



Omega Dash

Quick Start Guide



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Contents

Introduction	1
System requirements.....	2
System display.....	2
Standalone unit.....	2
Installation	3
Installing an Omega dash	3
Omega dash overview	5
Parts of the Omega dash display.....	5
Omega dash controls.....	6
Dash backlight	7
Display pages	7
Onboard Sensors and Channels.....	7
Gears	8
Alarms.....	8
Fuel.....	9
Omega dash setup	10
Getting Started.....	10
Initial Setup	10
Factory default settings.....	15
Before an outing.....	16
Calibrating sensors	17
Configuring Channels	19
Pit Lane Setup	28
Watching Channels.....	31
During an outing	33
Start mode	33
Race mode.....	33
Changing display pages.....	34
Alarms.....	35

After an outing.....	37
Telltale mode	37
Channel Help	38
Using Club Qualifying Mode	39
Club qualifying mode operating modes.....	39
Resetting CQM stored lap data.....	41
Dimensions	42
Omega dash	42
Panel cutout	42
Contact information	43

Introduction

The Omega dash is one of a range of Pi Research dashes that are designed to replace the normal set of analogue instruments in a race car. The Omega dash has an LCD that can be used to display channel values from on-vehicle sensors, supported Engine Control Units (ECUs), and Pi Delta or Pi Sigma systems.

Note. For details of the full range of supported ECUs, contact Pi Research Support.

When used as part of a Delta or Sigma system, the Omega dash can be used with a number of Satellite modules. The Omega dash contains circuitry to drive and power up to eight Satellite modules connected together in a 'daisy chain'. The Satellite module range consists of an Alarm module, a Gear/shift light module, a 5 digit 7-segment LED Numeric display module and a 5 digit 7-segment LCD Numeric display module.

A dual colour blue/red LED back-light is fitted to the Omega dash. This illuminates the Omega dash display, and improves contrast in low light conditions.

System requirements

System display

To use the Omega dash as a system display you will need one of the following systems:

- Pi Delta logger
- Pi Sigma logger (Elite or LLB)
- Pectel SQ6 ECU

The Omega dash should be configured in **SQ6 DEFINED** or **LOGGER DEFINED** display mode as detailed in the Initial Setup section.

All further setup is then performed using the system software. For setup details you will need to refer to the Hardware Reference and User Guide for your system.

Standalone unit

To use the Omega dash as a standalone unit with a set of on-vehicle sensors, you should install a supported set of Pi Research analogue sensors (such as those supplied as part of your Omega dash kit). Contact Pi Research for details on the sensors that can be used with an Omega dash.

The Omega dash can also receive and display data from a supported ECU (Pectel or MBE). Contact Pi Research for details on the ECUs that can be used with an Omega dash.

If you wish to record the data provided by your sensors, you can connect a Pi Research Compact Logger (available separately).

Installation

You can either adapt your existing dash panel or make up a new one specifically for the Omega dash.

When choosing a location for the Omega dash remember that:

- The Omega dash must be electrically and mechanically isolated from the vehicle chassis;
- the Omega dash display must remain visible once any removable control units (such as the steering wheel) are in place;
- the Omega dash should be viewed head-on (i.e. perpendicular with the driver's line of vision).

Installing an Omega dash

Caution: *The Omega dash can be used to drive a number of Satellite display modules. To prevent damage to your Pi System from a current overload, the Omega dash must be connected through a separate fused connection to the vehicle battery.*

When installing the Omega dash:

1. Make sure that there is sufficient space behind the dash panel for the cables to exit.
2. Refer to the figures in the Dimensions section of this manual for Omega dash overall dimensions and dash panel drilling dimensions.
3. Use the supplied anti-vibration mounts to install the Omega dash.
4. Make a cable exit hole that is large enough for the AutoSport connectors and looms to pass through.
5. Do not bend looms so that they place a strain on the AutoSport connectors.

Remote Shift / Alarm LED module

The remote shift / alarm LED module can be mounted on the top of the Omega dash using the supplied screws, or in an alternative location in the vehicle to aid visibility.

Remote driver switch

The remote driver switch loom consists of a single toggle switch connected to a loom that plugs into a loom connector on the rear of the Omega dash.

The remote switch can be fitted anywhere that the driver can comfortably reach.

The switch should be mounted so that it is switched up and down from the central position.

Omega dash overview

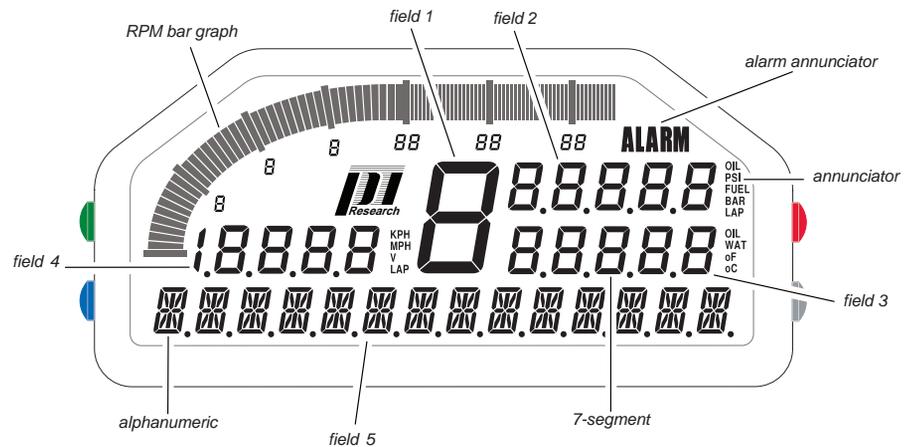
Overview

Parts of the Omega dash display

The Omega dash display has one RPM bar graph and five fields, which can be used to display channel information.

The fields can have one or more of three types of display character:

- alphanumeric characters (also known as star-burst characters)
- 7-segment characters
- annunciators



Parts of the Omega dash display

Alphanumeric characters

Alphanumeric characters can be used to display channel values or limited amounts of text.

7-segment characters

7-segment characters are commonly used to display the value of a channel.

Annunciators

Annunciators are used to highlight areas of the Omega dash by providing fixed text labels for channel values, for example 'Fuel', 'Water' or 'Boost'.

Omega dash controls

The Omega dash includes 4 integrated buttons that are used to configure and operate the dash.

The buttons have the following general functions:

Button	Press Function	Hold Function
	Scroll up	Channel Help Mode
	Scroll down	Watch Channels Mode
	Select Cancel Alarm (in race modes)	Pit Setup Mode
	Back Exit	Reset Fuel

Dash backlight

The Omega dash backlight can be set to the ideal brightness and colour for optimal visibility in your vehicle. Two-colour LEDs enable you to select a range of colours from blue, through purple, to red.

Display pages

The information displayed on the Omega dash is organised in pages. There are three types of page; pit, race and telltale. The channels on these pages are grouped together, giving suitable channels for starting the engine and checking sensor channels, a race session and an outing summary.

The Omega dash has a default set of channels for each page, however if you are using the dash as a system display for a Pectel SQ6 ECU or Pi Delta or Sigma system you can change the channels that are displayed using the appropriate setup software (see your system User Guide for details).

Onboard Sensors and Channels

The Omega dash includes the following onboard sensors and channels:

Sensor / Channel	Description
Accelerometer	Provides data to calculate cornering speed and generate outing maps if the Omega dash is used with a suitable logger (e.g. Pi Research Compact Logger).
Battery Voltage	Supply voltage sensor
Gear Number	Speed and RPM input values are used to calculate gear number. (See Gears section for more details)

Sensor Inputs

The Omega dash displays values from the following inputs when used as a standalone unit with on-vehicle sensors and/or a supported ECU (or Pi Interport):

Input / Channel	Example Sensor		ECU
Beacon	0 Channel Beacon Rx	01F-034119	—
Wheel Speed	Active Wheel Speed Sensor	21A-0144	selectable
RPM	4 Stroke RPM Box	01F-152080	selectable
Oil Pressure	Pressure Sensor 10 bar	21A-0091	selectable
Coolant Temperature	Temperature Sensor	01G-233020	selectable
Fuel Pressure	Pressure Sensor 10 bar	21A-0091	selectable
Oil Temperature	Temperature Sensor	01G-233020	selectable
Throttle Position	Throttle Potentiometer	01G-233029	selectable
Advanced mode only			
Front Damper Positions	Linear Potentiometer	01G-233034	—
Rear Damper Positions	Linear Potentiometer	01G-233034	—
Brake Pressures (Front and Rear)	Brake Pressure Sensor	01K-050620	—
Thermocouple Temperatures	EGT Thermocouple	21A-0045	—
Steering Position	Rotary Potentiometer	30K-162085	—

Gears

The Omega dash can be set up to auto-detect the current gear ratio using information from the RPM and wheelspeed sensor inputs. This provides a quick and easy way of displaying a gear number without having to add extra sensors to your vehicle. (See the Setting up Gear Ratio Display section for more details)

Alarms

The Omega dash can display alarms by changing the backlight colour, displaying the ALARM annunciator on the dash and lighting the red alarm LED on the remote shift / alarm LED module.

When using the Omega dash as standalone unit, the alarm thresholds can be defined for the following standard alarms using the Initial Setup mode (see the Alarms section for details.)

Alarm	Default threshold	Threshold type
Oil pressure	40.0 PSI	MIN
Coolant temperature	110 °C	MAX
Oli temp	110 °C	MAX
Battery	11.0 V	MIN
Fuel pressure	40.0 PSI	MIN

When using the Omega dash as a system display for a Pi Delta or Pi Sigma system, alarms can be configured for any input channel using the appropriate setup software (see your system User Guide for details).

Fuel

When using the Omega dash as a standalone unit with a supported Pectel ECU, you can configure the dash to provide fuel usage information. This feature is especially useful in endurance racing with the Omega dash predicting the number of laps remaining until a refuelling stop is required.

Omega dash setup

Getting Started

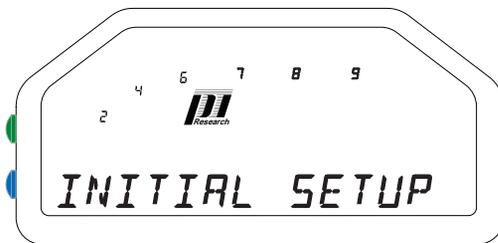
Before you can use your Omega dash, it must be configured with some basic setup information. You will need to complete the following steps in Initial Setup mode before you can start using your Omega dash:

- Choose a Display Mode for the dash
- Choose a Sensor Mode for the dash
- Enable Advanced Mode (if required)

Initial Setup

To enter Initial Setup Mode

1. Hold down the  and  buttons until the **INITIAL SETUP** message appears on the dash:

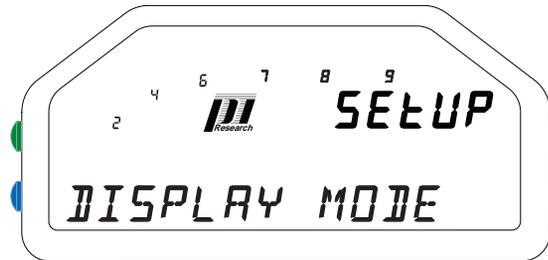


Initial Setup message

2. Press the  button to enter Initial Setup mode.

Pressing the  and  buttons will then cycle through the available menu options.

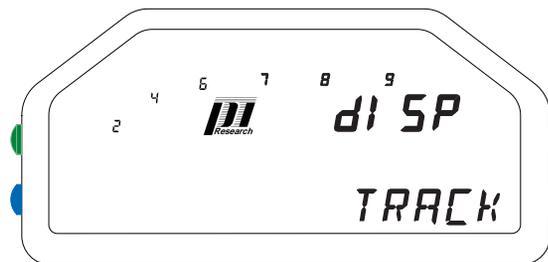
The first setup option is **DISPLAY MODE**.



Display mode - Setup option screen

To select a Display Mode

3. Press the  button to enter Setup - Display Mode.



Display mode - Track option screen

4. Press the  or  button to cycle through the available display mode options:

Display Mode	Description
TRACK	Default race mode. Lap times are calculated from beacon signals and telltales are available after an outing.
DEMO RUN	Demonstration mode - ideal for testing your dash or when showing your vehicle. The display cycles through a set of fixed values, changing every 30 seconds.
DEMO FIX	Fixed display demonstration mode - ideal for testing your dash or when showing your vehicle.

Display Mode	Description
SQ6 DEFINED	Select when running the dash as a system display with a Pectel ECU. Additional setup is required using DeskProW or CalTool. Consult the User Guide for your system for details on configuring the dash display.
LOGGER DEFINED	Select when running the dash as a system display with a Pi Delta or Pi Sigma system. Additional setup is required using Pi Workshop or Delta LMS. Consult the User Guide for your system for details on configuring the dash display.
TRACK DAY	Identical to Track mode but lap times are not displayed
TRACK + FUEL	Identical to Track mode with fuel calculation features (requires a Pectel ECU).

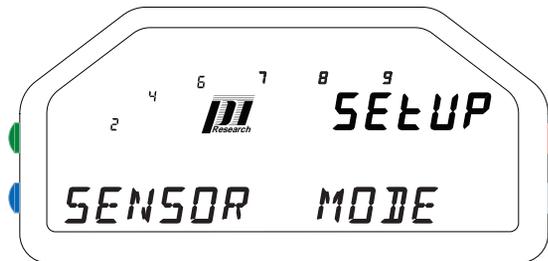
- When the required display mode is shown, press the  button to return to Initial Setup mode.

When using the Omega dash in either **LOGGER DEFINED** or **SQ6 DEFINED** display mode you do **not** need to select a Sensor Mode - simply press the  button to store the Initial Setup and reset your dash.

Ensure you have set up your system by following the instructions in your system User Guide and you are ready to begin.

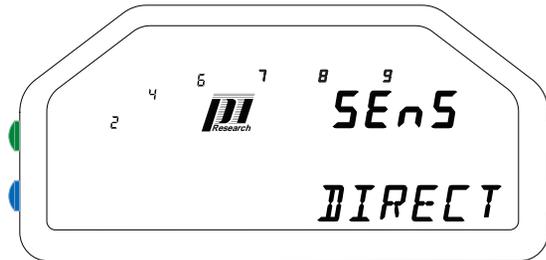
Select a Sensor Mode

- Press the  button to scroll to the **SENSOR MODE** option screen:



Initial setup - Sensor Mode option screen

7. Press the  button to enter Setup - Sensor mode.



Sensor mode - Direct option screen

8. Press the  or  button to scroll through the available Sensor mode options:

Sensor Mode	Description
DIRECT	Default sensor mode - channel information is displayed direct from the sensors installed on your vehicle.
TEST MODE	For testing your dash or your vehicle sensors.
INTERPORT	Select when using your Omega Dash with a Pi Research Interport. Channel data is displayed from the vehicle CAN stream provided by the Interport. You can select to use on-vehicle inputs instead of specific Interport channels using the Sensor Configuration menus.
PECTEL	Select when using your Omega dash with a Pectel ECU. Channel data is displayed from the datastream produced by the ECU. You can select to use on-vehicle inputs instead of specific ECU channels using the Sensor Configuration menus. (See Before an Outing for details)
MBE	Select when using your Omega dash with an MBE ECU. Channel data is displayed from the datastream produced by the ECU. You can select to use on-vehicle inputs instead of specific ECU channels using the Sensor Configuration menus. (See Before an Outing for details)

9. When the required Sensor mode is shown, press the  button to return to Initial Setup mode.

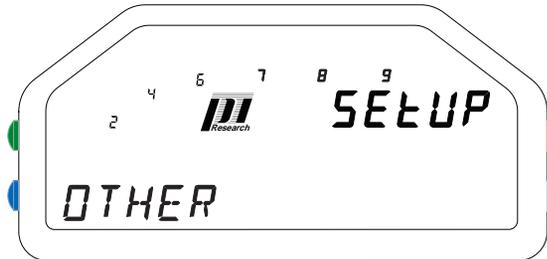
10. When you have chosen a Display mode and Sensor Mode, press the  button to return to the Initial Setup message.

Enable Advanced Mode (if required)

If you are using the additional channels that are provided in Advanced Mode (dampers, brake pressures, fuel calculation etc.) you must enable Advanced Mode in the Initial Setup.

You should ignore this section (steps 12 to 17) if you are not using the additional display channels.

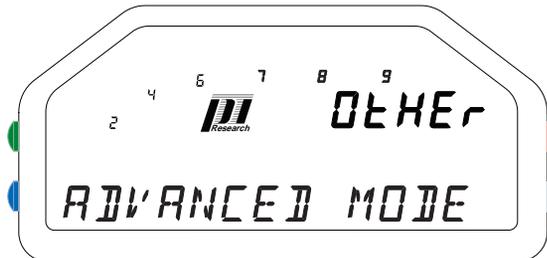
11. Press the  button to scroll down to the **OTHER** option screen:



Initial setup - Other option screen

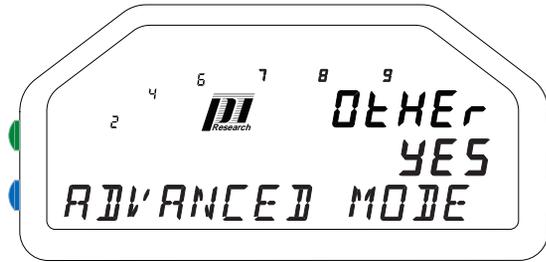
12. Press the  button to enter **SETUP - OTHER**.

13. Press the  button to scroll to the **ADVANCED MODE** option



Other - Advanced Mode option screen

14. Press the  button to enter **OTHER - ADVANCED MODE**.
15. Press the  button to enable Advanced Mode.



16. Press the  button **three** times to return to Initial Setup mode.

Reset the dash

17. Now press the  button to store the Initial Setup and reset your dash.

Factory default settings

Your Omega dash has a set of factory default settings for sensor inputs and alarms that are suitable for many setups. However, you should check that these are appropriate for your vehicle and system before embarking on an outing. In addition, certain sensors, such as the internal accelerometer, should be zeroed before starting an outing.

Follow the instructions in the Before an Outing section to check the sensor configuration and channel set up for your dash.

Before an outing

You should ensure that your Omega dash display settings, sensor configurations and serial output are correctly configured before embarking on an outing.

If you are using the Omega dash as a standalone unit with a set of on-vehicle sensors and/or a supported ECU (or Pi Interport), you should perform the following tasks:

in Initial Setup

- Calibrate your sensors
- Check your Omega dash input channel settings
- Check the RPM scale, red-line and start line settings
- Check the Serial Output Stream setting (if required)
- Check the Gear settings
- Check the Fuel calculation settings (if required)

in Pit Lane Setup

- Reset the dash lap count (if required)
- Zero your sensors
- Setup Club Qualifying Mode (if required)

in Watch Channels mode

- Verify your setup is providing the required values.

If you are using the Omega dash as a system display with a Pectel SQ6 ECU, Pi Delta or Pi Sigma system, consult your system User Guide for details on tasks that should be carried out before an outing.

Calibrating sensors

So that your Omega dash displays accurate values you should calibrate the throttle position (and steering position if using Advanced Mode) before an outing.

To calibrate throttle position

1. Hold down the  and  buttons until the **INITIAL SETUP** message appears on the dash:
2. Press the  button to enter Initial Setup Mode
3. Press the  button to scroll through the options until the **THROTTLE** option is displayed.
4. Press the  button to enter Setup - Throttle.
5. Press the  button to scroll to the **SET MINIMUM** option.
6. Ensure no throttle is applied, and press the  button to set the minimum throttle position.
7. Press the  button to scroll to the **SET MAXIMUM** option.
8. Apply full throttle, and press the  button to set the maximum throttle position.
9. Press the  button to return to Initial Setup mode and proceed to calibrating the steering position.

To calibrate steering position (Advanced Mode only)

10. Press the  button to scroll through the Initial Setup mode options until the **STEERING** option is displayed.
11. Press the  button to enter Setup - Steering.

12. The **SET RIGHT LOCK** option is displayed.
13. Apply right steering lock, and press the  button
14. Press the  button to scroll to the **SET CENTRE** option.
15. Centre the steering and press the  button.
16. Press the  button to scroll to the **SET LEFT LOCK** option.
17. Apply left steering lock and press the  button.
18. Press the  button to return to **INITIAL SETUP** mode.

Configuring Channels

The Omega dash provides a section in Initial Setup mode for each input channel that enables you to configure the required settings for each channel.

If you are using your Omega dash with a supported ECU (or Pi Interport), some channel values may be inaccurate or missing in the data stream produced by the unit.

You can choose whether to use the data supplied from the ECU data or the on-vehicle sensor by setting the **USE ANALOGUE?** option for the input channel in Initial Setup mode.

The following steps are performed in Initial Setup Mode (accessed by holding the  and  buttons, and then pressing the  button).

To set up a beacon

1. Press the  button to scroll through the Initial Setup mode options until the **BEACON** option is displayed.
2. Press the  button to enter **SETUP - BEACON**.
3. Press the  button to scroll through the beacon setup options:

Display option	Description
FITTED	Select whether a beacon receiver is connected to your Omega dash. (Yes or No).
MASK	Set the mask window, i.e., the period of time that must elapse after a beacon signal is received before a second signal will be recognized.

4. Press the  button to select a setup option, then press the  button to set the required value, followed by the  button to return to the beacon setup options.
5. When you have configured all of the beacon settings, press the  button to return to Initial Setup mode.

To set up a wheel speed sensor

1. Press the  button to scroll through the Initial Setup mode options until the **WHEEL SPEED** option is displayed.
2. Press the  button to enter **SETUP - WHEEL SPEED**.
3. Press the  button to scroll through the Wheel Speed setup options:

Display option	Description
UNITS	Set the units for wheel speed display (MPH or KPH).
DIAMETER	Set the wheel diameter for your vehicle.
MODE	Select an operation mode for the wheel speed sensor. REAL or LATCH
OUTING SPEED	Set an outing speed threshold (i.e., the speed at which the dash automatically switches from Pit Lane mode to Race mode)
TRIGGERS	Set the number of triggers on your wheel.
TYPE	Select the type of sensor that you are using (ACTIVE or PASSIVE)

4. Press the  button to select a setup option, then press the  button to set the required value, followed by the  button to return to the Wheel Speed setup options.
5. When you have configured all of the wheel speed settings, press the  button to return to Initial Setup mode.

To set up pressure and temperature sensors

The standard pressure and temperature channel settings are adjusted using a similar set of menu pages.

1. Press the  button to scroll through the Initial Setup mode options until the required channel option is displayed. (**OIL PRESSURE, COOLANT TEMP, FUEL PRESSURE, OIL TEMP**)
2. Press the  button to enter the setup for the displayed option.
3. Press the  button to scroll through the sensor setup options:

Display option	Description
USE ANALOGUE?	Select Yes to use the on-vehicle analog sensor, or No to use the value provided by a supported ECU or Pi Interport.
UNITS	Set the units used to display the channel (°C / °F for temperatures and PSI / BAR / HGF for pressures).
ALARM	Set the alarm threshold value for the channel.

4. Press the  button to select a setup option, then press the  button to set the required value, followed by the  button to return to the sensor setup options.
5. When you have configured all of the settings for a channel, press the  button to return to Initial Setup mode.

To set up thermocouple and brake pressure sensors (Advanced mode)

The advanced temperature and pressure channel settings are adjusted using a similar set of menu pages.

Ensure that Advanced mode is enabled in Initial Setup

1. Press the  button to scroll through the Initial Setup mode options until the required channel option is displayed.
(**THERMOCOUPLE 1, THERMOCOUPLE 2, F BRAKE PRESS, R BRAKE PRESS**)
2. Press the  button to enter the setup for the displayed option.
3. Press the  button to set the units used to display the channel (°C / °F for temperatures and **PSI / BAR** for pressures).
4. Press the  button to return to Initial Setup mode.

To set up damper position sensors (Advanced mode only)

You can use 4 damper position sensors with your Omega dash. The damper channel settings are adjusted using a similar set of menu pages.

Ensure that Advanced mode is enabled in Initial Setup

1. Press the  button to scroll through the Initial Setup mode options until the required channel option is displayed. (**FL DAMPER, FR DAMPER, RL DAMPER, RR DAMPER**)
2. Press the  button to enter the setup for the displayed option.
3. Press the  button to scroll through the RPM setup options:

Display option	Description
UNITS	Set the units for the damper position channel (INCH or MM).
INVERT	Select whether to invert the damper position scale.
LENGTH	Set the total travel length for the damper.

4. Press the  button to select a setup option, then press the  button to set the required value, followed by the  button to return to the Damper setup options.

To set up the RPM bargraph

1. Press the  button to scroll through the Initial Setup mode options until the **RPM** option is displayed.
2. Press the  button to enter the RPM setup.
3. Press the  button to scroll through the RPM setup options:

Display option	Description
REDLINE	Set the redline limit for the RPM display. When the engine RPM exceeds this value, the RPM bar graph flashes and the dash backlight turns red.
SCALE	Set the maximum RPM value for the bar graph display. The scale is then calculated automatically.
LAUNCH	Set the optimal launch RPM for your engine. This value is used to configure the Omega dash Start mode.
PULSES	Set the number of sensor pulses produced for every two engine revolutions.
INPUT TYPE	Select the input type for the RPM sensor.

4. Press the  button to select a setup option, then press the  button to set the required value, followed by the  button to return to the RPM setup options.
5. When you have configured all of the settings for the RPM channel, press the  button to return to Initial Setup mode.

To set up an output data stream

1. Press the  button to scroll through the Initial Setup mode options until the **OTHER** option is displayed.
2. Press the  button to enter Setup - Other.

3. Press the  button to scroll through the setup options until **SERIAL OUTPUT** is displayed.
4. Press the  button to enter Serial Output setup.
5. Press the  button to set the required value:

Display option	Description
LOG	Data is sent in a format that is suitable for logging on a Pi Compact Logger, the units employed for each channel are all metric.
VIDEO	Data is sent in a format that is suitable for use with the Pi Video Overlay Unit. The units employed for each channel are based on the Omega dash channel settings (Water temp is used to define all temperatures.).
No	No serial stream data is produced.

6. Press the  button twice to return to Initial Setup mode.

To set up the gear ratio display

The Omega dash can auto-detect the number of ratios that you specify in the Gears menu using information from the RPM and wheelspeed signal inputs. Alternatively, if you are using the dash with a supported ECU, the gear ratio number can be obtained from the ECU data stream.

1. Press the  button to scroll through the Initial Setup mode options until the **GEARS** option is displayed.
2. Press the  button to enter the Gears setup.
3. Press the  button to enter the Gears Enabled setup.
4. Press the  button to set the option to Yes to use auto-detect gear ratios, or **No** to use the value provided by a supported ECU (if available).

5. Press the  button to return to the Gears setup.
6. Press the  button to scroll through the Gears setup options:

Display option	Description
ENABLED	Select Yes to auto-detect gear ratios. Select No to disable auto-detect mode and display the gear ratio number provided by a supported ECU (if available).
FILTER	Set the filter employed when auto-detecting gear ratios. The stronger the filter, the more stable the RPM and speed values will be, but the Omega dash will take longer to change the ratio display. This will stop the wrong ratio from being displayed if the signals are subject to interference.
NO OF GEARS	Set the number of gear ratios on your vehicle.
RESET GEARS?	Delete stored gear ratio data. (Press the  button twice.)

7. Press the  button to select a setup option, then press the  button to set the required value, followed by the  button to return to the Gears setup options.
8. When you have configured all of the settings for the Gears, press the  button to return to Initial Setup mode.
9. Press the  button to store your setup and reset your dash.

If your Omega dash does not have any stored gear ratio data, you will need to drive your vehicle using all of the gears. While the auto-detect process is learning the available gear ratios, the gear number will flash and display the number of gear ratios that are still to be detected.

Once all of the gear ratios have been detected, the Omega dash will start to display the gear ratio number.

To set up Fuel calculation (Pectel Sensor mode only)

The Omega dash can use fuel consumption data provided by a Pectel ECU to display the calculated fuel tank fill level and the number of laps that can be completed before the fuel load is exhausted.

To use Fuel calculation you must ensure that following settings are correct:

- Advanced mode is enabled
- Pectel sensor mode is selected
- Track + Fuel display mode is selected (See the [Initial Setup section](#) for details).

1. Press the  button to scroll through the Initial Setup mode options until the **FUEL** option is displayed.
2. Press the  button to enter the Fuel setup.
3. Press the  button to enter the Fuel Enabled setup.
4. Press the  button to set the option to **YES**.
5. Press the  button to return to the Fuel setup.
6. Press the  button to scroll through the Fuel setup options:

Display option	Description
ENABLED	Set Fuel calculation on or off.
UNITS	Set the units to be used for fuel calculation. (LITRE/UsGAL/GAL)
TANK CAPACITY	Set the fuel tank capacity on your vehicle.
ALARM	Set the alarm threshold value for the fuel level.
SENSOR TRIM	Set the fuel calculation adjustment trim. The value can be set between 0.50 (lowest consumption) and 2.00 (highest consumption) to ensure the fuel calculation is as accurate as possible. If required, you can set the trim to a higher value in order to provide a margin for error to ensure that you car doesn't run out of fuel at the end of a run.

7. Press the  button to select a setup option, then press the  button to set the required value, followed by the  button to return to the Fuel setup options.
8. When you have configured all of the settings, press the  button to return to Initial Setup mode.
9. Press the  button to store your setup and reset your dash.
10. Press and hold the  button to reset the fuel level on you dash.

You must reset the fuel level on the dash each time the fuel tank is filled.

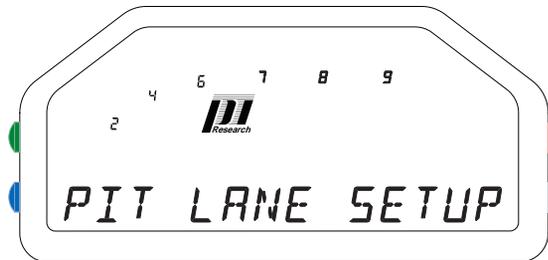
Pit Lane Setup

The Omega dash includes a Pit Lane Setup mode which enables you to:

- reset the dash lap-count;
- zero the dash accelerometer, and damper position, steering position and brake pressure sensors on your vehicle;
- configure Club Qualifying Mode.

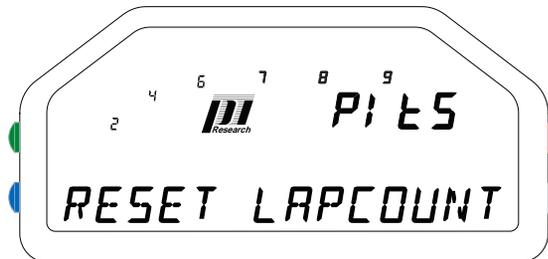
To enter Pit Lane Setup mode

1. Hold the  button until the Pit Lane Setup screen is displayed.



Watch Channels mode - Pit Lane Setup screen

2. Press the  button to enter Pit Lane Setup mode.



Pit Lane Setup mode - Reset Lap-count screen

You can now carry out any of the following tasks in Pit Lane Setup mode.

To reset the lap count

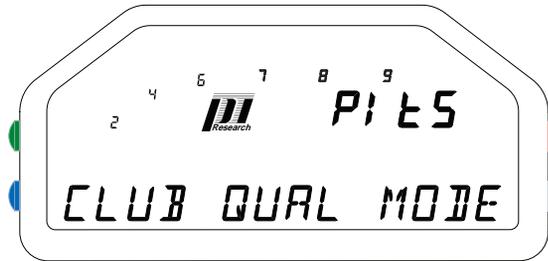
1. Press the  button at the Reset Lapcount screen to begin resetting the Lapcount
2. Press the  button to confirm the reset.
The **DONE** message screen is displayed.
3. Press the  button to return to the Pit Lane Setup options.

To zero sensors

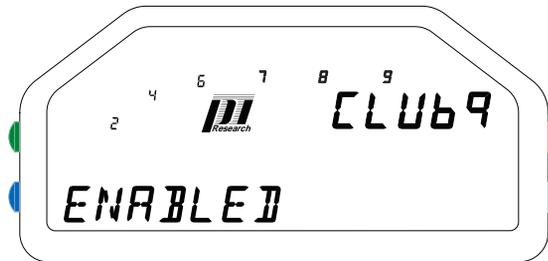
1. Ensure the vehicle is parked on a level surface, with the dampers at the central position and the brakes not applied.
2. Press the  button to scroll through the Pit Lane Setup options until the Zero sensors screen is displayed.
3. Press the  button at the **ZERO SENSORS** screen to begin zeroing.
4. Press the  button to confirm the zeroing.
The **DONE** message screen is displayed.
5. Press the  button to return to the Pit Lane Setup options.

To enable Club Qualifying Mode

1. Press the  button to scroll through the Pit Lane Setup options until the Club Qualifying Mode screen is displayed.



2. Press the  button to enter Club Qualifying Mode Setup.



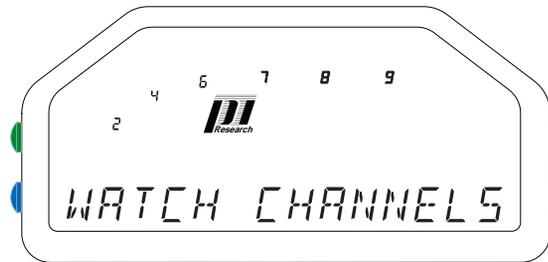
3. Press the  button to display the current setting.
4. Press the  button to change the enabled setting to **YES**.
5. Press the  button three times to return to the Pit Lane Setup options.
6. Press the  button to exit Pit Lane Setup, store your setup and reset your dash.

Watching Channels

The Omega dash includes a Watch Channels feature that enables you to check that the sensors on your vehicle are functioning correctly and your dash is reporting the right values before leaving the pit lane.

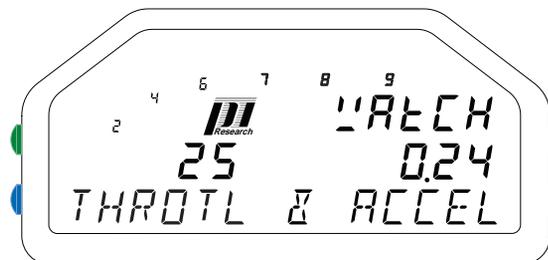
To watch channel values

1. Hold down the  button until the Watch Channels option screen is displayed:



Watch Channels option screen

2. Press the  button to enter Watch Channels mode.



Watch Channels - Throttle & Acceleration screen

3. Press the  button to scroll through the Watch Channels pages:

Watch Channels page	Description
Throtl & Accel	Live display of the throttle position and acceleration channel values
Speed	Live display of the current speed
Advanced mode only	
Front Dampers	Live display of the front damper positions.
Rear Dampers	Live display of the rear damper positions.
Brakes	Live display of the front and rear brake pressures, and the effective brake balance between full front (0%) and full rear (100%).
Thermocouples	Live display of the thermocouple channel temperatures.
Steering	Live display of the steering position.

4. You should apply throttle and brakes and adjust the steering position to check that the appropriate channel values are displayed.
5. Finally, before embarking on an outing you should also check that the temperature and pressure sensors are providing reasonable values and that a beacon signal is recognized by the dash.

During an outing

Start mode

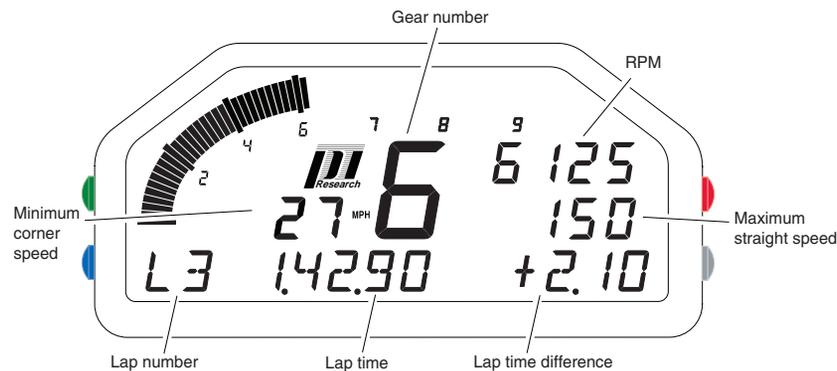
The Omega dash moves from Pit Lane mode into Start mode when engine RPM is detected.

Using the Launch threshold set in the RPM section of Initial Setup mode, the Omega dash provides a display that helps the driver to maintain the optimal RPM level on the start line. Over-revving will cause the dash back-light colour to change to red and the shift lights to flash.

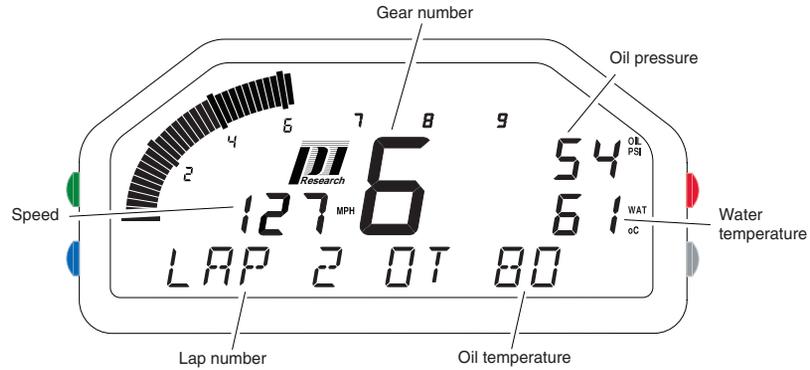
Race mode

The Omega dash moves from Start mode into Race mode as soon as the threshold outing speed (set in the RPM Setup) is exceeded.

Race mode includes two pages which display the following values:



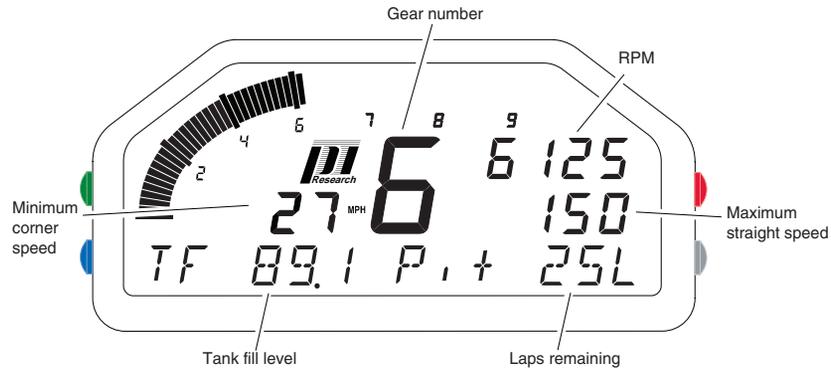
Race Page 1



Race Page 2

Track + Fuel display

If you are using the Omega dash in Track + Fuel display mode, Race Page 1 displays fuel tank fill level and the number of laps remaining on the current fuel load in place of lap time details:



Track + Fuel Race Page 1

Changing display pages

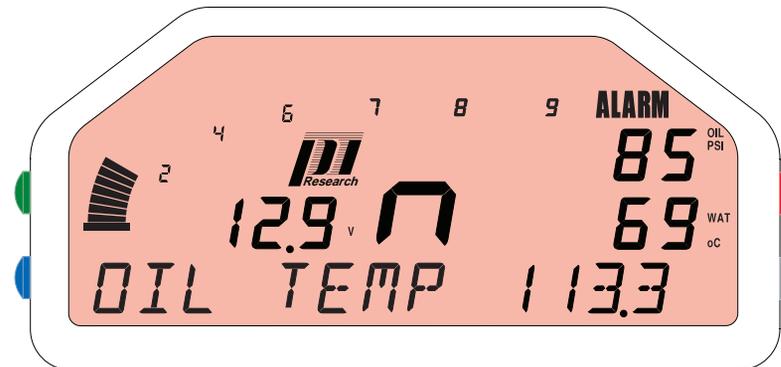
You can use the change the display page by pressing the  or  button to scroll through the available pages.

Alarms

Alarms warn of abnormal conditions, for example, a temperature being too high, or a pressure too low.

Acknowledging an alarm

If you have set an alarm to be displayed on the Omega dash display, then when the alarm condition occurs, the display will show the name of the alarm channel, and its value. The ALARM annunciator will be displayed and the backlight LED color will change to red.



Display showing Oil Temperature alarm

When an alarm occurs, you can either acknowledge it or ignore it.

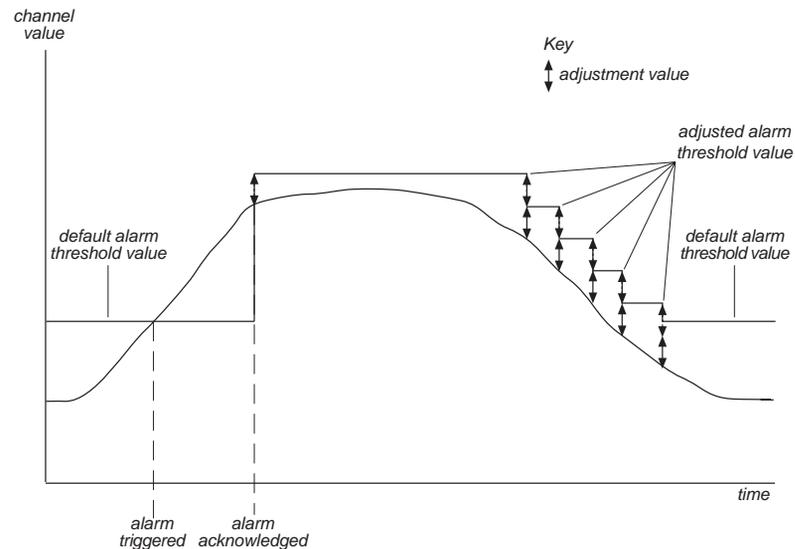
To acknowledge an alarm

1. Press the  button, or click the remote driver switch.

If other channels have reached an alarm condition, then the display will not return to normal, but show the next highest priority channel and its alarm value. This alarm will also have to be acknowledged. Only after you have acknowledged all of the alarmed channels will the display return to normal.

Acknowledging an alarm adjusts the alarm threshold value. The value of the channel when the alarm is acknowledged plus an amount known as the Adjustment value becomes the new alarm threshold value. The alarm will not re-occur unless the channel value crosses this new alarm threshold value.

Acknowledging enables the facility that can automatically restore the alarm threshold value to its default value. If the channel value falls by twice the adjustment value, the current alarm threshold value is reduced by the adjustment value. This becomes the new threshold value. If the channel value continues to fall, the adjustments are made until the default alarm threshold value is reached. The final adjustment may be less than the adjustment value. The automatic restoration will only work on a channel which has alarmed and has been acknowledged. The action of the automatic restoration facility is illustrated in the figure below.



Automatic restoration of the Alarm threshold value

If you ignore a displayed alarm it will cancel automatically provided that the channel value has changed so that the alarm threshold is not exceeded for a period of thirty seconds. The alarm threshold value is not adjusted if this happens. The alarm will not re-occur unless the channel value exceeds the threshold value again.

After an outing

Telltale mode

When the speed and RPM drop to zero after an outing the Omega dash automatically moves into Telltale mode, which provides a summary of the values displayed during the outing.

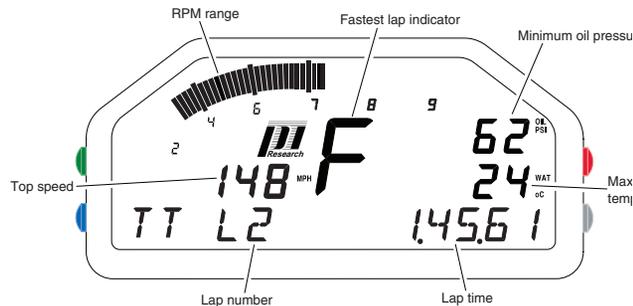
Telltales can be provided for a maximum of 100 laps in an outing.

The telltales for the fastest lap (denoted by an **F** in the gear number field) are displayed first.

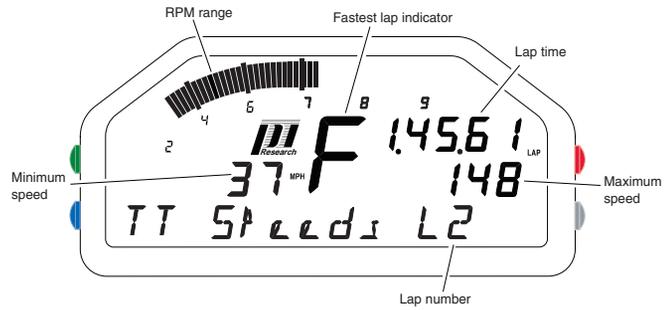
To view telltale data

1. Press the  button to cycle through the laps in the outing.
2. Press the  or  button to scroll through the available Telltale pages and Pit Mode page.

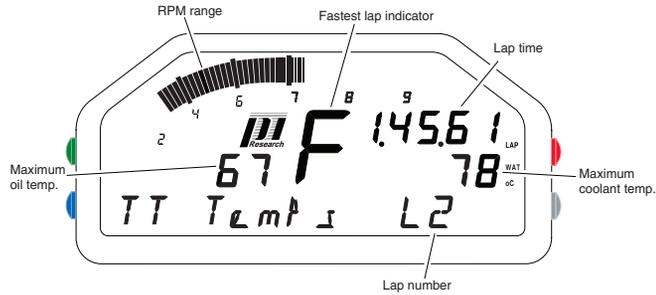
The following telltale pages are available:



Telltale page 1



Telltale page 2



Telltale page 3

Alarms

If an alarm has been triggered during a lap then the telltale pages for that lap are displayed with a red back-light.

Channel Help

Hold the  button to display channel names being displayed on the current page.

Using Club Qualifying Mode

To use **Club Qualifying Mode (CQM)** on your Omega dash, the beacon receiver must be configured correctly in the dash Initial Setup and Club Qualifying Mode must be enabled in the dash Pit Lane Setup.

Club qualifying mode operating modes

Club qualifying mode has two modes, **Learn mode** and **Operating mode** .

Learn mode

Learn mode is initiated when the Omega dash has no stored lap data. This occurs with either a new Omega dash or when the stored lap data has been reset.

Learn mode comprises three separate stages that are shown on the Omega dash Laptime display field.

The running Laptime and the words **LRN 1**, or **LRN 2** or **LRN 3** are alternately shown on the Omega dash.

Word	Meaning
LRN 1	The Omega dash is looking for the first beacon trigger used for synchronisation
LRN 2	The Omega dash is now synchronised and is looking for another beacon to measure the lap distance.
LRN 3	The Omega dash now has a stored lap of distance only. This lap has been split into sixteen equal distance segments and is collecting time stamps for each of the segments

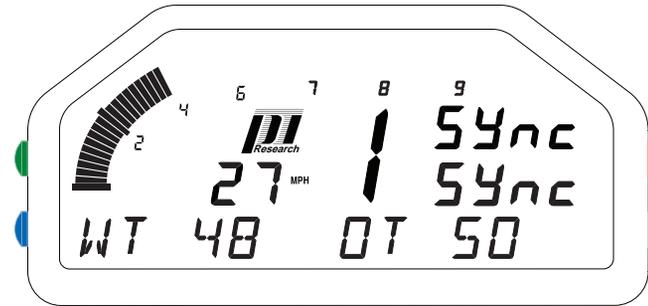
At the end of stage **LRN 3** the distance of that lap is compared to the distance of the lap stored in **LRN 2**. If the distances are within 5% of each other, the lap of **LRN 3** is stored in the Omega dash and can then be used for normal CQM operation.

Operating mode

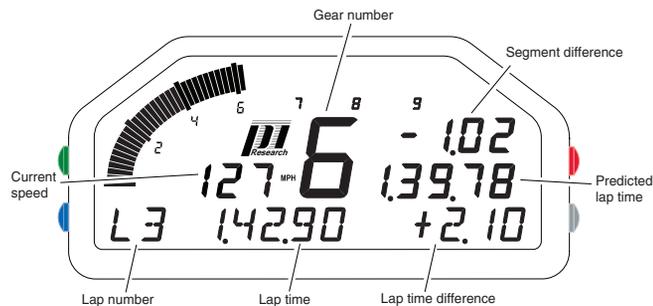
Once a lap has been learned the Omega dash can be used in Operating mode.

Operating mode needs to be synchronised before it will determine Qualifying Times. This is automatic when in Learn mode and as soon as learning is complete the Omega dash is already synchronised and laptime comparison begins.

After power up the Omega dash needs to synchronise itself by looking for the first end of lap beacon. Until this beacon is seen, the Omega dash alternates between showing the running laptime and **SYNC**.



Once synchronised, the Omega dash begins a laptime comparison. The lap is compared by determining when the current distance value equals one of the sixteen distance segments stored in the Omega dash. At this point the time difference between the current value and the stored value is calculated. The difference in the form **+/-x.xx.xx** is shown for the current segment. This is displayed for three seconds before returning to running laptime.



At the end of the lap, the laptime for the lap just completed is shown. If the laptime is faster than the one stored in the Omega dash and the distance of the two laps are within 5% of one another then the lap just completed is stored and the laptime value is flashed on the Omega for 10 seconds as per normal. If the lap time is slower than the stored lap or the distances are not within 5% of one another then the laptime is shown static and does not flash.

At the start of the next lap the process begins again. This continues whilst the Omega dash is in Race mode signified by a valid RPM and Speed values.

Resetting CQM stored lap data

To reset the stored lap data:

1. Press and hold the  button until the Pit Lane Setup screen is displayed.
2. Press the  button to enter Pit Lane Setup.
3. Press the  button to scroll through the Pit Lane Setup options until the Club Qualifying Mode (**CLUB QUAL MODE**) screen is displayed..
4. Press the  button to enter the Club Qualifying Mode menu.
5. Press the  button to scroll to the **RESET** option.
6. Press the  button twice to reset the stored lap data.

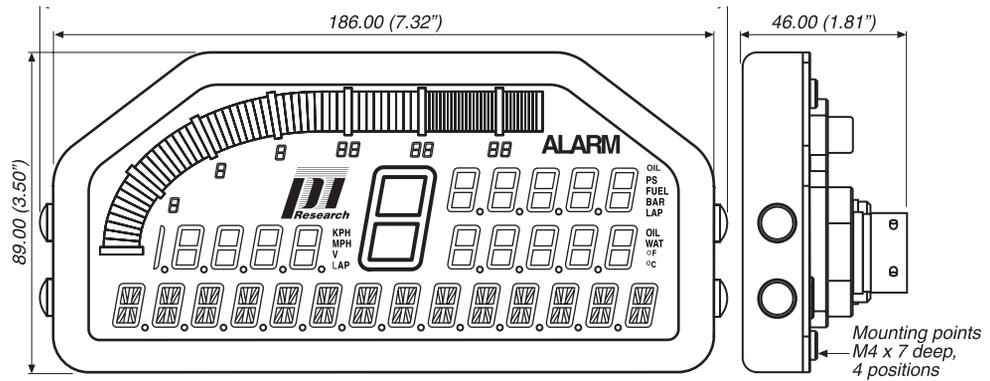
The **DONE** message is displayed.

7. Press the  button four times to exit the setup menus and reset your dash.

Dimensions

Use the following figures to help you when fitting a Omega dash. The dimensions are shown in millimetres and (inches).

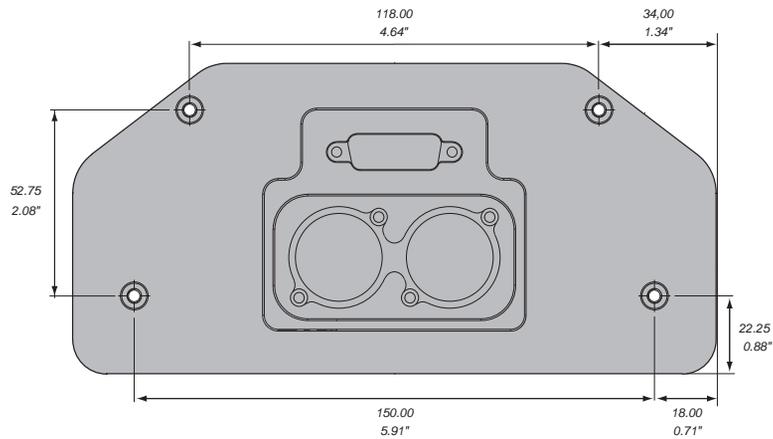
Omega dash



Omega dash dimensions

Panel cutout

Use the following figure to mark the position of the holes for mounting the Omega dash.



Panel drilling details (viewed from behind the Omega dash)

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