Accutach Co. Ford Clock Gauge
User Manual
Rev 2.1

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Thank you for your purchase of the Accutach Co. Mustang Clock Gauge. It adds Coolant Temperature, Intake Air Temperature, Air/Fuel Ratio, Oil Pressure, Fuel Pressure and Voltage digital gauge functionality to your 1994 to 1997 Ford Mustang, 1993 to 1997 Ford Crown Victoria or 1993-2002 Mercury Grand Marquis dash clock. Note that Air/Fuel Ratio functionality requires the use of a compatible aftermarket Wideband O2 Sensor (Not Included). Note that Oil Pressure gauge functionality requires the use of an Autometer 2242 100 PSI oil pressure sender (Not Included). Also, there is an output signal that will drive your stock oil pressure gauge in the same way the stock oil pressure sender does allowing you to simply replace your OEM oil pressure sender with the Autometer sensor. Fuel pressure gauge functionality will require the use of an Autometer 2246 fuel pressure sender (Not Included).

Please see the Clock Gauge Installation Guide for information required to install the Clock Gauge in your Ford. This manual covers the use of the Clock Gauge once it has been successfully installed on the car.

There are two main modes of operation, Setup Mode and Operate Mode. Setup mode allows you to set your clock and select temperature units of Fahrenheit or Celsius. It allows you to select between gasoline Air Fuel Ratio and Lambda for any fuel for the wideband display. It also allows you to set Alarm Limits for some of the gauge functions. Operate Mode allows you to do display any one gauge/clock at any given time. It also allows you to switch between two gauges/clock with the simple press of one of the two buttons. There is an alarm output with the ability to drive a cluster idiot light or equivalent. If you do not want one of the gauge functions, simply skip them during setup and operation. Make sure you disable any alarm associated with any gauge function you will not be using in your application.

Note: When we say "gauge" in this manual, it means clock in addition to the gauges that the Clock Gauge circuit implements. In other words, the clock is simply another gauge that can be displayed.

Setup Mode

When the Clock Gauge initially wakes up after power-up, (whenever battery power is restored), it wakes up displaying the flashing Oil Pressure Alarm, assuming the engine in not running. To put it into Setup Mode, simple press and release both buttons together. It will display "SU" for about 2 seconds:

After the "SU" is displayed for about 2 seconds, it will go to Clock Set Mode with the display at 12:00.

Press or press and hold the H button to advance the hour. Press or press and hold the M button to advance the minute. Press both buttons together to advance to the Temperature Unit Set Mode.

Temperature Unit Set Mode

In Temperature Unit Set Mode, the display will show an F on the left and a C on the right for about 2 seconds, then it will show the current setting.

Press the H button to set the Clock Gauge to Fahrenheit Mode. Only F will remain on the display when the mode is set.

Press the M button to set the Clock gauge to Celsius Mode. Only C will remain on the display when the mode is set.

Press both buttons together to exit Temperature Unit Set Mode and enter Engine Coolant Temperature Limit Set Mode. The characters EC will be displayed for two seconds after the mode switch.

Engine Coolant Temperature Limit Set Mode

The Clock Gauge Active Gauge will got to full brightness (if dimmed when the vehicle lights are on), switch to Engine Coolant Temperature Mode and flash between the letters EC and the current temperature if the preset engine coolant temperature limit is hit or exceeded. The idiot light output will also be activated.

In Engine Coolant Temperature Limit Set Mode, the display will show 230 in Fahrenheit Mode or 110 in Celsius Mode. You can raise the limit by pressing or pressing and holding the H button. You can lower the limit by pressing or pressing and holding the M button. If you set the limit to the maximum (350°F or 177°C), the limit alarm will be disabled.   You should do this if you are not using the ECT gauge function in your application.

Press both buttons together to exit Engine Coolant Temperature Limit Set Mode and enter the IAT Limit Set Mode. The characters IA will be displayed for about two seconds after the mode switch.

Intake Air Temperature Limit Set Mode

The Clock Gauge Active Gauge will got to full brightness (if dimmed when the vehicle lights are on), switch to Intake Air Temperature Mode and flash between the letters IA and the current temperature if the preset intake air temperature limit is hit or exceeded. The idiot light output will also be activated.

In Intake Air Temperature Limit Set Mode, the display will show 245 in Fahrenheit Mode or 118 in Celsius Mode. You can raise the limit by pressing or pressing and holding the H button. You can lower the limit by pressing or pressing and holding the M button. If you set the limit to the maximum (350°F or 177°C), the limit alarm will be disabled. You should do this if you are not using the IAT gauge function in your application.

Press both buttons together to exit Intake Air Temperature Limit Set Mode and enter the Oil Pressure Limit Set Mode. The characters OP will be displayed for two seconds after the mode switch.

Oil Pressure Limit Set Mode

The Clock Gauge Active Gauge will got to full brightness (if dimmed when the vehicle lights are on), switch to Oil Pressure Mode and flash between the letters OP and the current oil pressure if the preset intake oil pressure limit falls to or below the preset oil pressure limit. The stock oil pressure sender output is connected to ground when the oil pressure is above the limit. This sets the stock oil pressure gauge to Normal. The stock oil pressure sender output is opened when the oil pressure is at or below the limit. This sets the stock oil pressure gauge to below the L mark. The idiot light output will also be activated.

In Oil Pressure Limit Set mode, the display will show 6 PSI. You can raise the limit by pressing or pressing and holding the H button. You can lower the limit by pressing or pressing and holding the M button. If you set the limit to 0, the limit alarm will be disabled, and the stock gauge output signal limit will be set to 6 PSI. You should do this if you are not using the Oil Pressure gauge function in your application.

Press both buttons together to exit Intake Oil Pressure Limit Set Mode and enter AFR Display Set Mode. The characters A and L will appear in the display for 2 seconds after the mode switch.

AFR Display Set Mode

In AFR Display Set Mode, the display will show an A on the left and an L on the right for about 2 seconds

The Air Fuel Ratio can be displayed as either Air Fuel Ratio for Gasoline (A) or Lambda for any fuel (L).

If you choose Gasoline AFR, the air/fuel mixture will be displayed in parts of air to one part of fuel. A perfect burn (stoichiometry = 14.64) will display 14:64, a leaner burn will display a higher number and a richer mixture will display a lower number.   Since the clock display can't display a decimal point, the colon ":" is used instead.

Press the H button to set the Clock Gauge to Gasoline AFR Display Mode. Only A will remain on the display when the mode is set.

If you choose Lambda, the air/fuel mixture will be displayed as a decimal number where 1.00 represents a perfect burn for any fuel (stoichiometry). At stoich the display will show 1:00 since the clock display can't display a decimal point. A leaner burn will display a number larger than 1.00 and a richer burn will display a number less than 1.00.

Press the M button to set the Clock Gauge to Lambda Display Mode. Only L will remain on the display when the mode is set.

Press both buttons together to exit AFR Display Set Mode and enter Set Display Brightness Mode.

Set Display Brightness Mode

Normally, when you turn your car's lights on, the interior lights will all dim so the interior lighting will not interfere with your night vision by being too bright. This includes the clock. However, if you ever turn your lights on during the day, it is difficult, if not impossible, to read the clock. It is not a good thing if you can't read your digital multifunction gauge, so It is possible to disable the clock gauge's automatic dimming function when the lights are turned on.

In Set Display Brightness Mode, the display will show an H on the left and an L on the right for about 2 seconds

Press the H button to set the Clock Gauge to High intensity Display Mode. Only H will remain on the display when the High intensity mode is set.

If you choose the High intensity display mode, the clock gauge will not dim the display when the car's lights are turned on.

Press the M button to set the Clock Gauge to Low intensity Display Mode. Only L will remain on the display when the Low intensity mode is set.

If you choose the Low intensity display mode, the clock gauge will dim the display when the car's lights are turned on.

Press both buttons together to exit Set Display Brightness Mode and enter Operate Mode. 18:88 will appear in the display for 2 seconds to signify the end of Setup Mode. (Note: There are no alarm limits for fuel pressure, voltage or wideband gauge functions.)

At this point, the Clock Gauge will be in Operate Mode.

Operate Mode

If your engine is not running and you have an oil pressure threshold set, the oil pressure alarm will immediately be set, and the display will flash an alternating pattern of "OP" and "0". Start your engine to raise the oil pressure to make the alarm go away.

When in operate mode, you can assign one gauge function to the H button and another gauge function to the M button. You can switch the active gauge between the current H and M gauges simply by pressing the H or M buttons. After you press the button, the selected function code will be displayed for about one second. All of the gauge functions are working in the background, but only one can be shown at any time.

By pressing and holding the H or the M button for two seconds you can assign the next gauge function in the list to that button. The two digit code for that gauge function will be displayed as long as you are pressing the button and two seconds longer after you release it. After that, it will show the data for that gauge function. If you want to move to a different gauge function, you can press and hold the button for 2 seconds to step to the next gauge function in the list. You can hold the button for longer than 2 seconds to continually step through the list of gauge functions.

Here is the list of gauge functions in the order in which they appear when you are assigning gauge functions:

Function	Code
Clock	CL
Engine Coolant Temperature	EC
Intake Air Temperature	IA
Oil Pressure	OP
Fuel Pressure	FP
Voltage (Potential)	PO (for Potential)
Air/Fuel Ratio	AF

If you are not using a gauge function in your application, simply skip it.

If more than one alarm is activated at once, the out-of-limit functions will be flashed on the display sequentially, and the idiot light will be lit indicating one or more limits have been exceeded.

Changing the Setup

You can reenter the Setup Mode at any time simply by pressing both buttons at the same time. When you enter setup, the gauges are not functioning in the backgound. If you are worried about your oil pressure, intake air temperature or engine coolant temperature, you should do setup with the engine off, key on.

The display will change to show SU while both buttons are pressed, and for one second after the buttons are released.

Then the Clock will be displayed. From this point on, the setup will be identical to the initial setup procedure, except the current setup settings will appear rather than the initial power-up settings. Remember, if you grounded any of the sensor inputs during installation, the setup option for those gauge functions will not appear in setup.

Things to note

Operating Voltage Range:
The Clock Gauge will operate over a battery voltage range of 8 to 18V. However, the stock Ford clock display unit starts to dim at battery voltages below 11V and fades to near nothing by about 9 volts.

Temperature Calibration:
The Coolant Temperature and Intake Air Temperature Gauge functions have been calibrated against the PCM's temperature sensor readings. However, those readings are limited to values from 0 degrees to 255 degrees F. Your clock gauge can read and display values below and above those values, but your PCM will not recognize them. We strongly recommend that you do not drive your car with ECT or IAT values at or above 255 degrees F (124 degrees C) because you PCM can no longer accurately see the temperature. It would be bad for your engine, too.

Decimal Points:
Since there is no decimal point in the Ford clock display, the colon is used as a decimal point for the Voltage Gauge function and the AFR Gauge function.

The Voltage Gauge function displays the voltage to the tenths of a volt in the form 14:3 for example.

The AFR Gauge function displays AFR to the hundredths in the form 14:64 for example. The AFR Gauge function displays Lambda without a decimal point. Values of 1000 and above represent Lambdas of 1.000 (Stoich) and above (Lean). Rich values of 999 and below represent Lambdas of 0.999 and below.

Since it may be difficult to differentiate between a clock's time display and a lean AFR condition, when the clock gauge is displaying the clock, the colon will blink on and off each second.   If it is displaying AFR or voltage, the colon will be on all the time.

When you first put your key in the on position, you may see one or more of the alarms and the display flicker as the clock gauge boots up.

Enjoy your new Clock Gauge.