# IQ3 Cobra Jet Dash Manual



IQ3 Cobra Jet Dash Release Rev A 091218  
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## Manual Summary

This manual assumes that you have installed the most current version of the DataLink PC software which as of this writing is 4.8.11.

IQ3 firmware and DataLink updates can be found at <http://www.racepak.com/downloads>.

### *Manual Quick View*

The following provides a quick view of the manual layout:

1. IQ3 Cobra Jet Dash Features
  - a. Dash
  - b. Available channels for display
  - c. External optional sensors
  - d. Technical specifications
2. Installation
  - a. Dash
  - b. Software
3. Programming The Display
4. Adding Sensors
5. Software Usage

## ***IQ3 Cobra Jet Dash Functions***

The IQ3 Cobra Jet Dash is the main component of the system, as it contains the data logger and microSD memory card.

## ***PC Minimum Requirements***

Windows® XP / Vista / 7 / 8 / 10 operating system  
 USB 2.0 Port/ 1024 x 768 or higher monitor resolution

## ***DataLink Programming Software***

The DataLink software is used to both set up and configure the IQ3 Cobra Jet Dash. It will be used to modify any settings, page layouts, warning light settings, etc. The DataLink software requires a Windows based PC with a USB 2.0 port for communication. Programming cable is supplied in the kit.

## ***IQ3 Cobra Jet Dash Configuration File (software)***

The Configuration File contains the programming settings for both the dash and any internal and external sensors utilized by the IQ3 Cobra Jet Dash. Any additional sensors that were not shipped with the IQ3 Cobra Jet Dash will require updating and syncing of the configuration file.

## ***Data Recording Activation***

Any active channel may be used to start logging. From the factory, the IQ3 Cobra Jet Dash is programmed to start logging if either pushbutton is held for at least 5 seconds and stops logging when power is switched off on the dash. A data file is written every 3 seconds to the memory card during recording. When power is switched off, the last 3 seconds of data may not have been written to the card so take note of this. Once written to the card, the file is numbered in subsequent order (1,2,3, etc). The start logging channel may be changed to any valid sensor channel, by the user.

## **Terminology**

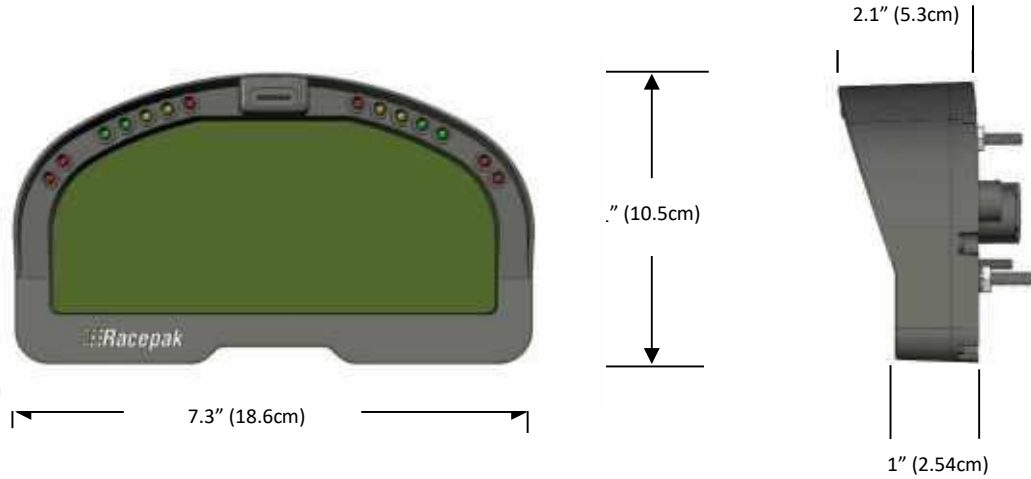
In order to assist in the installation and usage of the IQ3 Cobra Jet Dash, the following provides an outline of the most commonly used words that will be encountered in this manual:

|  |
|--|
| <b>Analog:</b> Data created by the reading of a voltage change sent from a sensor.   |
| <b>Calibrate:</b> The process of assigning values to sensor voltage output, in order to graph and analyze the sensor data.                                   |
| <b>CAN bus:</b> The specific name of the technology utilized to create the V-Net sensor system.  |
| <b>Channel:</b> The input from one sensor.   |
| <b>Digital:</b> A sensor or signal that has only two values, off or on such as the measuring of ignition pulses to calculate Engine RPM.                     |
| <b>HZ:</b> Number of times per second. Used to define sample rate. Example: 4Hz represents data that is saved 4 times (every .250) per second.               |
| <b>Sensor:</b> A device that converts a physical property, such as pressure into a voltage signal.   |
| <b>Transducer:</b> See Sensor.   |
| <b>V-Net Channel:</b> Any sensor that is connected to the V-Net port of the IQ3 Cobra Jet Dash.  |
| <b>V-Net:</b> Racepak exclusive that allows multiple sensors (analog or digital) to transmit their data over a single cable, back to the IQ3 Cobra Jet Dash. |

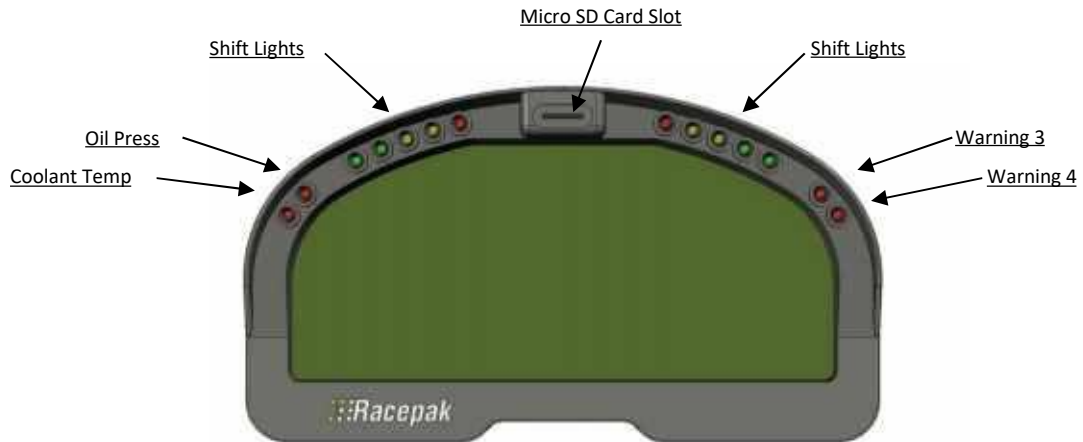


## Hardware Features

### External Dimensions

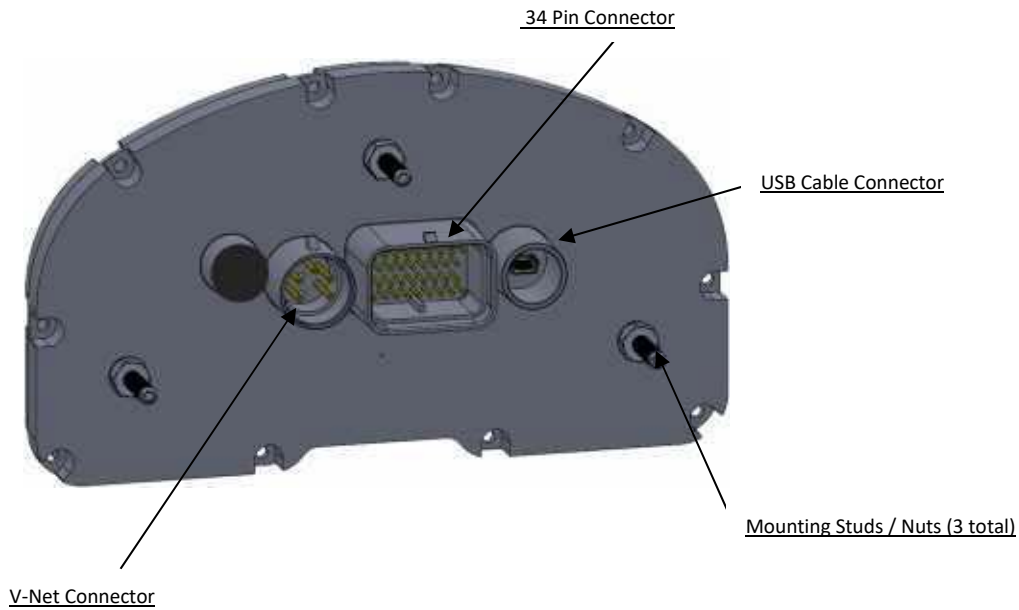


### External Features - Front



|                      |   |
|----------------------|---|
| Shift Lights         | Fully programmable sequential shift lights                |
| Coolant Temp Warning | Pre-set warning lights for high engine temperature >200°F |
| Oil Pressure Warning | Pre-set warning light for low oil pressure <50psi         |
| Warning Light 3      | Intercooler water temperature >100°F                      |
| Warning Light 4      | DCT code count > 0  |
| Micro SD Car Slot    | Location for removable memory card for data recorder      |

**External Features – Rear**



|                       |  |
|-----------------------|--|
| V-Net Connector       | Provides input for external sensor(s) V-Net cable              |
| Amp 34 Pin Connector  | Provides input for power / ground / programming buttons        |
| USB Cable Connector   | Provides input for USB programming cable supplied with package |
| Mounting Studs & Nuts | Three #10 studs and 10-32 nuts facilitate mounting             |

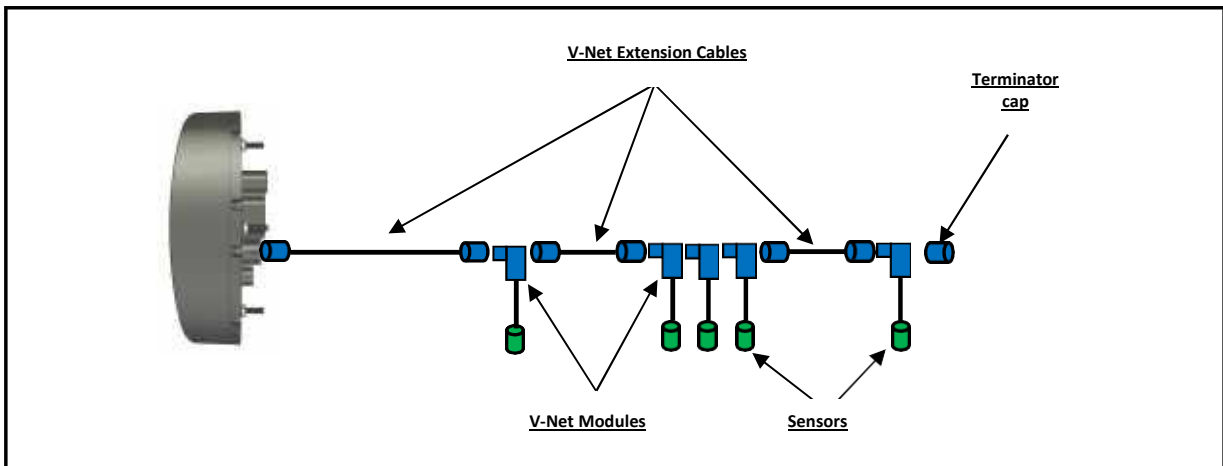
**MicroSD Memory Card**

The IQ3 Cobra Jet Dash is equipped with a microSD memory card. This card is located on the face of the IQ3 Dash, between the shift lights. The card may be removed by simply pressing on the card, which will slightly eject the card from the dash face. When inserting the card, insure it firmly “clicks” into place. The edge of the card should slightly protrude from the dash face, when seated. The IQ3 Dash supports standard microSD or microSDHC cards up to 16GB.

## ***External V-Net Sensor Connection (up to 6 additional channels\*)***

When installing any optional additional sensors to the IQ3 Dash, it will utilize the Racepak V-Net (CAN bus) for input. These added sensors are connected using “stackable” modules that connect to the round 5 pin V-Net port on the rear of the dash. This design provides the ability to transmit all sensor data through a single cable by use of these “stacking” modules. A cap is then placed at the end of the “stack” to terminate the system. The modules are typically available with sensors in kit form. Extension cables are available in a variety of lengths to connect multiple “stacks” of modules that may be installed in different locations throughout the vehicle.

To add sensors, the customer simply measures from the IQ3 Dash to the mounting location of the “stackable” module or modules, and orders the appropriate length pre-terminated V-Net extension cable. V-Net cables are available in 12” increments and are equipped with a male connector on one end and a female connector on the opposite end. In the event sensors are mounted in multiple locations throughout the vehicle, simply measure between each sensor location and order the necessary V-Net extension cables to connect all items to the main V-Net cable routed to the rear of the dash.



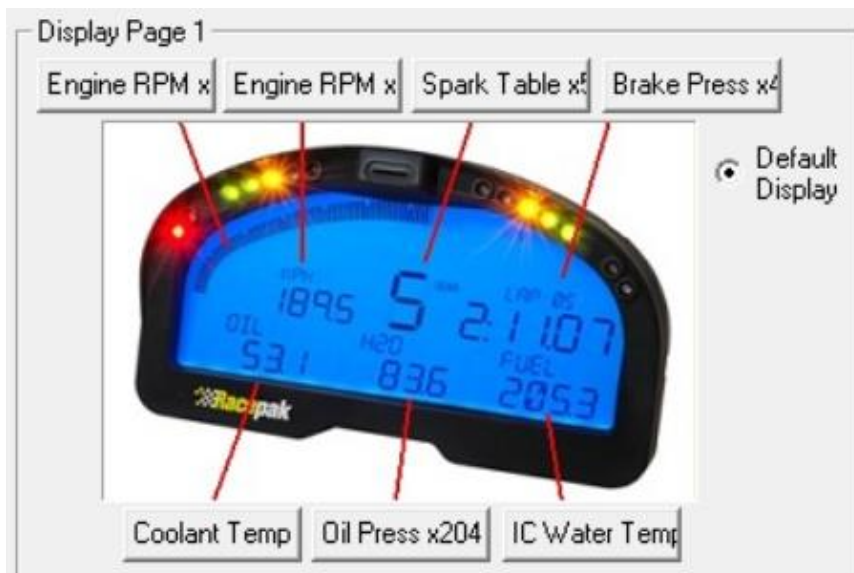
Any V-Net sensor currently offered by Racepak may be utilized by the IQ3 Cobra Jet Dash. For a complete listing of available sensors, visit our website located at [www.racepak.com](http://www.racepak.com) or contact the Racepak customer service department at 949-709-5555 for a catalog. Customer supplied sensors may also be utilized. DataLink software is used to both set up and configure the IQ3 Cobra Jet Dash using a Windows based PC. It will be used to modify any settings, page layouts, warning light settings, add additional sensors, etc. See Programming the *Display Using the DataLink Software* section shown later in this manual for further details.

**\* Additional 2- and 4-channel upgrades are available for the V-Net System on your IQ3 Cobra Jet Dash. Please contact Racepak at 949-709-5555 for further information or to purchase one of these upgrades.**

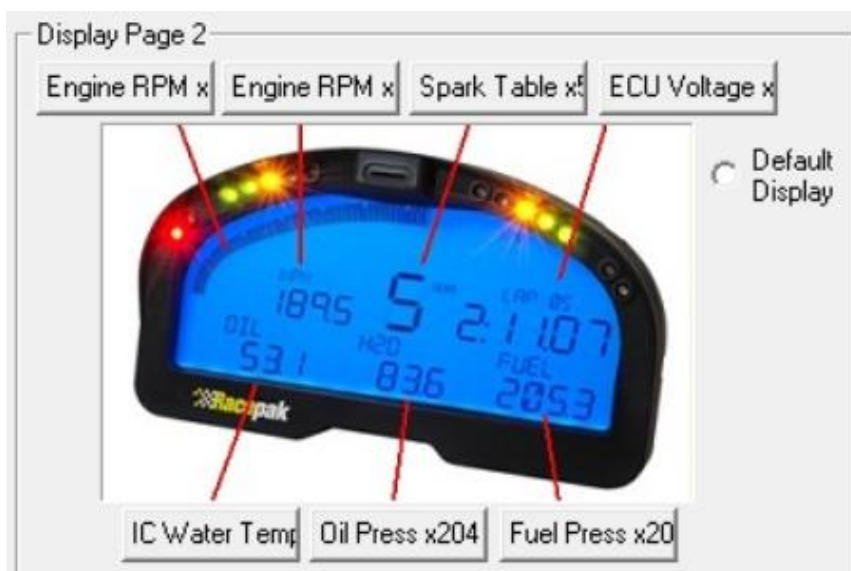
## Factory Default Display Settings

The Racepak IQ3 Dash is shipped with factory pre-programmed display pages. To modify these display pages, you must use a PC, programming cables and the Datalink program. This is outlined in the *Programming the Display Using the DataLink Software* area of this manual. Using the external programming buttons, a factory reset can be performed to revert all settings and pages back to as factory shipped (excludes hour/service values). Further details about the display page settings can be located later in this manual in the *Programming the display* section found on [page 35](#).

From the factory, Page 1 of the IQ3 Cobra Jet Dash is programmed to display the following items.



From the factory, Page 2 of the IQ3 Cobra Jet Dash is programmed to display the following items.



From the factory, Page 3 of the IQ3 Cobra Jet Dash is programmed to display the following items



From the factory, Page 4 of the IQ3 Cobra Jet Dash is programmed to display the following items



## External Programming Buttons

A variety of IQ3 Cobra Jet Dash display functions can be controlled, displayed or programmed through use of two external programming buttons known as Button 1 and Button 2. This enables the driver to make immediate changes without the necessity of connecting a PC to the dash. Instead of mounting the programming buttons directly in the dash, Racepak provides the ability to remote mount the two programming buttons for better driver access.

Racepak supplies (2) two buttons with the IQ3 Cobra Jet Dash however, the customer may utilize their own preference of momentary contact button type. The customer must ensure, the buttons selected, are normal open momentary switches and that they are capable of withstanding the environment in which they will be utilized. The buttons are connected to the 34 pin AMP connector located on the rear of the IQ3 Cobra Jet Dash. Refer to the IQ3 Cobra Jet Dash Wiring Pinout section, for pin out instructions.

Many of the programming functions found in the following section may also be performed through the use of the DataLink software and the user’s PC. These instructions can be found in the section [Programming Utilizing the DataLink Software](#) section.

### ***Button Programming Modes***

**Setup Mode:** Utilized to program items such as screen brightness or pulses per revolution (tach programming).

**Start Recording:** Utilized to start a recording when either button is held for +5 seconds. REC will be displayed in dash display area during recording.

### ***General Button Operation (Display and Setup)***

Basic programming functions of the IQ3 Cobra Jet Dash are accessed by using Button 1 and Button 2. It is recommended the two programming buttons be mounted as Left and Right in relation to the driver’s position viewing the dash. There are two programming modes available referenced as Normal Display and Setup Mode.

Since the IQ3 Cobra Jet Dash only utilizes two buttons, it is necessary to allow multiple uses for each button. In each of the modes, the length of time each button is held down, before releasing, determines the exact result. The following instructions will refer to short, medium and long button press lengths. This is the length of time the button is held down and the corresponding warning light blink. The point at which the button is released determines the type press that is accepted. As an example, releasing after the second LED warning light flash is detected as a medium length press.

| Type of Button Press     | Length of Time           | Warning Light Flash           |
|--------------------------|--------------------------|-------------------------------|
| Short Press and Release  | .2 Second before release | One Flash of Shift Lights     |
| Medium Press and Release | .5 Second before release | Two Flashes of Shift Lights   |
| Long Press and Release   | 2 Seconds before release | Three Flashes of Shift Lights |

### Button Functions in Setup Mode

While the IQ3 Cobra Jet Dash is in normal display mode, the programming buttons will perform the following functions:

| Button   | Short Press (1 flash)                 | Medium Press (2 flashes) | Long Press (3 flashes)                                    |
|----------|---------------------------------------|--------------------------|---|
| Button 1 | Advance to Next Display Page          | Enter Setup Mode         | Displays the current time in upper right display position |
| Button 2 | Clear/Acknowledge any Active Warnings | Does nothing             | Displays the current time in upper right display position |

### Programming in Setup Mode

The programming functions are arranged in a pre-defined order. This allows the user to enter the programming mode, and then toggle through to the desired feature by using the left or right button, depending on the mode.

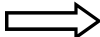

Setup Mode is used to program some basic features on the unit without the need to connect to a PC. It is utilized to program items such as screen brightness, LED brightness, reset to defaults, etc.



### Entering Setup

1. Press and hold the Button 1 for TWO shift light blinks – MEDIUM press
2. The Dash will display **SETUP 1?**
3. Confirm you wish to enter the setup mode by pressing the Button 1 for ONE shift light blink – SHORT press



To cancel entering Setup Mode, press the Button 2 for a SHORT press

The following are in the order in which the individual programming features will appear.

| Setting as Displayed on Dash | Program Setting Description  | Programming Command<br>*****               | Accept and Advance<br> | Accept and Exit<br> |
|------------------------------|--|--|---|--|
| SET DEFAULTS                 | Resets all dash settings to factory default values<br>N = No<br>Y = Yes<br><b>Auto saves and exits when selected- All settings and pages are set back to as factory shipped, except for hour/service and odometer values</b> | Short Press Button 2 to toggle between Y/N | Short Press Button 1  | Long Press Button 1  |
| SET TIME/DATE                | Adjust time of clock feature<br>N = No<br>Y = Yes<br>If Yes is selected and accepted, Button 2 increases time/value<br>Button 1 accepts value, moves to minutes, AM/PM etc   | Short Press Button 2 to toggle between Y/N | Short Press Button 1  | Long Press Button 1  |

| Setting as Displayed on Dash      | Program Setting Description   | Programming Command<br>*****   | Accept and Advance<br> | Accept and Exit<br> |
|-----------------------------------|---|--|---|--|
| BACKLIGHT                         | Backlight Brightness<br>0 = Off<br>10 = Maximum Brightness<br><b>Factory Default is 7</b>   | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| DIM BACKLIGHT                     | Dim Backlight Brightness<br>0 = Off<br>10 = Maximum Brightness<br><b>Factory Default is 3</b><br><b>Dim refers to state when pin 6 has power applied to it.</b> | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| LED BRITE                         | Onboard shift/warning LED Brightness:<br>1 = Minimum Brightness<br>10 = Maximum Brightness<br><b>Factory Default is 7</b>                                       | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| DIM LED BRITE                     | Onboard shift/warning Dim LED Brightness:<br>1 = Minimum Brightness<br>10 = Maximum Brightness<br><b>Factory Default is 3</b>                                   | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| EXT WARN BRITE                    | External Warning Light Brightness:<br>1 = Minimum Brightness<br>10 = Maximum Brightness<br><b>Factory Default is 7</b>  | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| EXT DIM WARN BRITE                | External Warning Light Dim Brightness:<br>1 = Minimum Brightness<br>10 = Maximum Brightness<br><b>Factory Default is 3</b>                                      | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| EXT SHIFT BRITE                   | External shift light Brightness:<br>1 = Minimum Brightness<br>10 = Maximum Brightness<br><b>Factory Default is 10</b>   | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| EXT DIM SHIFT BRITE               | External shift light Dim Brightness:<br>1 = Minimum Brightness<br>10 = Maximum Brightness<br><b>Factory Default is 3</b>  | Short Press Button 2 to increase value   | Short Press Button 1  | Long Press Button 1  |
| SHIFT GEAR X<br>(X = Gear number) | Program shift point for each gear.<br><b>Factory Default is:</b><br><b>Shift 1 7800 RPM</b><br><b>Shift 2 8000 RPM</b>  | Short Press Button 2 increases value by 10<br><br>Medium Press Button 2 Decreases by 500 | Short Press Button 1 advances to next gear  | Long Press Button 1  |



| Setting as Displayed on Dash | Program Setting Description  | Programming Command<br>* * * * *   | Accept and Advance<br> | Accept and Exit<br> |
|------------------------------|--|--|---|--|
| DEFAULT DISPLAY              | Default page on power up. If all positions are disabled, that page will not be displayed.<br>1 = Min<br>4 = Max<br><b>Factory Default is 1</b> | Short Press Button 2<br>Advances to next Display Page                              | Short Press Button 1  | Long Press Button 1  |
| WARN - COOLANT TEMP          | High Water temp warning value<br>Value to be used for control of High H2O temp Light (Lower Left LED)<br><b>Factory Default is 200</b>         | Short Press Button 2<br>Increases by 1<br>Medium Press Button 2<br>Decreases by 10 | Short Press Button 1  | Long Press Button 1  |
| WARN - OIL PRESS             | Low oil pressure warning value<br>Value to be used for control of Low oil pressure Light<br><b>Factory Default is 50</b>                       | Short Press Button 2<br>Increases by 1<br>Medium Press Button 2<br>Decreases by 10 | Short Press Button 1  | Long Press Button 1  |
| FAN ON TEMP                  | Fan On Output value<br>Value to be used for control for fan output<br><b>Factory Default is 180</b>  | Short Press Button 2<br>Increases by 1<br>Medium Press Button 2<br>Decreases by 10 | Short Press Button 1  | Long Press Button 1  |
| FAN OFF TEMP                 | Fan Off Output value<br>Value to be used for control for fan output<br><b>Factory Default is 175</b>   | Short Press Button 2<br>Increases by 1<br>Medium Press Button 2<br>Decreases by 10 | Short Press Button 1  | Long Press Button 1  |

## DatalinkII Software Installation

The DatalinkII software is utilized to program the IQ3 Cobra Jet Dash unit. If a previous version of DatalinkII exists on the programming PC, update to the latest DatalinkII software (version 4.8.11 or higher), following the steps below.



**During the program installation (step 6), select the unit to be utilized. Be sure to select “IQ3 Configuration for Cobra Jet” as this will install the necessary files needed for the IQ3 Cobra Jet Dash unit.**

### To install the software

1. Download the DataLinkII software from [www.racepak.com/downloads](http://www.racepak.com/downloads)
2. Start the DataLinkII installer by double clicking on the downloaded file.
3. “Welcome to the Install Wizard for DataLinkII”. Click **Next**
4. “License Agreement”. After reading, Click **Yes**
5. “Choose Destination Location” Default **C:\Program Files\DatalinkII**, Click **Next**
6. “Data Logger Installation and Support”, Select the check box for **IQ3 Configuration for Cobra Jet**, Click **Next**
7. “**Select Program Folder**”, Default is **DatalinkII**, Click **Next**
8. Install will start as noted by progress bar
9. Installing for the first time, a “**Welcome to the Install Wizard for PL-2303 USB-to-Serial**” window will open, Click **Next**
10. “**License Agreement**”, after reading, Click **YES**
11. Installation PL-2303 Wizard Complete, Click **Finish**
12. Installing for the first time, a “**Welcome to the Install Wizard for ST Driver**” window will open, Click **Next**
13. “**License Agreement**”, after reading, Click **YES**
14. Installation Wizard Complete, Click **Finish**
15. DatalinkII will now open
16. Software Installation Complete
17. Upon completion of installation, a new shortcut icon (shown right) will be added to the PC desktop with a title “DatalinkII Program”. Double click on the icon to start the DatalinkII software.



## Configuration Files

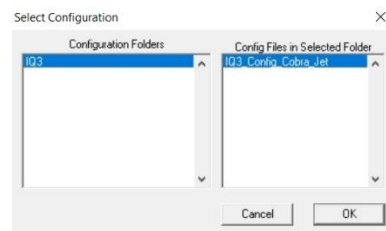
The IQ3 Cobra Jet Dash unit is shipped from Racepak, with factory default settings. To modify the settings of the IQ3 Cobra Jet Dash unit, most basic settings can be modified through the use of the programming buttons; however, the use of a PC/laptop allows complete access to all the available settings.

A PC/laptop must be connected to the IQ3 Cobra Jet Dash in one of the two fashions shown below. A configuration file on the PC/laptop will then be opened and synced (READ from) the unit. Once the settings are read from the IQ3 Cobra Jet Dash, changes are made, and SENT/WRITE back to the IQ3 Cobra Jet Dash.

### *Stand Alone or with V-Net Sensors*

When utilizing the IQ3 Cobra Jet Dash as a standalone system (i.e. **not connected** via V-Net to a compatible Racepak Data Recorder), use the factory car configuration file which was copied onto the PC during the DatalinkII software installation, listed as **IQ3\_Config\_Cobra\_Jet**. This configuration file contains the setup information for the IQ3 Cobra Jet Dash unit, and each of the internal channels connected to the IQ3 Cobra Jet Dash unit.

1. Connect PC to IQ3 Cobra Jet Dash unit using the USB programming cable supplied with the IQ3 Cobra Jet Dash unit system. (The USB programming port is located on the rear of the dash).
2. Ensure the main power is turned on for the IQ3 Cobra Jet Dash. The dash backlight will be on and lit when power is on.
3. Start the DatalinkII program by double clicking on the DatalinkII Program icon located on the Windows desktop of PC (shown right).
4. Open the car configuration file. To open the car configuration file, select **File** located in the main menu bar across the top of the screen and select **Open Car Configuration**. (Shown right).
5. The dialog box (shown right) will be displayed.
6. The list on the left-hand side of the **Select Configuration** dialog box will display all of the file folders in the RacePakData subdirectory (C:\RacePakData) that contain valid configuration files with a .rcg file extension. Select the IQ3 listing by selecting with the cursor.
7. The list on the right will now contain the list of configuration files contained in this folder. The factory configuration file for the IQ3 Cobra Jet Dash unit will be located here shown as **IQ3\_Config\_Cobra\_Jet**. Select it then click on the **OK** button.



## Programming the Display Using the DataLink Software

Many display functions of the IQ3 Cobra Jet Dash can be programmed utilizing the two external programming buttons as outlined in the Programming the Display by External Buttons section of this manual, [page 15](#). However, it is also possible to program many of these same functions along with additional functions utilizing the user's PC and DataLink program.

### *Com Port Settings*

When using a PC to program the IQ3 Dash, a programming cable must be used through the USB communication port on the back of the IQ3 Dash. A USB programming cable is provided with your IQ3 Cobra Jet Dash.

The DataLink software is set from the factory to communicate through COM3. If your PC is using a different COM port number, it will be necessary to match the DataLink and PC com port settings.

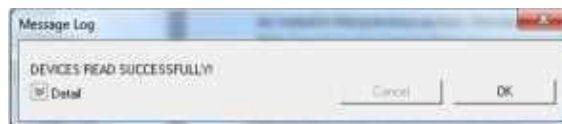
1. Connect the supplied USB programming cable between your PC's USB port and the USB port located on the rear of the IQ3 Cobra Jet Dash
2. Turn on the power to your Racepak unit.
3. Start the DatalinkII program by double clicking on the DatalinkII Program icon located on the Windows desktop of PC
4. Open the configuration file by clicking on **File -> Open Car Configuration**
5. Select the **IQ3** on the left pane, **IQ3\_Config\_Cobra\_Jet** on the right pane and click **OK**
6. Click **Edit** on the main menu bar and select **Read VNET Config**
7. A window may appear asking if you wish to default this configuration. Select the top option to make this configuration the default for all programming operations. Should you have more than one Racepak system, you may select another option that is applicable.

8. The DataLink program will check COM ports 1-255 for the presence of a Racepak unit. If found, DataLink will automatically configure the proper COM port setting for you. If a Racepak unit was not found, and you are using a USB to Serial Port adapter, ensure that you have properly installed the device adapter driver on your PC.
9. You can also manually configure the COM port settings under **Settings → Preferences**.



### Reading/Syncing of the Configuration File

1. Open the DataLink software and select **File** from the main menu area
2. Select **Open Car Configuration** from the pull down menu.
3. A Select Configuration dialog window will open. A list of folders containing Configuration files will appear on the left side, while the actual Configuration files appear on the right side. Select **IQ3** in the left window and select **IQ3\_Config\_Cobra\_Jet** in the right window.
4. Click **Edit** on the menu bar and select **Read V-NET Config**.
5. A dialog box (shown right) will appear asking if you wish to make this configuration the default configuration file. If this is the only Racepak system you will be programming, select the top option to make it the default. If using this PC to program more than one Racepak system, select the second box.
6. A message log will appear and should begin reading your system configuration. When finished the message log should display **\*\*\*\*\*DEVICES READ SUCCESSFULLY\*\*\*\*\***.

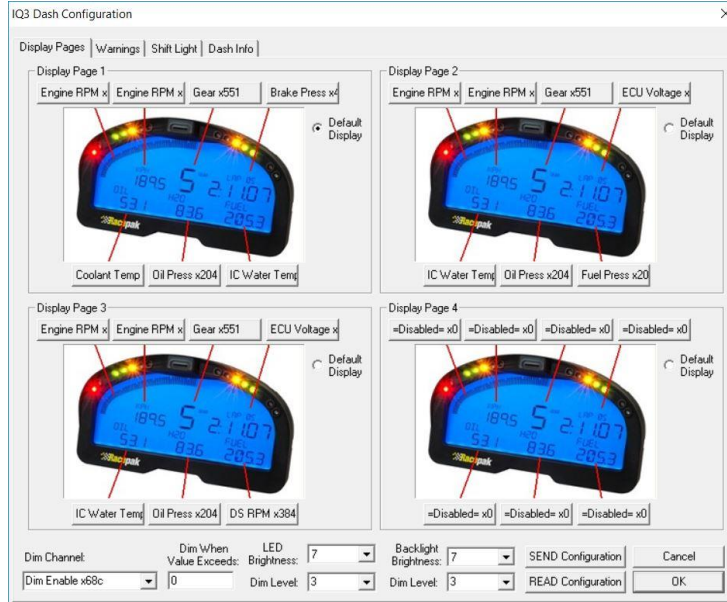


7. Click on the OK button. You should now see a new channel button for each sensor.
8. Right click on any of the channel boxes to modify/change their parameters.
9. Once any change is made, you must select **Send Configuration** to send change to the dash.



## Programming the Display Pages

Right click over the IQ3 Logger Channel Button. This action opens the following window:



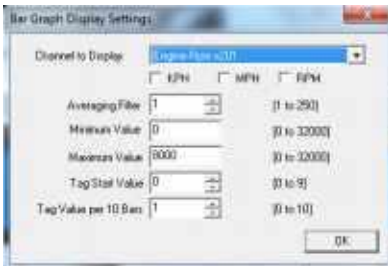
A view representing the current programming of all four display pages is obtained by selecting the Display Pages tab. Each input is programmed by selected the text box related to that input area, as indicated by the red line extending down to the dash, from each text box.

Each programming function is accessed by tabs located across the top of the page, as outlined in the following section.



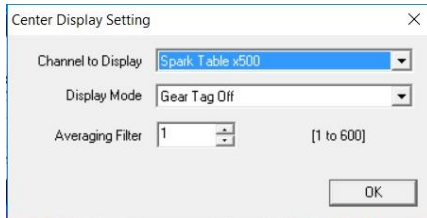
**All programming changes to the IQ3 Cobra Jet Dash must be finalized by selecting the SEND Configuration button found in the bottom right corner of each programming page.**

### Bar Graph (Sweep Tach)



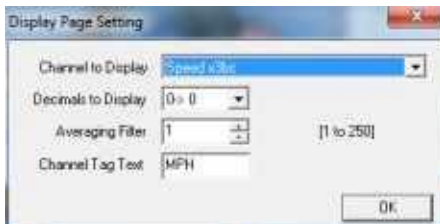
| Function              | Description  |
|-----------------------|--|
| KPH MPH RPM           | Selection defines channel name on dash   |
| Channel to Display    | Pull down arrow selects channel for bar graph data   |
| Averaging Filter      | Smooths displayed data. 10 is default  |
| Minimum Value         | Determines starting point for bar graph  |
| Maximum Value         | Determine ending point for bar graph   |
| Tag Start Value       | Determines start value for bar graph   |
| Tag Value per 10 Bars | Determines value for each 10 bar segment. <b>There are a total of 8, 10 bar segments for 80 total bars. Channel tag value <u>must</u> be equally divisible by the 80 bars to correspond correctly with a channel's actual reading.</b> |
| OK                    | Closes window following programming changes  |

### Spark Table (center of dash) "Spark Table"



| Function           | Description  |
|--------------------|--|
| Channel To Display | Pull down arrow selects sensor channel   |
| Averaging Filter   | Smooths displayed data. 10 is default  |
| Display Mode       | Selects when to display the gear number in the center display. Gear Tag Off is default |
| OK                 | Closes window following programming changes  |

### Remaining Inputs



| Function            | Description  |
|---------------------|--|
| Channel to Display  | Pull down arrow selects sensor channel                 |
| Decimals to Display | Number of digits to display after decimal              |
| Averaging Filter    | Smooths displayed data. 10 is default                  |
| Channel Tag Text    | Name/channel label to be displayed. 5 total characters |

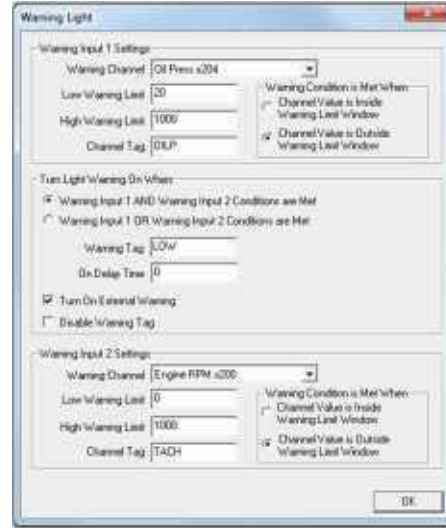
As shown above, to program an input area, simply locate the desired sensor channel by use of the pull down arrow, select the sensor channel, then define the remaining values for Decimals to Display, etc.



## Programming the Warnings

The IQ3 Cobra Jet Dash provides the ability to program up to four individual warning channels. The face of the dash contains four warning lights. Each warning light is associated with a single warning channel. To program each individual warning channel:

1. Select the “Warnings” tab.
2. Next, left click on the warning light you would like to program. This action will open the Warning Light text box.



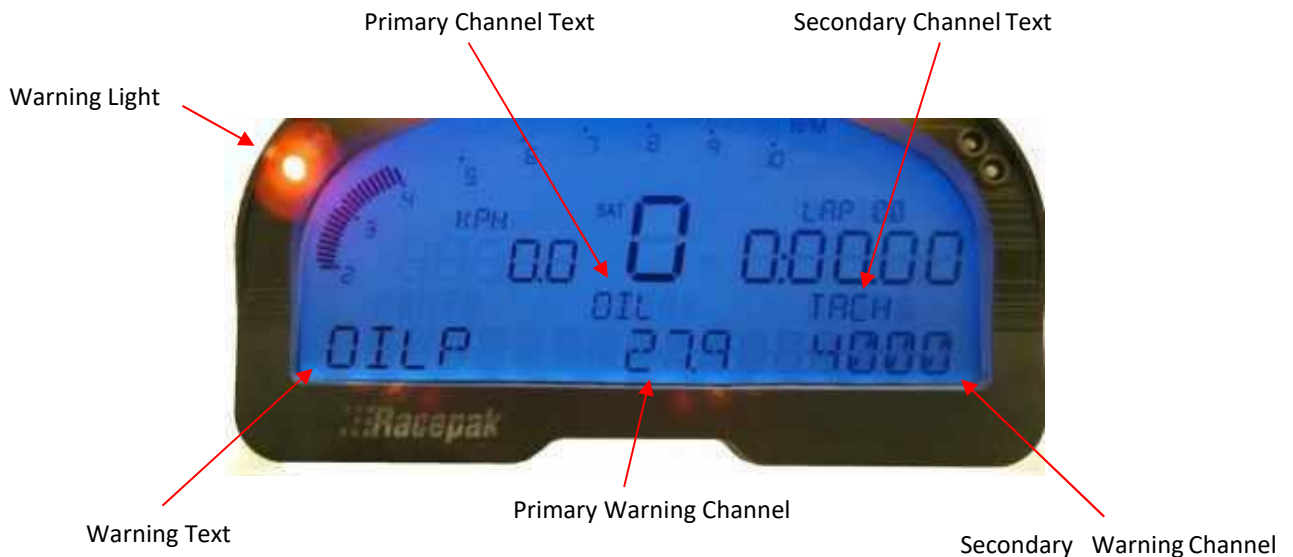
| Warning Parameter                                      | Description  |
|--|--|
| Warning Channel  | Sensor input to be used to trigger warning.  |
| Low Warning Limit                                      | Sensor value to trigger warning when below this value.   |
| High Warning Limit                                     | Sensor value to trigger warning when above this value.   |
| Channel Tag  | Text to be displayed above warning channel value when warning is activated. 5 chars max.       |
| Channel Value is Inside Warning Limit Window           | Triggers warning when sensor value is between Low and High Warning limits.                     |
| Channel Value is Outside Warning Limit Window          | Triggers warning when sensor value is below Low Warning Limit and above High Warning Limit.    |
| Warning Input 1 AND Warning Input 2 Conditions Are Met | Requires that warning 1 <b>AND</b> warning 2 conditions are met to activate warning.           |
| Warning Input 1 OR Warning Input 2 Conditions Are Met  | Requires that warning 1 <b>OR</b> warning 2 conditions are met to activate warning.            |
| Warning Tag  | Text displayed to the left of warning channel value(s) when warning is activated. 5 chars max. |
| On Delay Time  | Time in seconds to delay before warning is activated.  |
| Turn On External Warning                               | Turns on external warning when warning channel is activated.                                   |

## Example Warning Setup

As noted in the previous section, the dash warning setup allows the user to trigger a warning light based on one sensor channel or two sensor channels. In addition, a specific text warning may be programmed to display when the warning parameters are met.

In the example setup below, the dash warning was programmed as follows:

|   |
|---|
| <b>Warning Channel One:</b> Oil Pressure below 30 PSI     |
| <b>Text Above Warning Channel One:</b> OIL                |
| <b>Warning Channel Two:</b> Engine RPM above 1000         |
| <b>Text Above Warning Channel Two:</b> TACH               |
| <b>Text To Display When Warning Values Are Met:</b> Oil P |

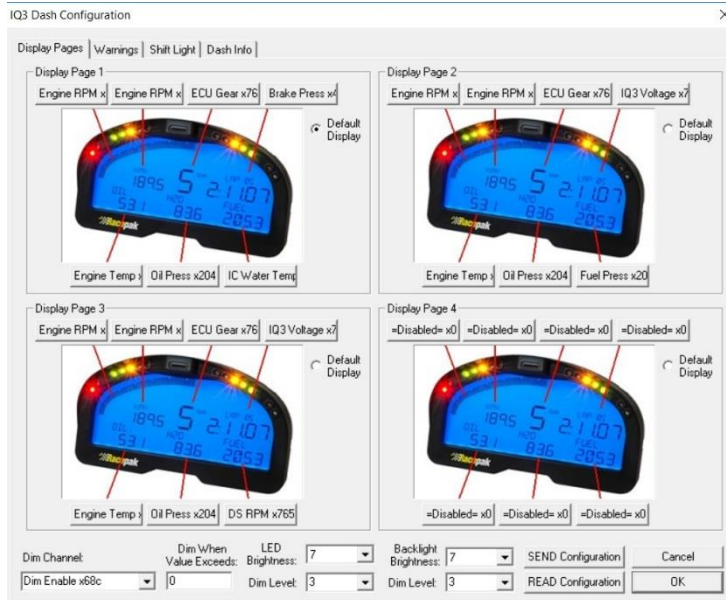


When at least one programmed warning channel is activated, the warning text will alternate between the warning channel data and the normal display page data once per second.

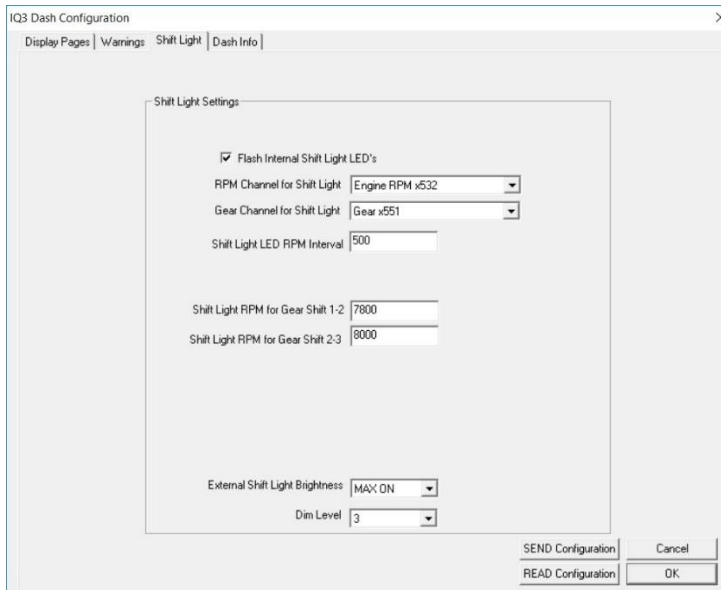
To clear ALL active warnings, enter a SHORT press on Programming Button 1. This will clear the warnings until the warning channel goes out of warning and then back into to warning again.

## External Shift Light

In addition to the internal shift lights in the IQ3 Cobra Jet Dash, an external shift light is also offered. The shift light can be programmed by right-clicking over the IQ3 Logger Channel Button. This action opens the following window:



Selecting the Shift Light tab will update the display to show the Shift Light settings. From this dialog, you can adjust your shift points for each gear as well as the External Shift Light Brightness and Dim Level. From the factory the External Shift Light Brightness is set to 'MAX ON' and Dim Level is set to '3'.

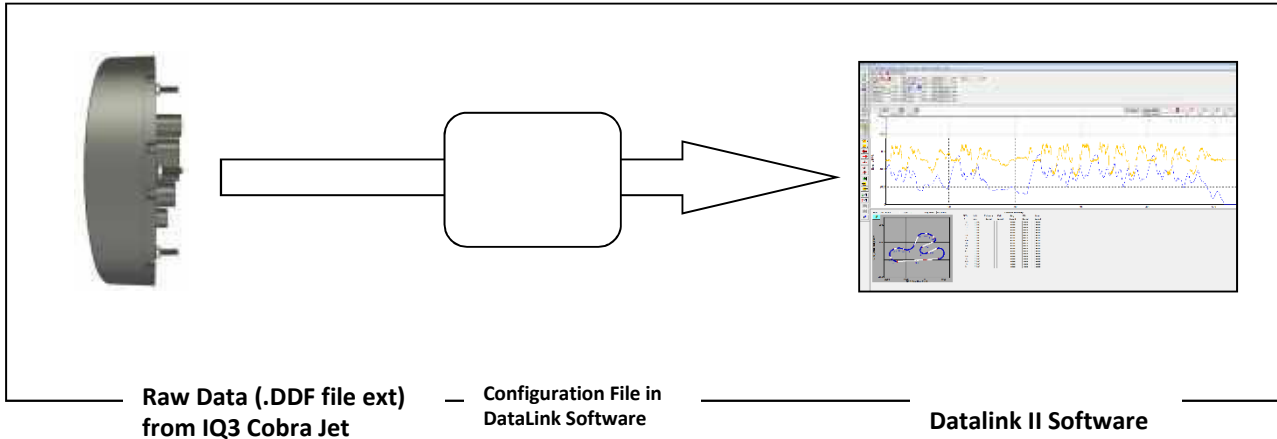


**All changes to the External Shift Light Brightness and Dim Level are controlled through the DataLink software. To ensure proper function of the External Shift Light, please ensure that the unit is set to MAX BRIGHTNESS using the white plastic buttons on the shift light assembly itself. All other functions of these buttons will be ignored.**

## DataLink II Logging and Downloading

### *Data Download Path*

The key to understanding the DataLink software utilized by the IQ3 Cobra Jet Dash is to understand the relationship between the downloaded data, the IQ3 Cobra Jet Dash Configuration file and the DataLink software.



**Downloaded Data:** Stored IQ3 data is downloaded to the user’s PC by means of the IQ3 Cobra Jet Dash microSD memory card. Before the data can be opened into the DataLink software, it must first pass “through” the Configuration file.

**Configuration File:** The IQ3 Cobra Jet Dash Configuration file, contained within the DataLink program, is automatically loaded with the installation of the DataLink software. The Configuration file contains all the information necessary to convert the raw data saved on the memory card into a format that allows the file to be opened in the DataLink software.

The configuration file is a “template” for all downloaded data, containing channel names, calibration values and scaling values, along with programming features such as the start data logging channel, etc.

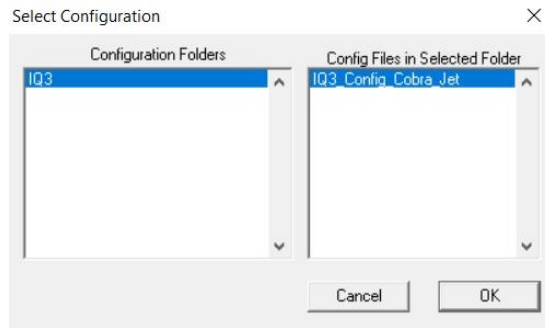
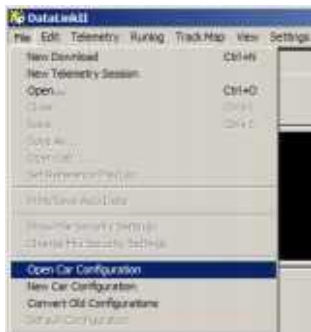
**DataLink Software:** The Datalink II software provides the ability to open and graph data contained in a runfile. The DataLink is software is generic in nature, in that it does not store information related to the data logger setup. Instead, the software contains settings relevant to the graphing of data and the user’s PC setup.


## Setting the Correct Time and Date Inside the Dash

A new data file (.ddf extension) is created on the SD memory card each time a new recording is initiated. Each file is time stamped with the time and date the recording was started to allow for easy identification of the data files upon uploading to your PC. For this reason, it is strongly recommended that you maintain the correct time in your IQ3 Cobra Jet Dash. The time can be programmed through use of two external programming buttons known as Button 1 and Button 2 OR following the following procedure using the Datalink II software.

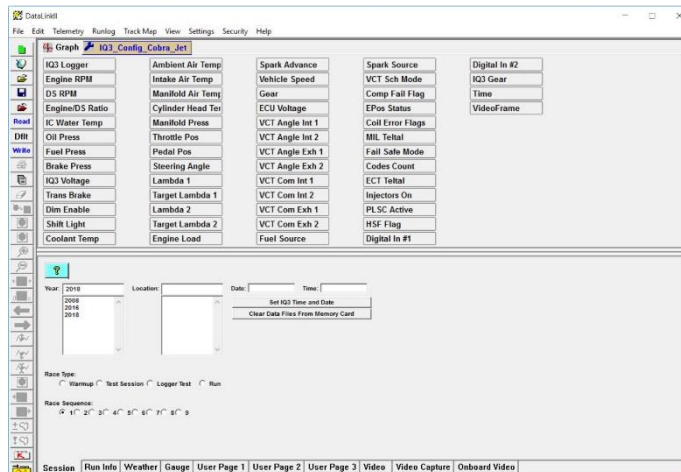
Before beginning, insure that the time and date on your PC are set correctly. The time is located in the Windows system tray at the lower right hand side of your screen. The date can be seen by placing the mouse cursor over the time display for a few seconds. You can change the time by double clicking on the time display.

Start the DataLink software and open your Car Configuration file by Clicking on **File** from the Menu bar and selecting **Open Car Configuration**. Select the configuration file named **IQ3\_Config\_CJ** and click **OK**

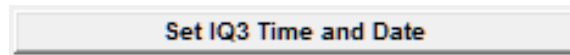


This will open your car configuration file. Next click on the  Organize Pane icon on the left tool bar.

This should bring up run log pane (located on the bottom of the screen) as shown below.



Next, insert the memory card in the memory card reader. Now click on the button labeled **Set IQ3 Time and Date** and follow the online instructions.



This procedure writes a file that contains the current time and date on the memory card. For the time to be set accurately, you must immediately remove the memory card from your PC's card reader, place it back in to the IQ3 Cobra Jet Dash and turn on the power for at least 5 seconds.

### ***Display Clock/Time:***

Clock/Time is available for viewing anytime the IQ3 Cobra Jet Dash is powered on and not in any setup modes. By default, it is displayed in the upper right area only when the button 1 is held down for a set period of time, roughly 3 seconds. Regardless of what parameter is programmed in that upper right area, the location of the clock cannot be changed.

#### **To view clock**

1. At any point, in normal viewing mode, Press and hold either button for THREE light blinks – LONG press
2. As long as the button is held, the display will show the time which was set in the Setup 1 programming menu.

To set the time, see Entering Setup Mode section found on [page 15](#).

## ***MicroSD Flash Card Reader Installation***

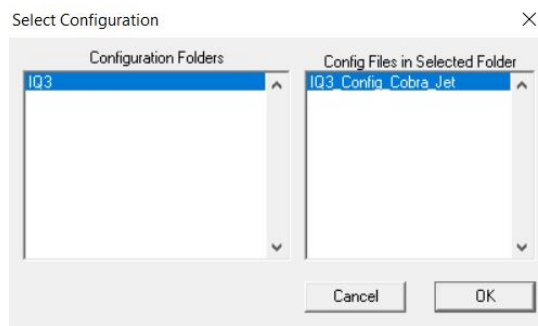
Data recorded by the IQ3 Cobra Jet Dash is stored on a microSD memory card. In order to transfer the data to the user's PC, it is necessary to utilize a microSD memory card reader. A microSD card reader is included in the IQ3 Cobra Jet Dash kit package. The reader requires an available USB port on your PC.


- ▼ The microSD memory card reader provided with the IQ3 Cobra Jet Dash does not support Windows 95 or Windows 98 operating systems.

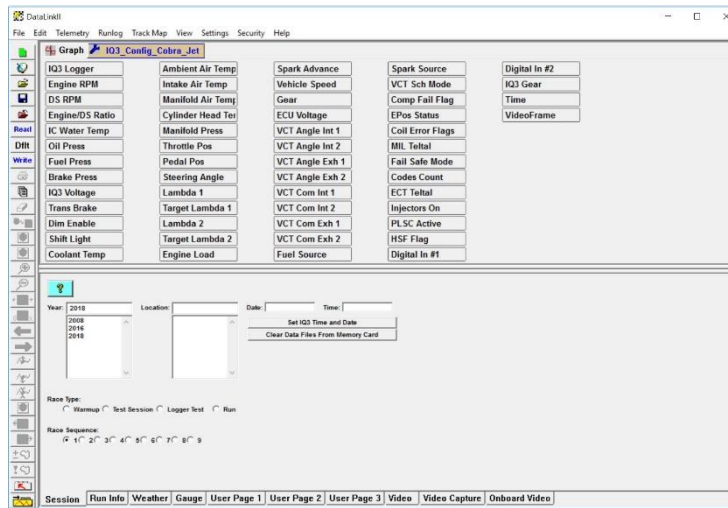
## ***Clearing Data Files from the Memory Card***

Clearing run data files after each data upload is not required but it is highly recommended that you do not allow too many run data files to build up. Storing too many data files on the memory card can also make it more difficult to identify the proper run data file on future uploads. Eventually the memory card will fill to capacity, and the data logger will no longer be able to record data. You can clear the data files from the memory card by performing the following procedure:

- 1) Start the DataLink II software and open your Car Configuration file by Clicking on **File** from the Menu bar and selecting **Open Car Configuration**. Select the configuration file named **IQ3\_Config\_Drag** and click **OK**



- 2) This will open your car configuration file. Next, click on the  Organize Pane icon on the left tool bar. This should bring up the run log pane as shown below.



- 3) Next, insert the memory card in the memory card reader. Now click on the button labeled **Clear Data Files From Memory Card**. The following screen will appear.



- 4) To delete all of the data files on the memory card click on the **Delete All Files** button. To delete only some of the data files on the card first click on the check boxes of the files you want to clear or delete. Then click on the **Delete Selected Files** button. When finished, click on the **Exit** button.



## ***Initiating a Recording***

Anytime power is applied to your system the data logger 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 staff at RacePak will have setup your data logger to start recording via pushbutton by pressing and holding either of the pushbuttons until REC appears on the dash display. The warning lights will typically flash at least 3 times before REC appears. If you wish to modify how the data is recorded read the following information.

The start of the recording can be programmed to occur by different methods. These are;

### **Start Recording Manually on Operator Input (default)**

In this mode a momentary push button switch is connected to one of the inputs on the data logger. Each time power is applied to the data logger; the logger monitors the input, and will begin recording only when either of the included pushbuttons is held down until the dash displays REC on its screen. Once the recording is started, it will continue until the maximum record time is reached, or the power is turned off.

### **Start Recording Automatically when threshold is exceeded.**

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 once a threshold has been reached, for example once the Engine RPM exceeds 3000 rpm. Once the recording is started, it will continue until the maximum record time is reached, the power is turned off, or the RPM goes below the Stop Record threshold for more than 30 seconds.

When setting the start record parameters, please keep in mind that it can take up to 1-2 seconds from the time a new recording is initiated, and the time data actually begins to be recorded. This time is required for the IQ3 Cobra Jet Dash data logger to initialize a new recording and varies depending on the number of V-Net channels installed in your system and the number of data files on the SD memory card.

## ***Recording Data***

After you have programmed the recording parameters as described above, you are ready to record run data using your new data logger. To record data simply turn on power to your system. The recording will begin any time the conditions as programmed above are met. The status of the recorder in the IQ3 Cobra Jet Dash data logger will flash REC on the screen while recording data. The recording will end when the Max Number of Seconds to Record is reached, the Start Record Channel data goes below the Stop Record Value for more than set period of seconds, or the power to the data logger is turned off.

If you have selected to automatically start the recording when a data channel exceeds a programmed threshold, be sure the data channel is functioning properly or the recording will not start. In addition, if you are trying to take a warm up recording in the pits, be sure the data channel exceeds the start threshold or no recording will be taken.

After you have recorded your data you are ready to upload the data into your PC.

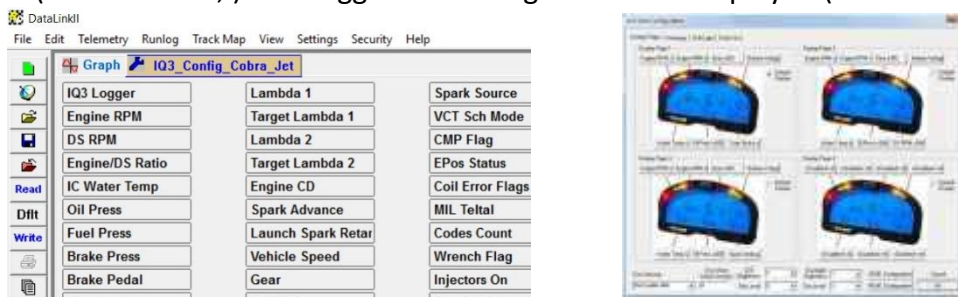
## Configuring the Record Parameters

The first step to programming the record parameters to your data logger is to connect your data logger to your PC using the serial communications cable supplied with your data logger. Once the logger is connected turn on power to your data logger.

Next, start the DataLink II program and open the car configuration file. You can do so by clicking on **File** from the Menu bar, and selecting **Open Car Configuration**. Select the configuration file named **IQ3\_Config\_Cobra\_Jet**, and click **OK**.

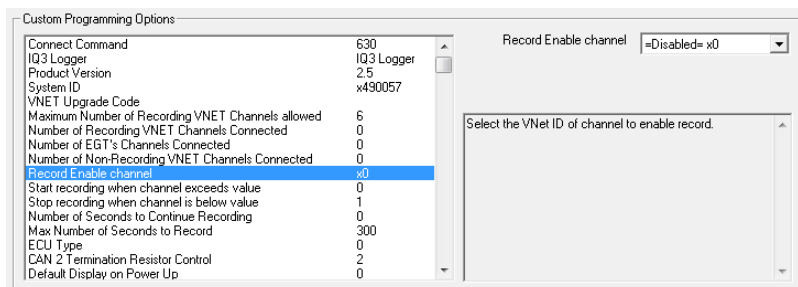


Next, position the mouse cursor over the **IQ3 Logger** channel button, and click the right mouse button (shown below, ). The logger edit dialog box will be displayed (shown below).



Located in the top of the dialog box are tabs, locate and click on the **Dash Info** tab

Next locate the Custom Programming Options area of this window



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. The options channel dropdown 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 Start Record Channel

The record enable channel is the data channel used to start or trigger the recording process. When the IQ3 Cobra Jet Dash data logger is programmed at the factory, the Start Record Channel will have been set to **Disabled = x0** as shown below. In this setting, the data recording is only initiated via the utilizing the either pushbutton input. To start the recording automatically when a selected parameter exceeds a preset threshold, select the desired parameters name from the list displayed in the edit box as described below.



To program the record enable channel, locate the **Start Record Channel** option, and select it as described above. The options channel dropdown box will be updated with the names and ID's of all of the currently installed parameters measured by your system. To enter a new value, click on the down arrow located on the right side of the option edit box. 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 Start Recording Threshold Value

This option is used in conjunction with the **Start Record Channel** to determine when the recording is started. By default, since the Start Record Channel has been factory set **Disabled = x0**, as the pushbuttons start the recording. In this case, the record option threshold is ignored.

If you have selected any other channel, the recording will start any time the value of the selected channel exceeds the value of the record threshold. If you are using an on/off switch connected to a digital input on your data logger to manually start the recording, you will need to set the Start Record Value to 0. A digital input channel in event mode only has two values, 0 when the switch is off and 1 when the switch is on. In this case, a value of 1 is greater than 0 and the recording will start.

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

A **Stop Recording when channel is below** value can also be set. This allows a lower threshold to end the recording that is in process when the selected channels value falls below this set number for a minimum set number of seconds as designated by the **Number of Seconds to Continue Recording** time.

## Setting the Record Length

Locate the **Max 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.

## Sending the Record Parameters to Your Data Logger


The final step in programming the record parameters on your data logger is to send the configuration just edited from your PC to your data logger over the USB communication cable connected above. 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 data logger. When completed, the last line in the progress box should read **Devices Programmed Successfully**.

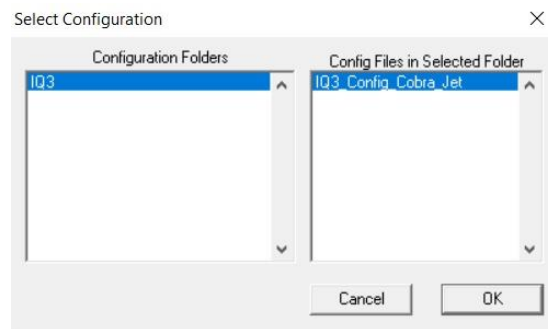
You have completed the programming of your data logger. The new programming will become effective the next time you turn your data logger on.

## Uploading Recorded Data to your PC from the IQ3 Cobra Jet Dash

Data from your IQ3 Cobra Jet Dash data logger can be uploaded to your PC for data viewing and analysis using the RacePak DataLink II program. Follow the instructions below to upload data from the SD memory card to your PC.

Remove the SD memory card from the IQ3 Cobra Jet Dash data logger and place it in the SD memory card reader connected to you PC.

Next, click the  New Upload icon at the top of the left toolbar.




Select the configuration file named **IQ3\_Config\_Cobra\_Jet** and click **OK**.

The first time you attempt to upload data you will need to select the memory card reader drive.

To do this click on the drop down box labeled **Look in:** and then click on the drive labeled **RACEPAK\_SD** as shown in the picture below.



Now you should be able to see the data files that were recorded by your IQ3 Cobra Jet Dash. The first file recorded would be named 1.ddf, the second 2.ddf, the third 3.ddf and so on. If you would like to see the time and date the data files were created, you will need to click on the  details icon in the upper corner.



The time and date will now be shown. However, they typically cannot be seen because they are off to the right of the screen. To fix this, you will need to drag the window larger by placing the mouse over the lower right corner. Now using left mouse button, click and drag the window larger.



After you have identified the data file you would like to upload, select the file by clicking on it with the left mouse button, and then click on the Open button in the lower right corner.

### ***Naming and Storing the Uploaded Data***

After the data has been uploaded from the memory card, 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.

The 'Session' dialog box includes the following elements:

- Year:** A dropdown menu with options 2008, 2016, and 2018.
- Location:** A dropdown menu with the selected option 'Anywhere Raceway'.
- Date:** A text field containing '09/14/2018'.
- Time:** A text field containing '11:38:26'.
- Buttons:** 'Set IQ3 Time and Date' and 'Clear Data Files From Memory Card'.
- Race Type:** Radio buttons for 'Warmup', 'Test Session', 'Logger Test', and 'Run'.
- Race Sequence:** Radio buttons for '1' through '9'.
- OK:** A button at the bottom center.

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 appropriately. 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.

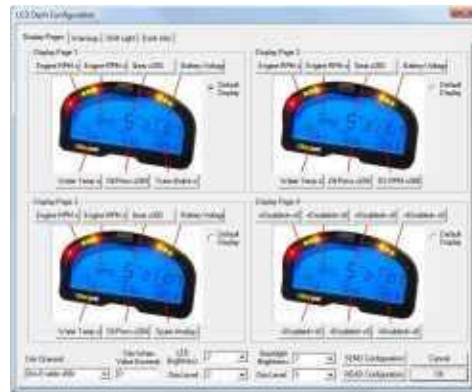


## Viewing Real Time Data on your PC

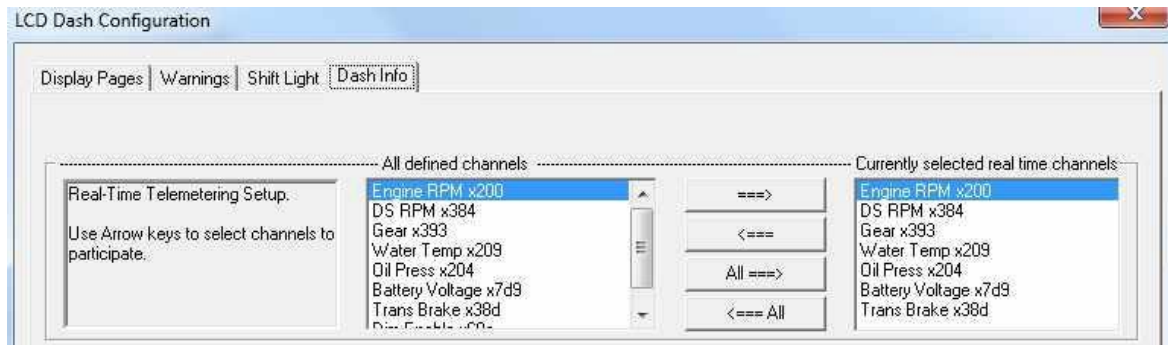
Real Time data from your IQ3 Cobra Jet Dash data logger can be displayed and recorded on your PC computer using the DataLink II program. Before you can view the data however, you must first setup the real time parameters in your data logger. To setup your data logger's real time configuration, position the mouse cursor over the **IQ3 Logger** channel button, and click the right mouse button.



The logger edit dialog box will be displayed (shown below). Located in the top of the dialog box are tabs, locate and click on the **Dash Info** tab



An edit dialog box will be displayed. The top area of the dialog box will be a Real – Time Telemetry Section.





## ***Setting up the Logger 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 button. Remember that only channels in the right hand list will be displayed during a real time telemetry session.

From the options list in the lower left-hand corner of the dialog box, select the **Real Time Sample Rate** and select the desired real time sample rate. **Note:** the V-Net Sample rate of each module(s) to be monitored should be equal to or greater than the real time sample rate. If they are not, then 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 setting in the initial software installation. Normally this is COM1.

After you have edited the options, use the **Send Configuration** button to sync 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 Real Time Telemetry Parameters***

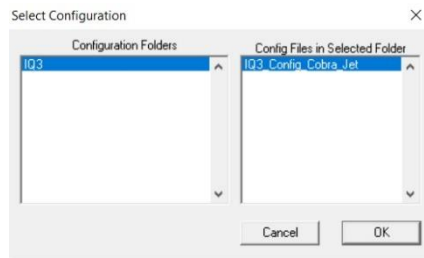
The final step to setting up the real time telemetry session is to set the DataLink II real time recording parameters. These parameters are set by selecting the **Recording Parameter** menu item found in the **Telemetry** main menu selection. The following dialog box will be displayed.



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 1000 seconds is entered for Circular Buffer Length 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 stopped by the operator. Only the last 1000 seconds of data will be stored.

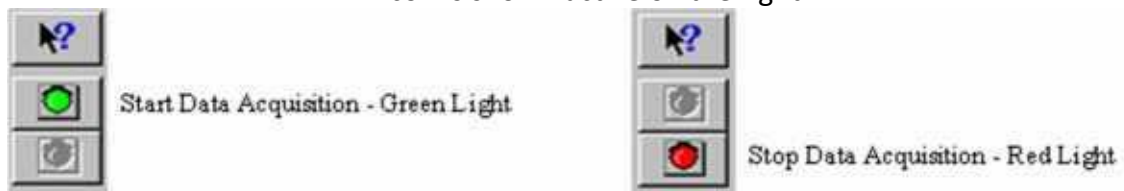
### ***Starting a Telemetry Session***

The next step is to start a telemetry session. Select the **Telemetry** icon  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 asking if you wish to start real time data session. Be sure USB programming cable is connected to dash AND the dash is powered up.

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 click the **Save** icon located in the tool bar, or select **Save** located in the **File** main menu.

## ***DataLink II Help Files***

The DataLink II software includes a complete selection of help files, which can be accessed as shown below:

Main Menu or any open Dialog Box: To get help for any of the menu items simply highlight the menu item by placing the mouse cursor over the menu item. Next press the F1 key to display the help.



Icon Tool Bar: Select the ? button located at the bottom of the icon toolbar. The mouse cursor will change to a? Position the mouse cursor over toolbar icon for which help is desired and click the left mouse cursor. Help will be displayed



DataLink Program Screens: Select the ? button located at the bottom of the icon toolbar. The mouse cursor will change to a? Position the mouse cursor over the section of the DataLink II screen for which help is desired and click the mouse button. Help will be displayed.



Runlog Pages: To get help on a run log page look for the blue icon with a question mark. Simply click on the button to display the help for the run log page.

Help from Main Menu: Click on the Help main menu selection and select the Help Topics menu selection. The Help Topics: DataLink II Applications Help will be displayed. Follow the instructions included with the help box to navigate thru the online help

## Dash Info Tab

The Dash Info contains setup parameters specific to the dash. Locate the Custom Programming Options area. This is found on the left side of the page.

To change any of the following parameters, place the mouse cursor on the desired text line and left click. This will activate the input box for the particular setting to the right of the selected text line. Changes are entered in the input box and then sent to the dash via the SEND Configuration button as found in the lower right corner of the open window.

In most instances, these settings are also accessed by the external programming buttons

### IQ3 Logger

Product type, do not change

### Dash Model

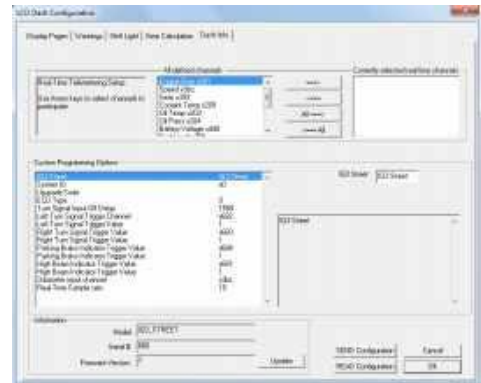
Dash model

### Dash Serial #

Serial number for product

### Firmware Version

Firmware version for connected product. Updates, when available, are posted at <http://www.racepak.com/downloads/>



## Troubleshooting and FAQ

The IQ3 Cobra Jet Dash is designed to provide trouble free performance. At times, problems could be encountered that may affect data. We have attempted to provide answers for some of the most common questions and problems.

### ***DataLink will not communicate with the IQ3 Cobra Jet Dash***

The IQ3 Cobra Jet Dash contains a built-in USB adapter that allows it to communicate using a COM port connection with its USB cable.

Verify the correct COM port of the user's PC is selected. To perform this procedure:

- A. Connect the USB cable between the IQ3 Cobra Jet Dash and your PC
- B. Turn on the power to the IQ3 Cobra Jet Dash and wait 5 seconds
- C. Locate the Device Manager within Windows
- D. Locate Ports (COM & LPT) in the list
- E. Select the + or ▼ to expose dropdown list
- F. Ensure the Racepak USB Device is listed and a COM number is listed
  - i. If no listing is found, check power on dash and ensure the DataLink software was properly installed as the USB driver is installed during the software installation.
  - ii. If listing is shown, note the COM number and exit the device manager
- G. Open DataLink software, go to Settings->Preferences within the Menu Bar
- H. Select matching COM port number from the Logger COM Port setting

### ***V-Net Sensor Channels "lock up" from time to time***

If a V-Net channel is subjected to excessive electrical interference, the channel will shut down for a period of time, then re-set and start displaying again. Ensure none of the V-Net modules or cables are against or in the immediate area of ignition system components.

## Conclusion

We hope this manual has proved helpful to your entry into the usage of the Racepak IQ3 Cobra Jet Dash. While the knowledge gained from our data system will provide a benefit to any race team. Taking the time and effort to learning how to utilize the system will prove most beneficial.

As with any endeavor, the work invested in properly learning the usage of the product will pay dividends in the customer's satisfactory. There are a variety of books available concerning the data analysis. Take time to locate and read of the manuals to learn the proper method of utilizing the product.

As always, if there are any questions concerning any aspect of the system, please feel free to contact the Racepak support personnel at 949-709-5555.

Thank you,

Racepak Data Systems







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