

InVision 87-93 MUSTANG DIRECT FIT DIGITAL DASH



What is Included:

- (1) Preassembled Panel Mount Digital Gauge Display & Universal Wire Harness
- (1) Oil pressure Sending Unit
- (1) Temperature Sending Unit
- (4) Light Sockets
- (4) 194 Bulbs
- (1) 510 OHM Resistor

Recommended Tools & Supplies:

- Screwdriver set (including both flathead & Phillips)
- 1/4" drive standard & metric socket set
- 3/8" drive standard & metric socket set
- Standard & Metric open end wrenches
- Wire strippers
- Wire crimpers
- Wire splice connectors for connecting wires to your vehicle harness.
- Wire coverings or zip ties for neatly organizing or bundling wires.
- Wire diagram of your vehicle 3A & 5A fuse & fuse holders
- Soldering iron, solder & various sizes of heat shrink tubing
- Digital volt/ohm meter
- Oil Pressure Socket

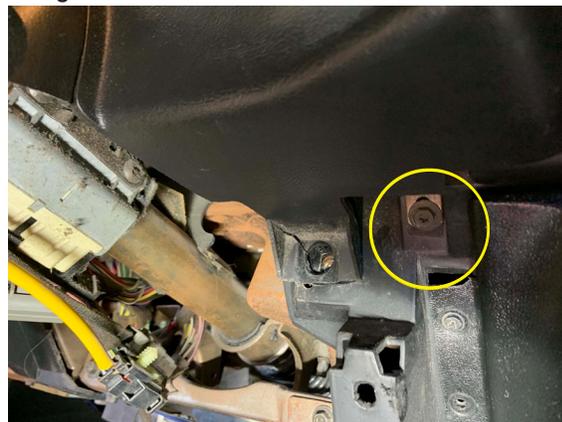
Step 1, Removal

Begin by removing the steering column covers (upper & lower). Next, remove the lower dash plastic cover (requires 8mm socket), followed by removing the metal knee plate which is behind the lower dash plastic (those also require an 8mm socket). While you are down there, go ahead and remove the two lower bezel screws, as well as the right, lower bezel bracket screw (image 2 below). This requires a 7mm socket.

Image 1



Image 2



Now, you will want to remove the switches from the dash bezel. You will find release tabs visible under the buttons that you press, to be able to pull the switches from the bezel (see image 3 on next page). Once removed, use a screwdriver, and carefully pry against the wire harness locking tab, to push it away from the switch. Be careful not to bend the tab away from the harness connector, as you don't want to break the locking tabs (see image 4 on next page).

Image 3



Image 4

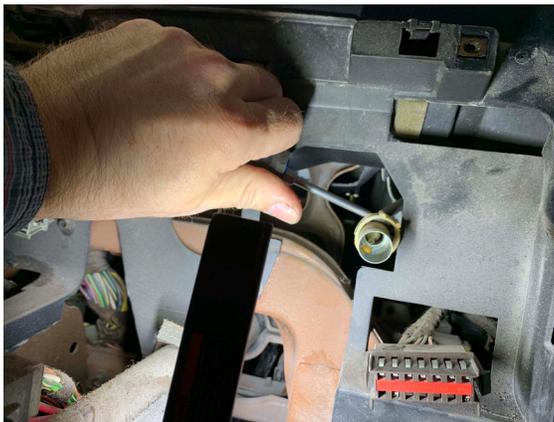


After removal of the switches, you can use a T20 Torx bit, with a short 1/4" drive ratchet to remove the top of the bezel screws. With all of this removed, you should be able to carefully remove the instrument cluster bezel from the vehicle. Now, you may remove the instrument cluster screws (which are 7mm). Before you can completely remove the instrument cluster, you will have to locate, and unplug both wire harness connectors, as well as the mechanical speedometer cable. The harness connectors have squeeze tabs that you can squeeze and disconnect by hand (see image 5 below). The speedometer cable can be stubborn, and a small, to medium flat blade screw driver can be helpful to try and "off center" the speedometer cable plastic, to get it to release (see image 6 below). The cluster was already removed to be able to show you how I positioned the screwdriver to release the cable).

Image 5



Image 6



Step 2, Wiring:

Although the InVision Digital Dash comes assembled, the wiring will take a little time, therefore it is easier to disconnect the wire harness from the rear of the InVision Digital Dash. Push down on the blue locking tab, so that you can pull the pink latch all the way up, and over as shown in the pictures below. The connector will then easily pull out. When you are ready to reinstall the wire harness, follow the steps in reverse order, except that you won't have to push the locking tab to install (you will need to secure the pink latch).



You can then remove the Selector Knob from the rear of the new InVision panel by removing the two T10 Torx (sometimes Phillips) screws. Now you can move the InVision Digital Dash out of the way so that you have plenty of room to work.

Wiring will require some basic automotive electrical knowledge, and in some cases a vehicle specific wiring diagram, or the ability to test circuits to verify proper hook ups. You will need to be able to test various circuits at this time. You will find the following wire colors on your new InVision Digital Dash. There are several different methods of connection that you can use when connecting the InVision Digital Dash wire harness to your existing wiring:

Gray: Dash Lights. Connect to factory dash lighting wire. Look for a power that turns on and off with the parking lights and or head lights, but also dims (power lowers) as you adjust your headlight dimmer. A test light works well for checking this. Check the light blue with red trace wire from either of your factory cluster connectors. If by chance you have a faulty dimming circuit in your vehicle, you can use any of the wires from your headlight switch that turn on & off with the park lights. The factory dimmer is not used by your new dash. More on the functionality of this later in step 4 of this instruction.

Red (4 foot): 12v, key on power. Connect to factory gauges power only if it is 12v. This power should turn on and off with the ignition switch. Check the red wire with yellow trace from one of the factory cluster connectors. If no factory wire to use, you may either find an ignition power from the fuse box, or from the ignition switch. If not using a factory cluster power wire, this should be protected with a standard automotive 5A inline fuse.

Pink: Battery power, for memory retention. You may connect this to any constant-on, battery power such as at the factory fuse box, the ignition switch, or to the battery direct. You may check for power at these locations by leaving the key switched off, and using your test light to locate power that is still on. You may protect this circuit with a standard automotive 3A inline fuse.

Black (4 foot): System ground. We recommend to choose a new ground location for this wire, preferably at the engine. You may ground to the rear of one of the cylinder heads, or on the intake manifold to one of the unused accessory bolt holes. We do NOT recommend using existing, factory cluster ground as this is going to be a much older circuit, which may no longer be a very clean ground.

Green w/ Red stripe: Hi Beam indicator. Connect to factory hi beam indicator wire or to hi beam switch. This circuit will be powered only when the headlights are on, and high beams are on. Check the gray with white trace wire from one of the factory cluster connectors.

Blue w/ White stripe: Left turn indicator. Connect to factory left turn indicator wire. You may test for this with a test light, with the key on, with left turn signal on and look for a wire that flashes your test light with the turn signals. Check the light green with white trace wire from one of the factory harness connectors. *See note after the wiring instructions, on the next page.

Blue w/ Red stripe: Right turn indicator. Connect to factory right turn indicator wire. You may test for this with a test light, with the key on, with right turn signal on and look for a wire that flashes your test light with the turn signals. Check the white with light blue trace wire from one of the factory harness connectors. *See note after the wiring instructions, on the next page.

Red (2 foot): 12v key on power. This is intended for applications where you might be using a 3-wire vehicle speed sensor that requires power. You should find that this wire is powered any time that the digital dash is powered. You may also use this to power a GPS interface module, or some other accessory as desired as long as it fits within the recommended fuse requirements. This wire also may not be used for your particular installation.

Green w/ white stripe: Temperature sender wire. Run this out to the engine bay, to where you will install the AutoMeter temperature sender.

Violet: Speed signal. Connect this to the signal wire at your speed sender/sensor. If you are using a computer (ECM, PCM, ECU, etc), you may connect this to the factory speed signal wire at the computer instead of the speed sensor if it is equipped. Consult a diagram for your computer to verify.

Brown: Oil PSI sender wire. Run this out to the engine bay, to where you will install the AutoMeter oil pressure sender.

Green: Tachometer signal wire. Where you connect this will depend on what ignition system you have. If your engine is distributor equipped, with no ignition box, you may then connect to the negative side of the ignition coil. If you are using an after market ignition box, you will connect this wire to the dedicated tachometer signal output wire. NOT to the ignition coil. If your application has no distributor, or ignition box and is using coil packs you may have an available tachometer signal at your computer. If you have questions on this, please call our tech support team at (866)-248-6357.

Black (2 foot): This is used only if you have a speed sensor/sender that requires a supplied ground. If you have a speed sensor that is already existing/functioning that is already grounded or is grounded by a computer, then this wire is not needed. If you need to supply ground to your speed sender/sensor, then connect this black wire to the ground wire of your speed sender/sensor. If unused, ground this wire.

Orange: Fuel sender wire. Connect to the original fuel sender wire. Ford typically used yellow with white trace wire for this. To be sure, you may use a digital ohm meter to test which wire is correct. To determine the correct wire, set your ohm meter to its lowest setting (most commonly 200, with no K or M suffix). Connect the positive lead of the meter to the wire you are going to test. Ground the meter negative lead.

You are looking for something that resembles the fuel level reading prior to original dash removal. Example, the factory sender is 16-158 ohms. If the tank was at or near E, you might see 16 to 25 ohms. If the tank was at half tank, the reading would be about 87 ohms. If the tank was at Full, the reading would be near 158 ohms. The fuel level sender simply varies from 16 to 158 based on the amount of fuel there is. If the factory fuel gauge did NOT function, you may have further diagnosis to do, to test the sender in the tank, the sender ground, and the sender wire itself. You may call AutoMeter tech support for further assistance on this if needed.

Brown w/ White stripe: Service Engine Soon Indicator. Not all applications will use this. This is only used if you are using an engine management system that has a grounded output for a Service Engine Soon light. Check the pink with light green trace wire from one of the factory cluster connectors.

Six pin connector. For future expansion. *See Image on page 12.**

***WARNING* DO NOT CUT, MODIFY, OR HANDLE IN ANY WAY, ANY OF THE YELLOW SHEATHED AIR BAG WIRES, OR YELLOW AIRBAG CONNECTORS!**

The only Air Bag wires you are handling in this case is the black wire with a yellow trace at the instrument cluster connector, for the Air Bag warning indicator lamp ONLY.

Note Regarding Turn Signals: Before you reinstall your dash, check to see if your turn signals flash after wiring in your new dash. If they do flash, then leave them as is. If they do NOT flash, then you will need to wire in a light socket, with an incandescent bulb (such as a 194) in parallel. For example, for the left turn signal, we wired as recommended, but also used an AutoMeter model 3220 light bulb, and wired the white wire of this light socket to the same light green w/white trace factory turn signal wire, and we then grounded the black wire of the new light socket. The internal turn signal indicators of the new InVision dash are LED, and may cause your turn signals to flash slow, or not at all. Adding the additional light socket puts more electrical load on the circuit, and causes it to function normally, should this happen.

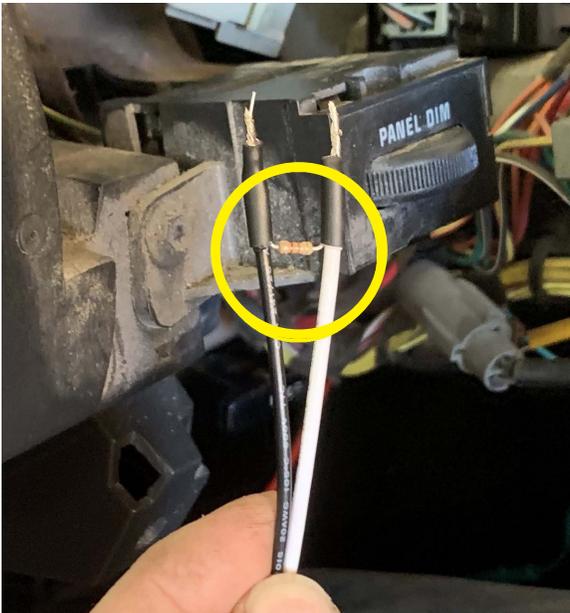


The InVision dash comes with 3 external warning indicator lights that are option for you to wire up and use, to keep factory systems functioning properly. They are charging system, ABS brakes, and Air Bag (SIR). Each of these use a common 194 bulb. Top is Charging Light, Middle is ABS Light, Bottom is Air Bag Light.

If using the original charging system: You will have to wire in a light socket, with an incandescent light bulb, and a 510 ohm ½ watt (or larger watt) resistor in order for the charging system to function. Without this, the charging system will not work.

This can be done with a light socket, such as AutoMeters model number 3220, and use a 194 light bulb (bulb & socket included). For this, connect one wire of the light socket (either) to pin 14 light green with red trace wire of the factory cluster connector. Then connect the other light socket wire to the remaining red wire with yellow trace wire of the factory cluster connector (there were originally two of these wires, and you used one already for your 12v power wire in this instruction). Keep in mind if you have an airbag, you will be connecting a 2nd wire to the red/yellow wire in the next step below. You will also wire the resistor across the two wires of the light socket (see photo 7 below).

Image 7



When the charge light is wired properly, the light will turn on with the key on, and engine not running. The light will then go out, when you start the engine & the charging system starts working. If the light comes on at a later time with the engine running, then have your alternator checked.

If SRS / Airbag Equipped: You will have to wire in a light socket, with an incandescent light bulb. This can be done with a light socket, such as AutoMeters model number 3220, and use a 194 light bulb (bulb & socket included). For this, connect one wire of the light socket (either) to pin 10 black with yellow trace wire of the factory cluster connector. Connect the second wire of the light socket to the same red with yellow trace wire that you used for the charging system light.

NOTE: Do Not substitute an LED in place of the supplied incandescent bulb.

ABS Light: Not used with the Fox Body Mustang applications

Now is a good time to plug your harness into the new dash display, and turn power on to make sure all of your wiring is good, and to become familiar with the dash. Remember you still have senders to connect outside of the interior at this point. We will cover Set Up details later, though for now, simply make sure that your dash powers up, and that turn signals, and hi beam indicator (when lights are on) function.

Step 3, Senders:

Water temperature: The InVision Digital Dash must use the included AutoMeter temperature sender. On most SB Fords, the factory temperature gauge sender is located in the intake manifold, toward the front on the drivers side. You can remove this sender, and install the AutoMeter sender & 3/8" NPT adapter bushing in this location.

***TIP:** The factory gauge sender uses a single wire. You do not want to remove the 2-wire sender (sensor) located on the opposite side of the intake manifold.

The AutoMeter sender is 1/8" NPT, and includes a 3/8" NPT & 1/2" NPT adaptor bushing.

If you are running a GM LS based engine, you will need a different sender & adapter due to the LS engine family unique size of 12mm x 1.5. You will need AutoMeter model number 2259 sender & model number 2277 adapter. This will install into the passenger bank cylinder head, just past the last exhaust port.

You may now connect the Green w/ white stripe sender wire from the InVision Digital Dash wire harness.

Oil Pressure: The InVision Digital Dash must use the included AutoMeter pressure sender. The SB Ford oil pressure port is located on the left (drivers side) front of the engine block, near the oil filter. This port is 1/4" NPT. Many, but not all SB Fords have an oil pressure extension pipe, which you will want to retain, in order to fit our sender. If you do not have this extension pipe, you can order one from sellers such as Scott Drake (google Scott Drake oil pressure extension).

You will have to remove the factory sender from this location in order to install the AutoMeter sender.

The AutoMeter sender is 1/8" NPT, and includes a 1/4" NPT adaptor bushing.

If you are running a GM LS based engine, you may need a different adapter due to the LS engine family unique size of 16mm x 1.5 located at the back of the engine. You will need AutoMeter model number 2268 adapter. Another popular option is to modify the cover plate located just above the oil filter, and drill & tap a 1/8"NPT hole and install the sender there. Some choose to run braided line, such as AutoMeter model number 3227, in order to remotely mount the sender away from the exhaust when using this location/method.

Fuel Level: This kit is designed for multiple factory fuel senders. The resistance ranges that are compatible are: 0-90, 240-33, 73-10 (linear), 73-10 (non-linear), 16-158, 40-250, and 0-30 OHM. If you have a fuel sending unit other than those listed you will need to change the fuel sender.

Speed Sensor/Sender: This sender was not included with the InVision Digital Dash, since many users already have an existing speed sender due to using a late model drivetrain, or having a pre-existing electric speedometer.

You can use AutoMeter model number 5292 speed sender if using a Ford transmission with a factory cable output. Connect the red wire from the speed sender to the 2 foot red from the InVision Digital Dash wire harness. Connect the black speed sender wire to the 2 foot black wire from the InVision Digital Dash wire harness. Connect the white speed sender wire to the violet wire from the InVision Digital Dash wire harness.

If you have a pre-existing 2-wire speed sender that was being used for an electric speedometer, you may connect one wire of this speed sender to the 2 foot black wire from the InVision Digital Dash wire harness. Then connect the other wire of the speed sender to the violet wire from the InVision Digital Dash wire harness. Many times the polarity of the 2 wire speed sender is not polarity sensitive. Though if you have a black wire, that one is typically ground, and the other (white, tan, violet, green, etc.) is typically signal. If both were the same color, then it will not matter.

If you are using a factory late model drivetrain which uses its own speed sender, you will then use the factory speed-out wire/circuit.

Start the engine: Check to make sure you are registering oil pressure, water temperature (as it warms up), volts, fuel level, and RPM. You will need to calibrate & drive the vehicle for speedometer function. Also check for any leaks at this time.

If all looks good, then begin installing the new InVision Cluster into the dash, and re-install parts in the reverse order in which they were removed.

Step 4, Setup

The InVision Digital Dash comes equipped with a button/knob referred to as the "Selector Knob". To enter the InVision Digital Dash Main Menu, push in & release the Selector Knob one time. The Main Menu will appear. The Selector Knob also turns slightly left or right. Use the left or right motion to scroll through the menu. Think of pushing in & releasing the knob as an "Enter" command. If you attempt to enter the menu while driving (vehicle in motion), you will only get a partial menu. In order to access the full menu, the power needs to be on, but you need to be stopped (the engine can be running). The full Menu shown is in the below pictures.



Warnings: The InVision Digital Dash provides audible and visual warnings for certain parameters. Warnings are only active when the engine is running. The fuel level warning is not adjustable, and comes pre-set at around 1/8 tank. You can disable the warning if you choose. The oil pressure warning can be adjusted to turn on at 4, 8, or 18 PSI. You can disable the warning if you choose. The water temperature warning can be adjusted to turn on at 220, 235, or 250 degrees. You can disable the warning if you choose. The voltmeter warning can be adjusted to turn on at 11.5, 12.2, or 15.0 volts. You can disable the warning if you choose.

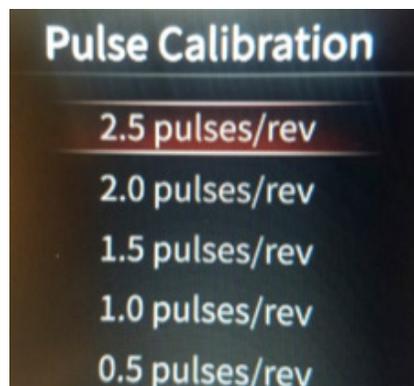
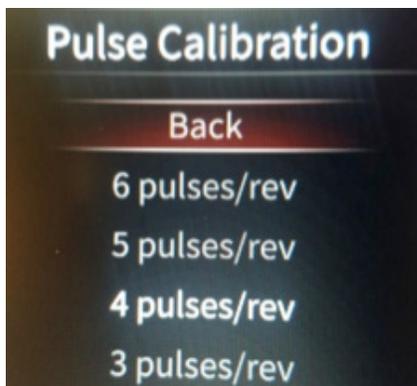
To adjust, or disable a warning, enter the Main Menu and scroll to the gauge you want to adjust (we will show oil pressure here), and press Enter. Scroll to the value you want to select, and press Enter. To exit, scroll up to Back and press Enter.



Once you are finished adjusting your warnings, and you are back at the Main Menu, scroll to the top until Close is highlighted, and press Enter.

Tachometer PPR (Pulse Calibration): This is the tachometer calibration. PPR stands for pulses per revolution. A standard V8 with a distributor type ignition system will be 4ppr. This is also the standard setting for the InVision Digital Dash. If you have an in line 6, your setting would be 3ppr. And if you have updated your drivetrain to an LS type engine and are using a factory PCM, the PCM tachometer output is 2ppr.

To adjust PPR, enter the Main Menu. Scroll to Tachometer, and press Enter. Next, scroll to Pulse Calibration, and press Enter.



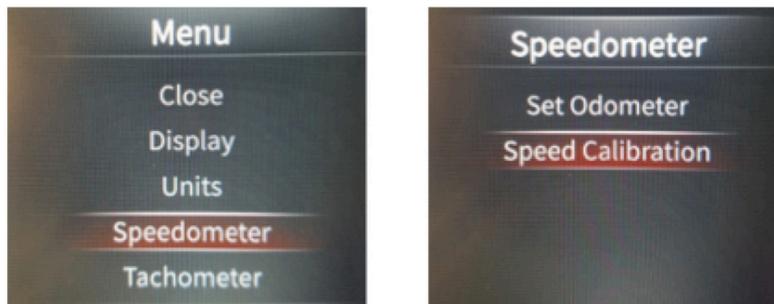
Once you have chosen the correct PPR, scroll up to Back, and press Enter. Then, scroll up to Back again, and press Enter. Once you are back at the Main Menu, scroll to Close and press Enter.

Tachometer Scaling: The standard scale is 0-10,000 RPM. You can adjust the tachometer scale to be 0-8,000 RPM if desired. To adjust the scaling, enter the Main Menu. Scroll to Tachometer, and press Enter. Next, scroll to RPM and press Enter. Scroll to the desired scale, and press Enter.

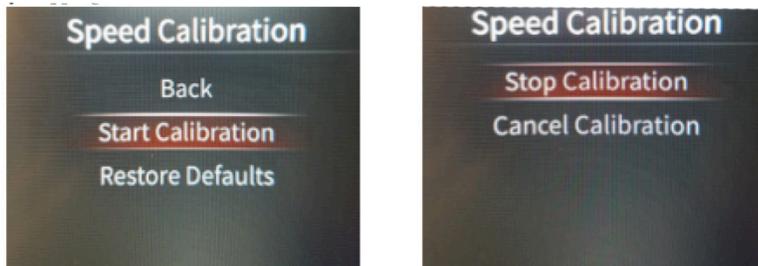


Once you have chosen the Tachometer Scaling, scroll up to Back, and press Enter. Then, scroll up to Back again and press Enter. Once you are back at the Main Menu, scroll to Close and press Enter.

Speedometer Calibration: Speedometer calibration will be required for an accurate speedometer reading. You will need a 2 mile pre-marked distance. To calibrate the speedometer, enter the Main Menu, scroll to Speedometer and press Enter. Next, scroll to Speed Calibration, and press Enter.



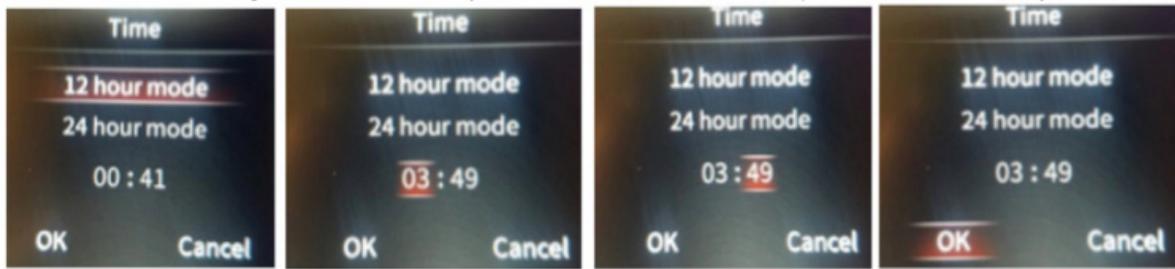
Drive to the beginning of your 2 mile distance (this could be at your driveway or elsewhere). Choose Start Calibration and press Enter. The display will now show "Stop Calibration" (don't press Enter yet). Drive 2 miles and come to a stop. Press Enter on Stop Calibration. You don't have to come to a complete stop when pressing Stop Calibration, but it helps to insure that you have a more accurate 2 mile distance. The more accurate your 2 miles are, the more accurate your speedometer will be.



If the speed sender/sensor is functioning, and your calibration is successful, you can scroll up to Back and press Enter. Then, scroll up to Back again and press Enter. Once you are back at the Main Menu, scroll to Close and press Enter.



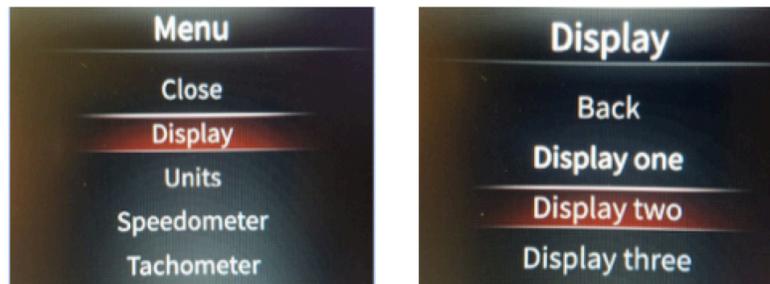
Time: You can choose to display the time in either 12 hour (standard) or 24 hour mode. To adjust the time, enter the Main Menu, scroll to Time, and press Enter. Select either 12 or 24 hour mode, and press Enter. You can also adjust the time here. After you select the mode, scroll to the hours (left) segments and click Enter. Scroll the numbers up or down by turning the Selector Knob left or right. Press Enter, and scroll to the right to highlight the minutes (right) segments. Scroll the numbers up or down by turning the Selector Knob left or right. Press Enter. Once you are finished, scroll to "OK" and press Enter. This returns you to the Main Men.



Fuel Sensor: You have 7 different fuel sensor ranges to select from, select the one that matches your vehicles fuel sender and press enter. Once you have chosen the correct sensor range, scroll up to Back, and press Enter. Once you are back at the Main Menu, scroll to Close and press Enter. A stock 87-93 Mustang uses 16-158 setting.



Display: You have 3 different display types to choose from. To choose the display style, enter into the Main Menu, scroll to Display, and press Enter. Then scroll to which number display you want, and press Enter.



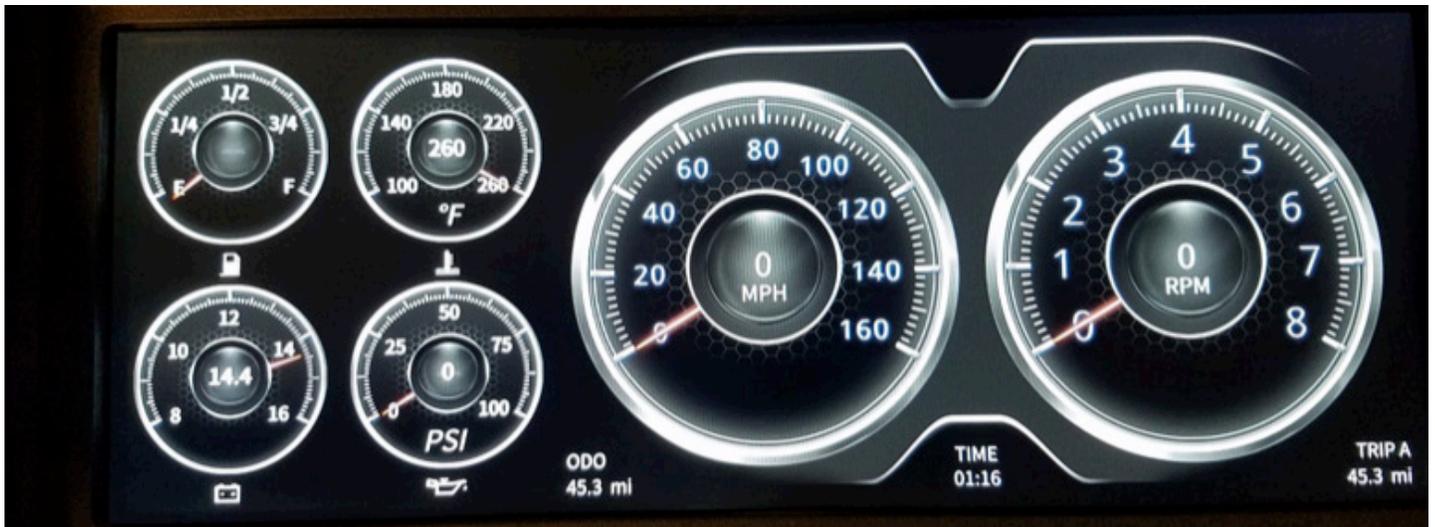
Display One



Display Two



Display Three



Display 4

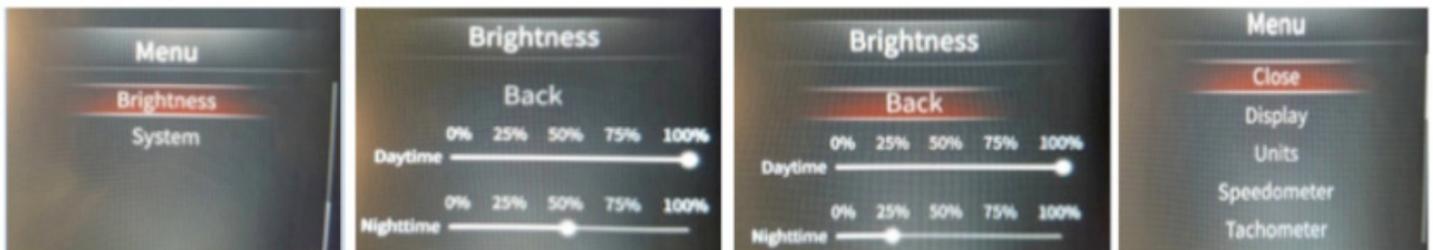


Displays One, Two, and Four do not have any colors options. If you choose Display Three, you will have a choice of colors. To change the color, when Display Three is displayed, press Enter to access the Main Menu, scroll to Display and press Enter. Scroll to Display Three (which will be in bold white) and press Enter again. The Display Three color options menu will come up (there are two pages of color options). Scroll to the desired color and press Enter.



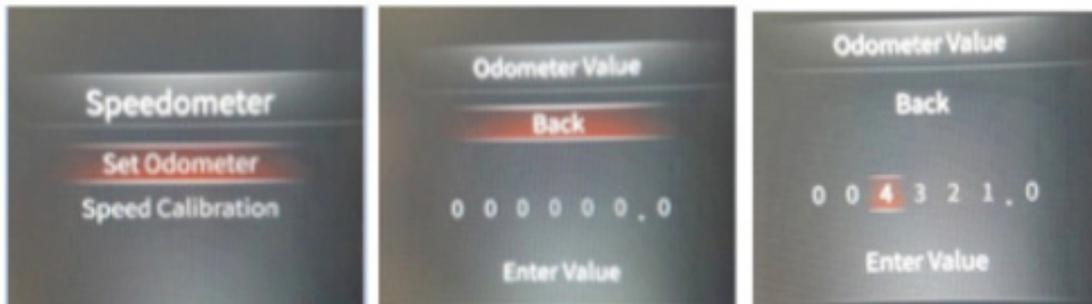
To Exit, simply scroll up to Back, and press Enter, then scroll up to Back on the Display menu, and press Enter, then scroll up to Close on the Main menu and press Enter.

Brightness: You will no longer adjust brightness with the factory dash light dimmer. You will select Daytime and Nighttime brightness for the InVision Digital Dash. Once power is applied from the lighting to the InVision Digital Dash, it will automatically dim down to the Nighttime brightness you have selected. To adjust the brightness, enter the Main Menu, scroll down until you reach Brightness, and press Enter. Scroll down one time for Daytime settings and press Enter. Scroll left or right to choose the percentage of brightness. When you are satisfied, press Enter then scroll down one time again for Nighttime and press Enter. Scroll left or right for the percentage of brightness desired. When adjusting Nighttime brightness, you should have the vehicles lights turned on. When you are satisfied, press Enter, then scroll up to Back, and press Enter. Scroll up to Close and press Enter to exit the Main Menu.



The odometer can be set to match the mileage on your vehicle. This can only be done ONE time only, and must be done within the first 500 miles. After being set, or 500 miles have been accumulated, this option will disappear and it cannot be set again.

To set your odometer, enter the Main Menu, scroll to Speedometer, and push Enter. Scroll down to Set Odometer and press Enter. Scroll down to the odometer digits. When you get to the digit that you want to change, press Enter, then scroll up or down with the Selector Knob until you get to the desired number and press Enter.



Trip Odometer: The InVision Digital Dash has the main odometer and two trip odometers. Both trips can be reset at any time by the user. To choose which Trip Odometer is displayed, enter the Main menu, scroll to Speedometer, and press Enter. You can choose which Trip is displayed and also reset (clear) either one. Scroll to the option you want to choose and press Enter. To Exit, scroll up to Back, and press Enter. Once you are back at the Main Menu, scroll to Close and press Enter.



System: This displays the versions of firmware the unit is equipped with.

Units: You have the option to choose either Imperial (Miles, MPH, °F and PSI) or Metric (Kilometers, KM/H, °C and BAR) units. To change the units of measure, enter the Main Menu, scroll to Units and press Enter. Scroll to either Imperial or Metric and press Enter. To exit, scroll up to Back, and press Enter. Once you are back at the Main Menu, scroll to Close and press Enter.



Time to enjoy your new InVision Dash!



Accessories and Replacement Parts:

- 2258 Replacement Temperature Sender
- 2242 Replacement Oil PSI Sender
- 3220 Replacement Incandescent Bulb and Socket
- 5292 Ford Speed Sender
- 5289 GPS Speed Sender

- 5290 Universal Magnet Driveshaft Speed Sender
- 3227 3' -4AN Stainless Braided Line Kit
- 9117 Tach Adapter for DIS Systems
- 9108 Replacement InVision Wire Harness

*****6 Pin Connector Image**



SERVICE

For service send your product to AutoMeter in a well packed shipping carton. Please include a note explaining what the problem is along with your phone number. If you are sending product back for warranty adjustment, you must include a copy (or original) of your sales receipt from the place of purchase.

12 MONTH LIMITED WARRANTY

AutoMeter Products, Inc. warrants to the consumer that all AutoMeter High Performance products purchased from an Authorized AutoMeter Reseller will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12 month warranty period will be repaired or replaced at AutoMeter's option, when determined by AutoMeter that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of parts in the AutoMeter High Performance product and the necessary labor done by AutoMeter to effect the repair or replacement of the AutoMeter High Performance product. In no event shall AutoMeter's cost to repair or replace an AutoMeter High Performance Product under this warranty exceed the original purchase price of the AutoMeter High Performance Product. Nor shall AutoMeter Products, Inc. be responsible for special, incidental or consequential damages or costs incurred due to the failure of an AutoMeter High Performance Product. This warranty applies only to the original purchaser of the AutoMeter High Performance Product and is non-transferable. This warranty also applies only to AutoMeter High Performance Products purchased from an Authorized AutoMeter Reseller. All implied warranties shall be limited in duration to the said 12 month warranty period. Breaking the instrument seal, improper use or installation, accident, water damage, abuse, unauthorized repairs or alterations voids this warranty. AutoMeter disclaims any liability for consequential damages due to the breach of any written or implied warranty on all products manufactured by AutoMeter Products, Inc. For a comprehensive listing of Un-Authorized AutoMeter Resellers please visit www.autometer.com/autometerlocator/index/unauthorized.

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