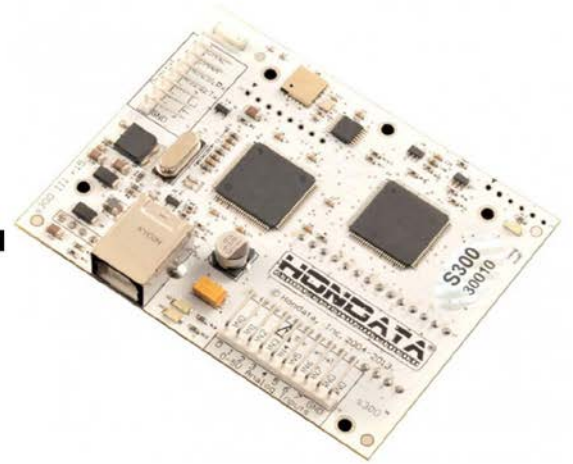




Revision	Date
Initial Release	Jan 23, 2017
Updated	Nov 29, 2017
Update for S300 specific layout	Jan 26, 2018



**CAN data**

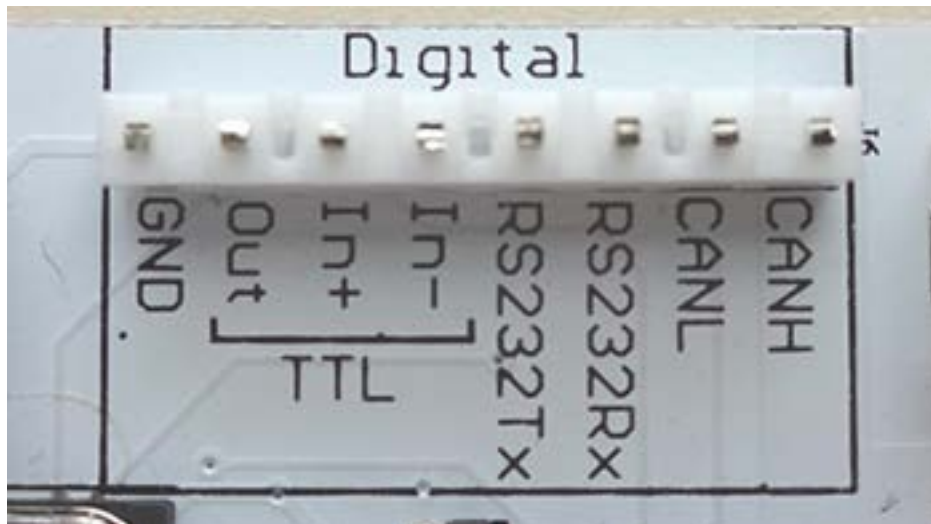


## *HONDATA S300 v3.0 CAN Interface to AEM CD Dashes*

### Supported Devices

Hondata S300 V3 (White PCB) ECU

### CAN Bus Wiring



The Hondata S300 V3 has its CAN connection on the Digital I/O header. Flying lead connector, Hondata part number GC98401158, is required to connect. The CANH (CAN+) is a white wire and the CANL (CAN-) is a blue wire.

The AEM CD Dash has two separate CAN bus ports – Port 1 and Port 2. Port 1 is typically used for AEMnet CAN devices and Port 2 is used for third party CAN devices. The CD Dash wiring harness has a Port 2 flying lead cable that's terminated with a male two pin DTM connector.

S300 CANH (CAN+ White) → CD Dash Port 2 Connector Pin 1 (CAN 2+; Silver)

S300 CANL (CAN- Blue) → CD Dash Port 2 Connector Pin 2 (CAN 2-; Black)

A CAN bus network needs two terminating resistors in order to function correctly – one at each physical end of the network. The CD Dash has a software selectable internal CAN terminating resistors. The S300 does **NOT** have an internal terminating resistor. You **MUST** add a 120 ohm resistor between CANH and CANL. AEM has provided a pre-configured layout for use with the S300 V3 and the Port 2 terminating resistor is turned on by default.

## HONDATA S300 V3 Software Setup

In SManager; under Parameters | Digital input/output | CAN Output select “Motec SDL/ADL” and upload the calibration to the ECU.

## Supported Channels

The S300 V3 ECU transmits 21 unique channels

CH	CD7 Channel Name		CH	CD7 Channel Name
1	EngineSpeed		12	ECUAnalogInput0Voltage
2	VehicleSpeed		13	ECUAnalogInput1Voltage
3	GearPosCalculated		14	ECUAnalogInput2Voltage
4	ECUBatteryVoltage		15	ECUAnalogInput3Voltage
5	IntakeManifoldAirTemp		16	ECUAnalogInput4Voltage
6	CoolantTemp		17	ECUAnalogInput5Voltage
7	ThrottlePos		18	ECUAnalogInput6Voltage
8	IntakeManifoldAirPress		19	ECUAnalogInput7Voltage
9	FuellnjPulsewidth		20	FuelEthanolFrequency
10	IgnitionTiming		21	FuelEthanolDuty
11	FuelAirEquivRatio			

# AEM Setup in DashDesign

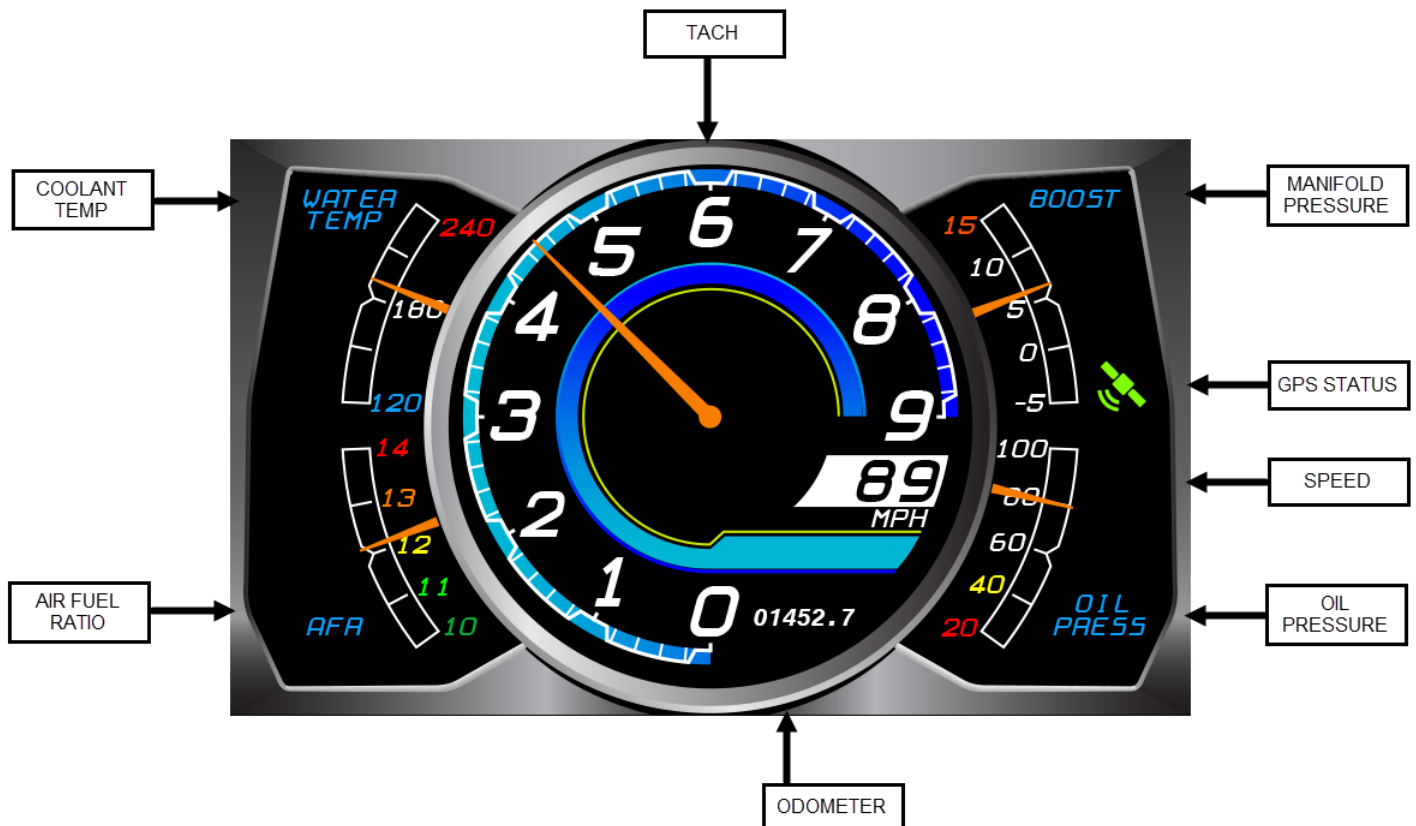
AEM has provided a pre-configured default layout to receive, display and log (if using logging version of CD Dash) the CAN bus channel data from a Hondata S300 V3. To load this, simply open the Hondata S300 V3 layout and upload it to the dash\*. Go File>Open, navigate to Documents\AEM\DashDesign\Setups\App Specific and select the Hondata S300 V3 layout file. To load layout onto dash, connect USB cable from dash to PC with dash powered on and go File>Upload to Display or use keyboard shortcut CTRL+U.

No additional dash setup or channel configuration is required for general usage however, all elements within the layout are fully user configurable should you choose to customize the layout to suit your specific needs.

\*NOTE: Verify that dash is on latest firmware before loading layout. Go Tools>Upload Firmware and load latest .bin file.

## Hondata S300 V3 Layout Overview

### Page 1 & 2 – General

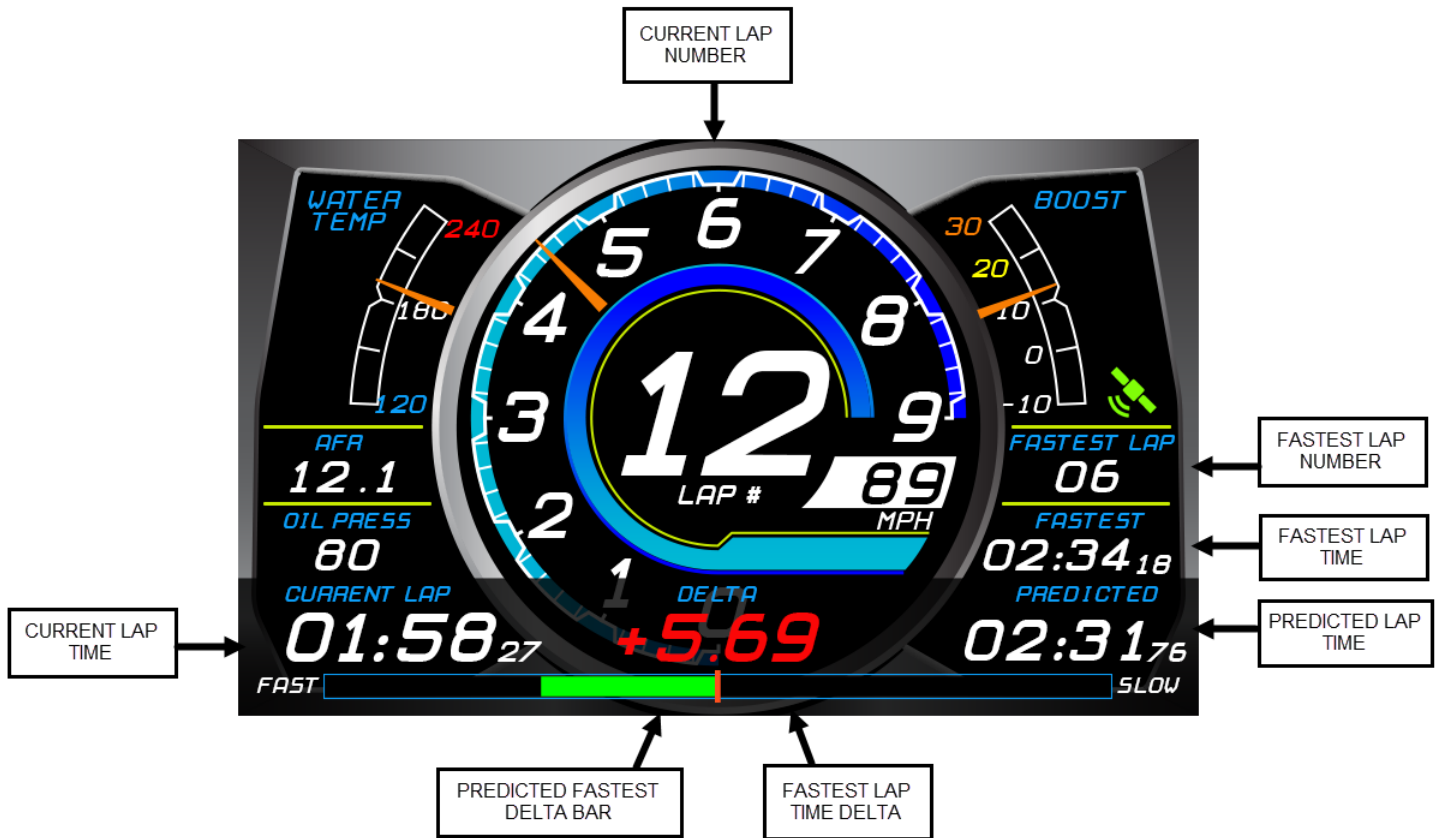


Additional details:

- Perimeter gauges: Gauge channels are user configurable – can be set to any channel desired. Gauge heading names are editable text.

- Oil Pressure: Setup assuming AEM 100 psi pressure sensor (pn 30-2130-100) using Analog Input 1 – see Page 4 Diagnostic for more details.
- Number scaling: The number scale on all four of the perimeter gauges is user configurable and can have its color and value changed (for units, sensor range, etc).
- Speedometer: “MPH” text can be changed for other units or speedometer can be changed to completely different channel.

## Page 3 – Lap Timing

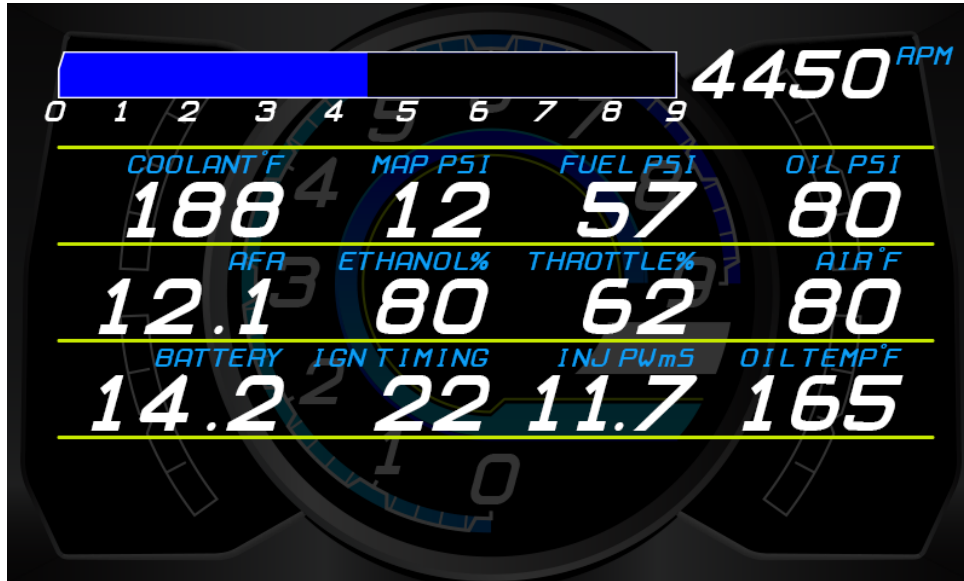


Includes lap timing channels for use with either an AEM VDM or GPS Module\*. This page maintains the upper two perimeter gauges and then displays AFR and Oil Pressure as a numeric read out on the left. The perimeter gauges and numeric read outs can be changed to reference any channel desired. Additional lap timing channel details:

- Fastest Lap Number: Displays the number of the fastest lap.
- Fastest Lap Time: Displays the time of the fastest lap.
- Predicted Lap Time: Displays the predicted lap time for the current lap based upon progress through the GPS track map.
- Fastest Lap Time Delta: Displays the difference in seconds between the last completed lap and the fastest lap. Negative deltas (faster) display as green and positive deltas (slower) display as red.
- Predicted Fastest Delta Bar: Graphically displays the delta time between the predicted lap time and the fastest lap time. Faster displays as green and slower displays as red.

\*If not using an AEM VDM or GPS Module for lap timing, Page 3 can be replaced with either Page 1 or 2. With Page 3 selected as the active page, go Edit>Paste Screen From Setup File, open the same AEM 5 Gauge layout file and select the desired page to import.

## Page 4 – Diagnostic

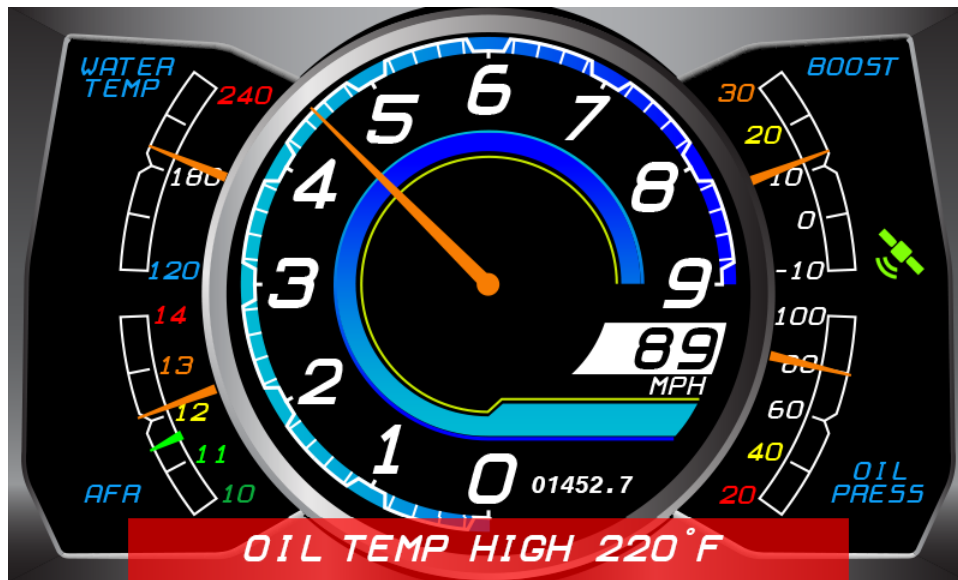


Diagnostic page that allows you to check over many important channels quickly and easily. Extra channels configured as follows:

Channel	S300 Input	Notes
Oil Press (Oil PSI)	Analog 1	Setup to use AEM 100 psi pressure sensor (pn 30-2130-100)
Fuel Press (Fuel PSI)	Analog 2	Setup to use AEM 100 psi pressure sensor (pn 30-2130-100)
Oil Temp (Oil Temp °F)	Analog 7	Setup to use AEM temp sensors 30-2010/2011/2013/2014 with 2.2k Ohm pull up to 5v

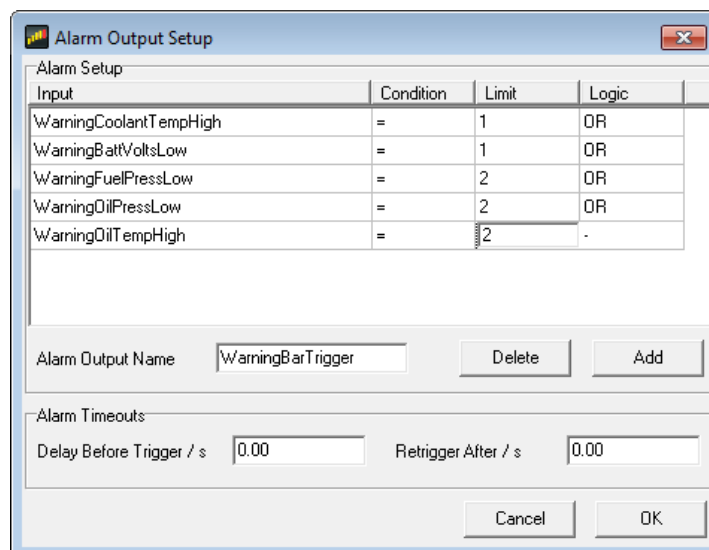
# Warnings and Alarms

## Warning Bar



This layout utilizes a number of different warnings and alarms to notify the driver of problems and their severity. A warning is generally used to report non-urgent conditions that the driver should be aware of but continue operating the vehicle. Warnings are viewable on any of the four main layout pages. A warning will be triggered and continue to display so long as the warning trigger conditions are still valid. Warnings cannot be forcibly cleared.

The red warning bar and warning message text are two separate elements that are triggered by output *WarningBarTrigger* which is an alarm that references the following channels:



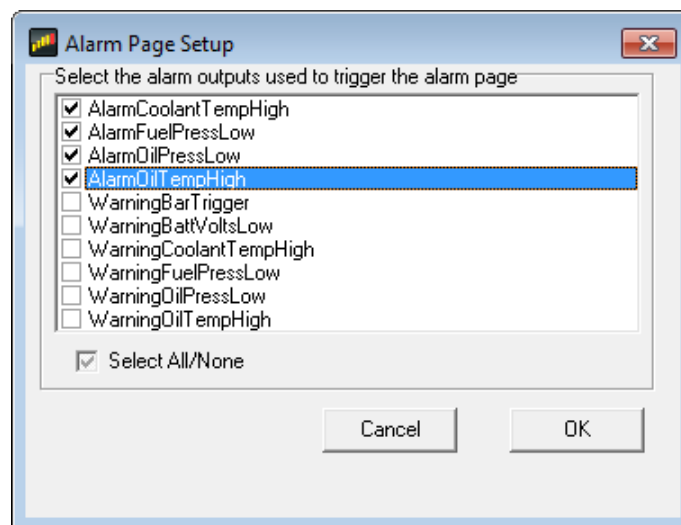
The warning will be triggered if channels *WarningCoolantTempHigh* or *WarningBattVoltsLow* are 1. Note that *WarningFuelPressLow*, *WarningOilPressLow* and *WarningOilTempHigh* are included in the *WarningBarTrigger* alarm but have been set to 2 to disable them from triggering the warning. If fuel and oil pressure sensors are being used, their values may be set to 1 in order to trigger the warning in the event of low oil/fuel pressure.

## Alarm Page



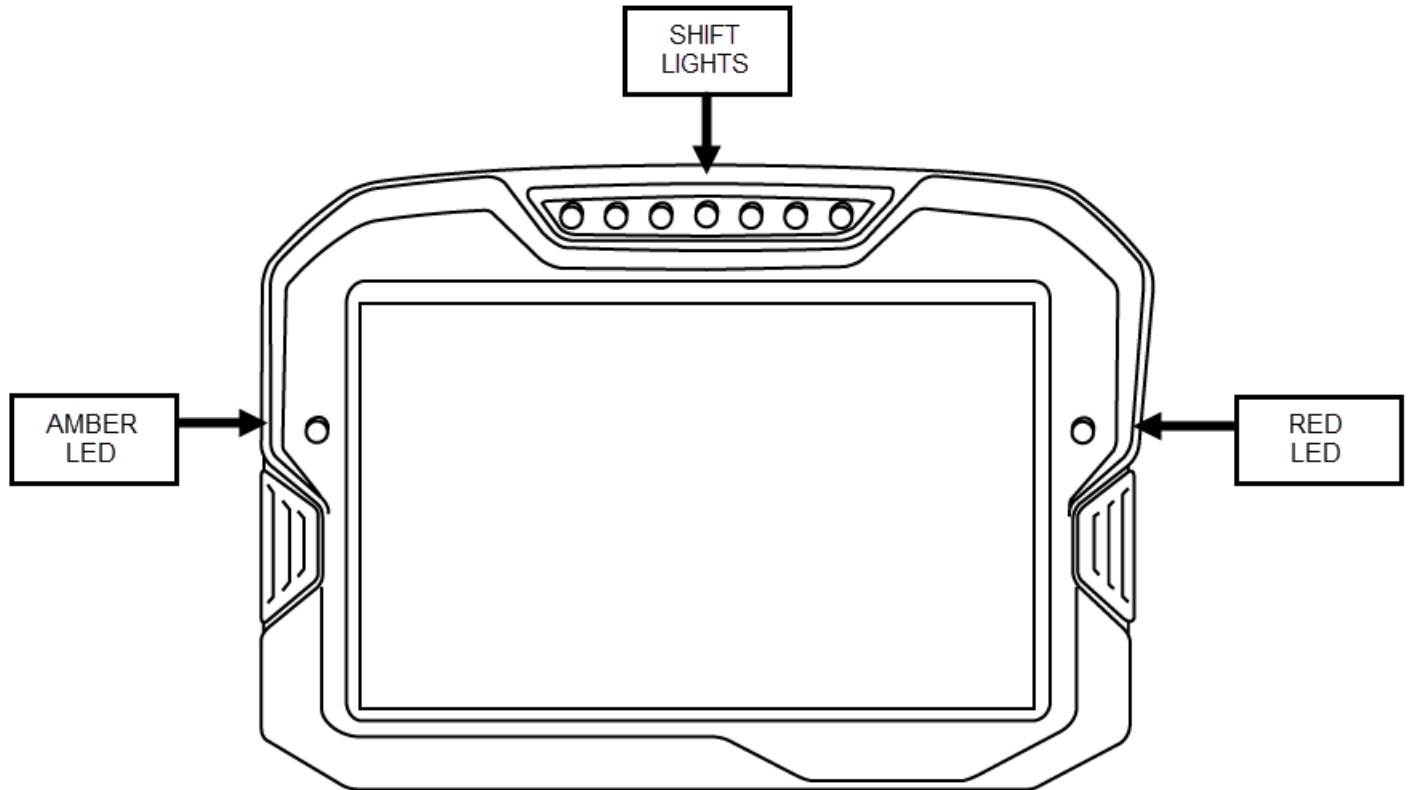
Alarms are generally used to alert the driver to a severe condition that could potentially cause engine/vehicle damage and vehicle operation should be stopped immediately. When an alarm is triggered, the Alarm Page is displayed on the screen along with an alarm message. An alarm can be cleared or “ignored” by the driver by pressing the left button on the dash.

Alarms are configured similarly to warnings however setting up the Alarm Page trigger is slightly different. There are separate alarm outputs that appear similar to the warning outputs but typically have more severe trigger thresholds. For example, the **warning** for low oil pressure is triggered at 40 psi but the **alarm** for low oil pressure is triggered at 30 psi. The trigger criteria for the Alarm Page is configured by going to Setup>Alarm Page. The Alarm Page Setup references all the alarm outputs in the layout.



**NOTE:** Warnings and alarms for low oil and fuel pressure are built into the layout but have been “disabled” by setting their engine speed reference to be >12,000. To make these functions active, set to a pertinent value; ie 3000 rpm.

## Shift Lights & LEDs



Shift lights and LEDs are configured in Setup>Shift Lights and LEDs. This layout sets the shift lights to start at 5000 rpm, go full scale at 6700 rpm and flash at 7000 rpm. The shift lights progression range can be configured in Shift Light Setup>Auto Create Outputs. The first shift LED is turned on at the Start rpm and the following LEDs are turned on based on the Offset value. To find the correct Offset value, take the full rpm progression range and divide by 7. For instance, for shift lights that start at 5000 rpm and end/flash at 7000 rpm, take full rpm progression range of 2000 and divide by 7 (Offset = 285).

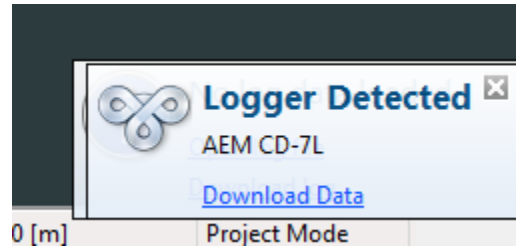
The amber (left) LED references output *LEDLeftAmber* which is an alarm that references *WarningCoolantTempHigh*. The amber LED will turn on when coolant temp is greater than 210°F. The red (right) LED references output *LEDRightRed* which is an alarm that references *AlarmCoolantTempHigh*. The red LED will turn on when coolant temp is greater than 230°F.

## Logging

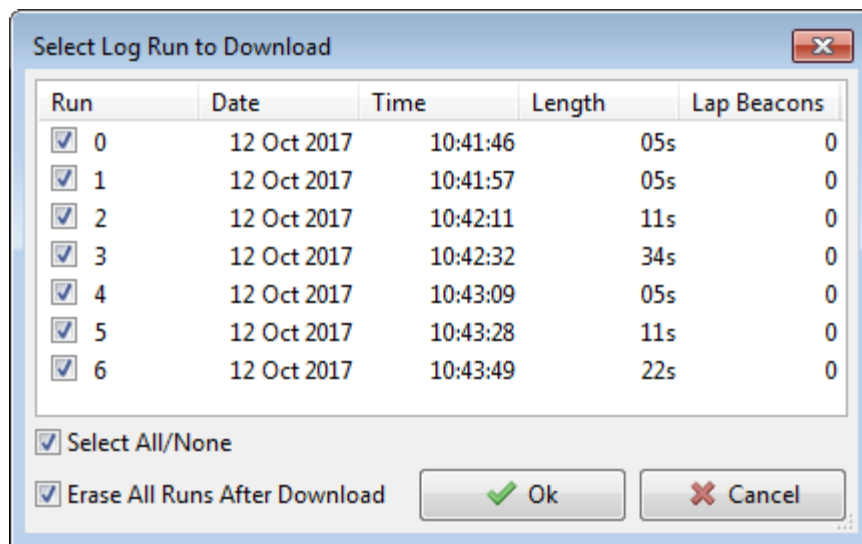
If using the logging version of the dash, the incoming CAN bus data channels can be recorded in a data log for later analysis. The Hondadata S300 V3 layout file is already setup to log with a good selection of useful channels. Logging is set to start/stop based on output *EngineSpeed* so logging will be active whenever the engine is running. To view the logging setup or make changes, go Setup>Logging.



Logs are downloaded from the dash using the AEMdata software. With the AEMdata software open, simply connect the USB cable from the dash to the PC with the dash powered on and the software will automatically detect the dash and that it has logs to download.



Click on Download Data and you'll be prompted to select the sessions to download. Be aware that all the individual log sessions selected will be downloaded as a single .daq file.



Once you click on OK, you'll be prompted for a file name and save location.

**TIP:** Because multiple log sessions are downloaded as a single .daq log file through AEMdata, you may choose to eliminate unuseful data (warm up, long periods of idle, etc) to shorten the log to only contain data you're interested in analyzing. This can be accomplished by trimming the log data. To do this, select the log data to be kept (click & drag) and then go File>Trim Log File. Select the channels to be included in the new trimmed .daq file, click on Export and select a file name and save location. You will now have a new trimmed .daq file.