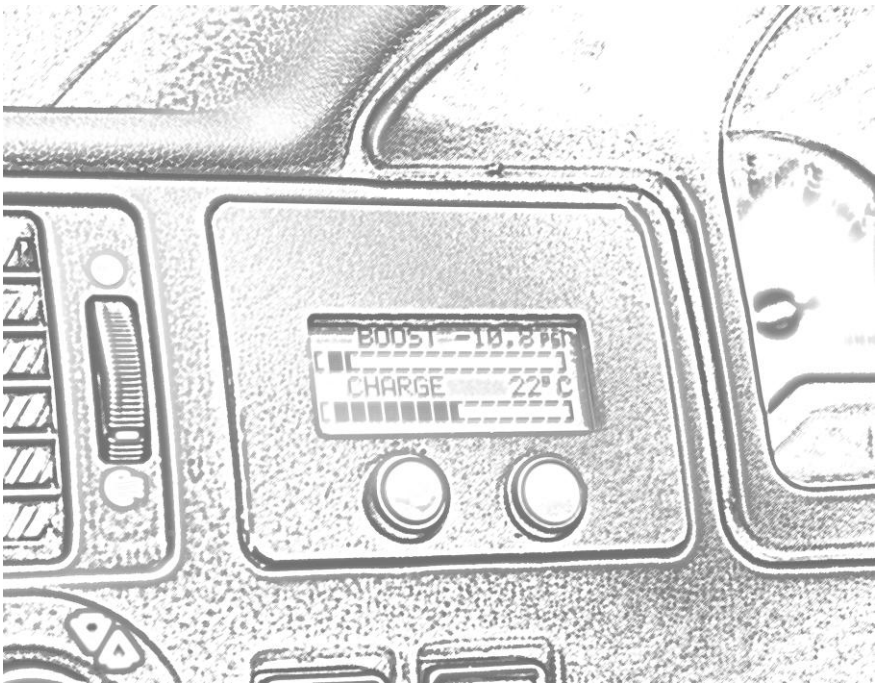
Data Stream Monitor DSM-01

User Manual

Escort RS Cosworth – Clock Mounted



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Contents

1 Overview:

1.1 Packaging Checklist:

- DSM-01
- Front Panel
- Wiring Loom
- Quick Set Up Guide

If any of the above items are not present please contact us using the contact section on the last page of this manual.

1.2 Unit Description and Purpose:

The DSM-01 is an electronic monitor that displays the most fundamental parameters of your Engine during a running session. These are displayed in real time using the same sensors that supply the ECU with the data that determines how the engine performs. The unit is designed to monitor parameters from a standard or a modified engine.

1.3 Unit Installation:

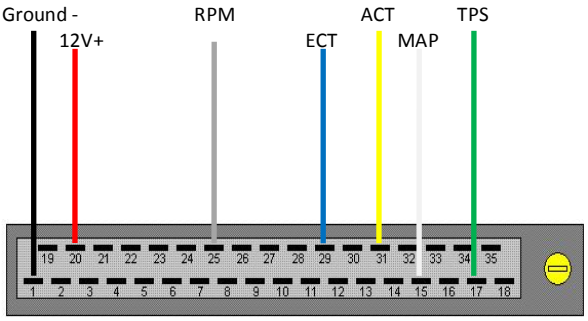
A full fitting service is available please **contact us** for further details.

(a) Wiring and Connectors:

Connect the supplied wiring loom to the existing Cosworth loom using the connection table below. This will need to be soldered and suitably insulated to the existing vehicle wiring loom. Ensure you route the cable behind the dashboard so it does not interfere with the operation of the vehicles controls.

CN2 (Rear of unit)

ECU Connector Pin	Monitor Loom Connector
MAP (15)	White (1)
ACT (31)	Yellow (2)
ECT (29)	Blue (3)
TPS (17)	Green (4)
RPM (25)	Grey (5)
N/C	N/C (6)
12v + (20)	Red (7)
Ground - (1)	Black (8)



ECU Connector
(View from rear of Connector)

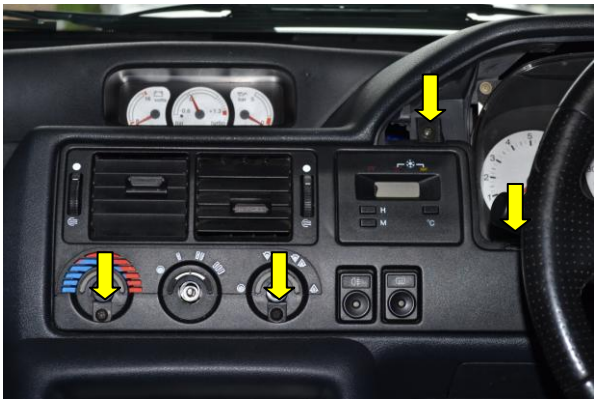
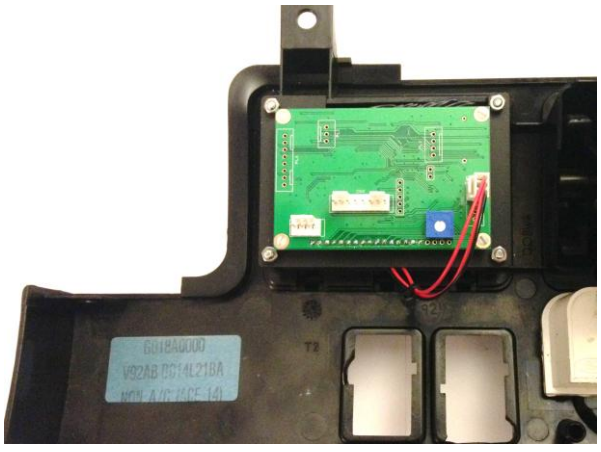
CN1 (Rear of unit)

Button	Monitor Loom Connector
Pin1 – Green	(1)
Pin1 – Red	(2)
Pin2 - Red&Green	(3)

CN3 (Rear of unit)

Warning Device	Monitor Loom Connector
Alarm +	1
Shift Light +	2
Ground -	3
Ground -	4

(b) Placement of Unit:

Step 1: Undo the 2 screws that hold the speedo clocks surround on and remove the surround.	**Step 2:** Remove the 3 heater controls by gently pulling them. Undo the 4 screws that hold the heater panel in place and remove panel.
	
Step 3: Gently push the clock out of the bezel. You will then need to file the 4 corners of the rear of the bezel to allow the screws from the DSM-01 to push though the bezel. (please note this will not affect re-fitting your clock at a later date).	**Step 4:** Remove the 4 nuts and washers that are attached to the DSM-01. Thread the DSM-01 main PCB and switch wires though the clock hole be sure not to trap any wires
	
Step 5: Refit the mounting plate to screws that are now through the panel. Attach the 4 washers and nuts. Tighten finger tight so that front panel is flush. Be sure not to over tighten! Refit plug CN1	**Step 6:** Your DSM-01 is now ready to use.
	

2 Operation:

2.1 Initial Setup:

When the unit is first powered up it will scroll through an initialisation sequence where it will systematically check each sensor for suitable values.

Contrast is set to a satisfactory level during the assembly process. However should you have the requirement to customise this setting locate the pot on the reverse of the unit then adjust to the desired contrast by turning the white dial with a small screwdriver. The text should be crisp and the character squares should not be visible.

2.2 User Defined Settings:

Following on from the Quick Set-up guide you may desire to customise the monitor to suit your personal preferences required during operation. To set the User defined parameters press the Green & Red buttons together. This puts the unit into adjustment mode.

Press the Red button to navigate down to the desired parameter. When you have scrolled to the parameter you wish to set press the Red and Green buttons together – that takes you into the options available for that parameter. Repeat this procedure for each customisable/personalised setting.

2.3 Engine Parameters Monitored:

BOOST	= Turbocharger Boost Pressure in PSI
CHARGE TEMP	= Intake Charge Temperature after passing through the intercooler in Deg °C
COOLANT TEMP	= Engine Coolant Temperature at the Cylinder Head Sensor in Deg °C
THROTTLE	= Throttle Position from 0-100%
RPM	= Engine RPM measured in Revolutions per Minute
BATTERY	= Battery Voltage measured in Volts
RUN TIME	= Engine Run Time for each session

3 User Menus:

3.1 Scrolling Through The Menus:

Button Functions:
Button 1 (Green Button) = Navigation Up
Button 2 (Red Button) = Navigation Down
Press Buttons 1 & 2 together = Enter Menu / Select Item

To access the User Menus Press Red & Green Buttons together

This takes you into the User Menu Options. To select the 1st user adjustable option available press Red & Green buttons together. This takes you to:

CLEAR PEAKS
Press the Red button repeatedly until you reach the desired peak you would like to clear. Press Red & Green buttons together – this is confirmed by a large OK on the screen. (repeat for each peak you desire to clear or if you wish to clear all select the first option 'CLEAR ALL') Once you have cleared the relevant peaks press the Red button to scroll down to the Exit Menu. Press Red & Green Buttons together to select.

Sample Screen:

```
* CLEAR ALL
  CLEAR MAP PEAK
  CLEAR ECT PEAK
  CLEAR ACT PEAK
  CLEAR TPS PEAK
  CLEAR RPM PEAK
  CLEAR BATT MENU
  EXIT MENU
```

Press Red Button once to navigate to:

User Screen 1: Press Red & Green Button together to select this option. Then press Red & Green buttons again to define Line 1. Press the Red button repeatedly until you reach the desired parameter you want displaying on Line 1. Press Red & Green buttons to confirm. Repeat this procedure to create Lines 2, 3 & 4. Once you have populated your desired Screen list press the Red button to scroll down to Exit Menu. Press Red & Green Buttons to return to Main Menu.

Press Red Button once to navigate to:

User Screen 2: Press Red & Green Buttons together to select this option. Then press Red & Green buttons again to define Line 1. Press the Red button repeatedly until you reach the desired parameter you want displaying on Line 1. Press Red & Green buttons to confirm. Repeat this procedure to create Lines 2, 3 & 4. Once you have populated your desired Screen list press the Red button to scroll down to Exit Menu. Press Red & Green buttons to return to Main Menu.

Press Red Button once to navigate to:

MAP SENSOR:
Press Red & Green Buttons together to select this option. Then press the Red button repeatedly until you reach the desired MAP Sensor fitted to your vehicle. Once you have selected your desired MAP Sensor press Red & Green Buttons together to select. This will be confirmed by a large OK. Press the Red button to scroll down to the Exit Menu. Press Red & Green Buttons together to select.

Sample Screen:

```
* 2.0 BAR
  2.5 BAR
  3.0 BAR
  5.0 BAR
  EXIT MENU
```

Press Red Button once to navigate to:

TPS SENSOR:
Press Red & Green Buttons together to select this option. Then press the Red button repeatedly until you reach the desired TPS Sensor fitted to your vehicle (See FAQs if you are unsure or what TPS is fitted to your vehicle). Once you have selected your desired TPS Sensor press Red & Green Buttons together to select. This will be confirmed by a large OK. Press the Red button to scroll down to the Exit Menu. Press Red & Green Buttons together to select.

Sample Screen:

```
* Throttle 2WD
  Throttle 4WD
  EXIT MENU
```

Press Red Button once to navigate to:

SHIFT SETTINGS: (this option can only be used if the optional shift light is fitted)
Press Red & Green Buttons together to select this option. Press Red & Green Buttons together to turn the Shift Light function on. (Press Red & Green buttons again to turn the Shift Light function off). Press Red Button to scroll down to the RPM adjustment (this is the RPM when the Shift Light will illuminate). Press Red & Green buttons together to access the RPM adjustment – Press Red Button to increase RPM threshold and Green Button to decrease RPM threshold. Once you have reached your desired RPM Shift Light setting press Red & Green buttons together to confirm. Press the Red button to scroll down to the Exit Menu. Press Red & Green Button together to select.

Sample Screen:

```
  SHIFT SETTINGS
* ALARM ON
  4650 RPM
  EXIT MENU
```

Press Red Button once to navigate to:

ALARMS: (this option can be used in conjunction with the optional LED or Sounder)
Press Red & Green Buttons together to select this option. Press Red & Green Buttons together to display if the alarm function is ‘on’ or ‘off’. Pressing the Red & Green buttons together will turn all the Alarms on or off - Note: the alarm function must be on (for all alarms) to have an alarm active for any one parameter. Once selected Alarms on or off press the Red button once to scroll down to the Exit Menu. Press Red & Green Buttons together to select.

Press Red Button once to navigate to:

MAP Alarm
Press Red & Green Buttons together to select this option. Press Red & Green Buttons together to display if the alarm function is ‘on’ or ‘off’. Pressing the Red & Green buttons together will turn the MAP Alarm on or off. If ‘on’ is selected, press the Red button once to scroll down to PSI adjustment. Press Red & Green buttons together – Press Red Button to increase PSI and Green Button to decrease PSI. Once you have reached your desired PSI setting press Red & Green buttons together to confirm. Press the Red button to scroll down to the Exit Menu. Press Red & Green Buttons together to select. (Repeat the above procedure to select the alarms for the ECT, ACT & BAT parameters). Press the Red button to scroll down to the Exit Menu. Press Red & Green Buttons together to select.

Press Red Button once to navigate to:

SET BACKLIGHT:
Press Red & Green Buttons together to select this option. Then press the green button to increase the backlight and red button to decrease the backlight. When you have reached your desired backlight level, press Red & Green Buttons together to select. This will automatically return you to the Main Menu.

Sample Screen:

```
  SET BACKLIGHT
[||||||||||||||||||||||||||||___]
```

Press Red Button once to navigate to:

FACTORY RESET:

Press Red & Green Buttons together to perform this action which will be confirmed by a large OK.

This function restores the unit to its pre-installation settings should you wish to overwrite any customised settings you have made.

Press Red Button once to navigate to:

ABOUT SCREEN:

This is a read only function, displaying the serial number and software version of the unit. This screen will automatically time-out after 5 seconds.

Sample Screen:

```
   DATA STREAM
  MONITOR DSM-01
Serial Num  00001
 Code Rev  0.59
```

EXIT MENU:

Press Red & Green buttons together to Exit back to display mode.

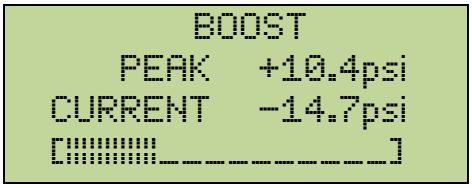
3.2 Screenshots In Order Of Display:

Functions are displayed in the following format:

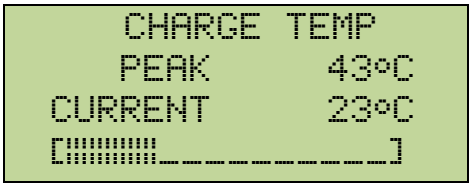
PEAK	Gives the highest value achieved for that parameter since last reset
CURRENT	Is the current level in real time for that parameter
SEGMENTED BAR GRAPH	A graphical display of the current parameter being produced

Functions are accessed in the following order through the menus:

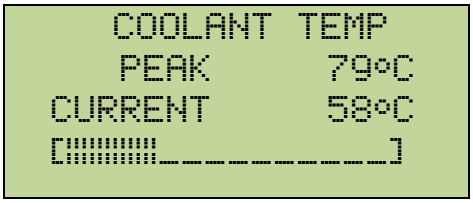
(1) BOOST: (Please refer to the explanation of Boost Spike in the FAQ's section)



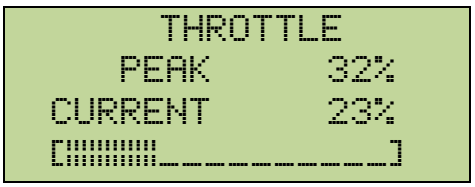
(2) CHARGE TEMP:



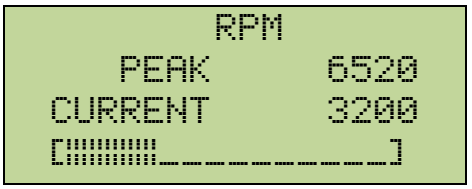
(3) COOLANT TEMP:



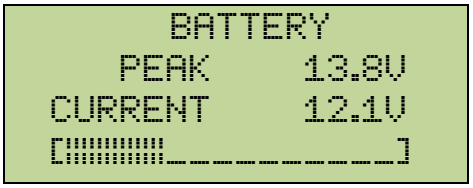
(4) THROTTLE:



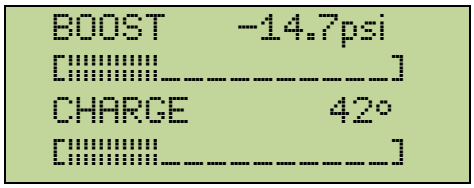
(5) RPM:



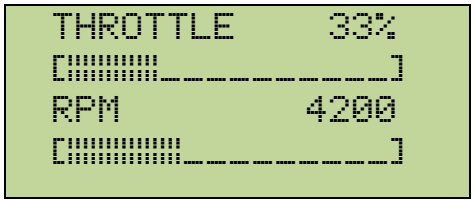
(6) BATTERY:



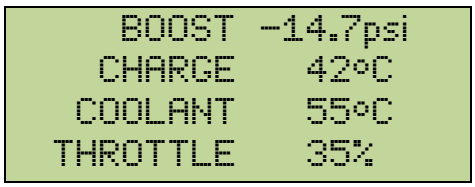
(7) DUAL SCREEN 1:



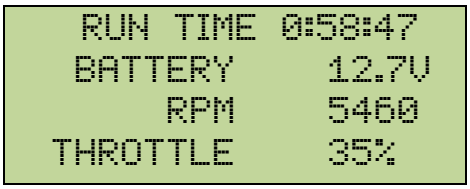
(8) DUAL SCREEN 2:



(9) CUSTOM SCREEN 1:



(10) CUSTOM SCREEN 2:



4 Technical:

4.1 Memory:

The unit will restore to the monitoring screen 'session' that was last displayed before the unit was powered down.

4.2 Parameters And Limits:

Sensor	Abbreviation	Lower Limit	Upper Limit
Throttle Position Sensor	TPS	0%	100%
RPM	RPM	270	9990
Coolant Temperature	ECT	-24°C	124°C
Air Charge Temperature	ACT	-24°C	124°C
Manifold Absolute Pressure	MAP	-13.5PSI	18.5PSI (2.0 BAR Sensor) 24.7PSI (2.5 BAR Sensor) 32.5PSI (3.0 BAR Sensor) 67.4PSI (5.0 BAR Sensor)
Battery Voltage(1)	BAT	0V	15V (Graph) 20V (Numbers)
Backlight	N/A	N/A	11 Selectable Intensities

(1) These numbers refer to the data limits, NOT the unit operating voltage

4.3 Troubleshooting:

Problem	Fix
The unit won't turn on	Check Power and Ground connections are made and secure on CN2.
Throttle reads backwards	You have the wrong throttle sensor type selected. Enter the menu and change the sensor type.
A particular parameter is failing to display	Check relevant wire is connected to corresponding sensor
Alarm screen keeps flashing	Check that the pre-determined parameter is within the alarm limit and press any button. (for further info see Alarms Sections)

4.4 FAQ's:

What TPS is fitted to my vehicle?

If you have a 2WD RS Cosworth the TPS fitted from the factory would have been a PF01.

If you have a 4WD RS Cosworth the TPS fitted from the factory would have been a PF09.

(Please note the above may have been changed by a previous owner as part of an upgrade or modification)

What MAP sensor is fitted to my vehicle?

If you have a Sierra RS Cosworth the MAP Sensor fitted from the factory would have been a 2.0bar.

If you have a Sierra Sapphire RS Cosworth the MAP Sensor fitted from the factory would have been a 2.0bar.

If you have an Escort RS Cosworth the MAP Sensor fitted from the factory would have been a 2.5 bar.

3.0bar and 5.0bar variants will only be fitted to modified engines. You should consult your tuner to determine what MAP Sensor is fitted to your vehicle if you have a modified engine.

The peak boost is reading more than my known highest boost level for my vehicle?
This is caused by what is known as "Boost Spike". See below for a detailed explanation of this.

Boost Spike explained:

"Boost Spike" is the momentary overshoot in boost pressure over the desired boost level as the engines rpm increases through the rev range – i.e. it is the higher boost value produced for a very short period before the boost settles to the correct controlled level. This is caused by a number of factors including the standard wastegate actuator spring rate or the vehicles standard or aftermarket boost controller system holding the pressure to the wastegate.

How this affects the DSM-01 Peak value:

The unit will measure this momentary boost spike and will store it as a peak reading on the display. This is the maximum boost value achieved during the boost spike produced since the last reset.

Your desired boost level will be the 'held' value after the boost has settled and will be displayed by the "CURRENT" value on the display. During the boost curve, the highest boost value is always achieved during the boost spike period. It then drops back to the level determined and governed by the boost control method (i.e. actuator/external wastegate/boost controller combination). This can be demonstrated by a hard acceleration run normally in 4^{th} gear up a hill or slight incline – you will observe that the boost spike is achieved around the mid-range of engine rpm and then starts to 'tail off' as sustained higher engine rpm increases. You should consult your tuner for guidance on boost levels for your particular set-up.

4.5 Alarms And Resetting Of Alarm:

Note – once the alarm has been activated on one of your pre-determined limits the backlight will flash (and sound) along with a warning device (if fitted) and switch to the function/parameter that has been exceeded. The backlight and warning device (if fitted) will continue to flash/sound until that parameter drops back below your pre determined limit and you will need to cancel the alarm by pressing any one of the two buttons.

External Warning LED/Sounder:

The unit can also accommodate powering an external LED or Sounder in conjunction with the internal alarm function (this option is available separately). An LED (also available separately) can be used for the Shift Light function.

5 Appendix:

5.1 Unit Specification:

Operating Voltage – DC 7V ~ 16V
Operating Voltage (Peak logging disabled) – DC 7V ~ 9V
Normal Operating Current Consumption - 35mA
Operating Temperature – 0°C ~ 50°C
Accuracy of Readings – 12bit A to D, 5v input = 1.2mV resolution

5.2 Safety:

The primary attention of the driver should always be on safe driving. The information from the DSM-01 should be observed as part of the normal driving sequence performed in the operation of the vehicle as with any ancillary gauge, instrumentation or electronic dash system. Making adjustments to the unit should only be made when it is safe to do so. It is recommended that a passenger be present to make any adjustments that are required. The driver must remain attentive to driving the vehicle at all times. Use of the DSM-01 while driving could lead to an accident and cause serious injuries if used irresponsibly.

5.3 Disclaimer:

We the manufacturer will not be held liable for any injury, damage, direct or consequential loss or accident caused by negligent or irresponsible driving while using the DSM-01.

5.4 Warranty:

This unit is warranted for a period of 12 months from original date of purchase. Items covered by the warranty: Component or software failure, material or process defects, or a factor caused during the manufacturing process. This warranty is not transferrable and only valid for the original purchaser. The warranty is invalidated if one of the following has occurred: Improper use, incorrect installation or wiring, accidental damage, impact damage or any other such instance that is not down to the manufacturing process, components failure or assembly.

5.5 Contact Us:

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