



BD X-MONITOR 2

Digital Gauge Monitoring Package

Installation Instructions

P/N# 1080500

***** READ THIS MANUAL & DISCLAIMER COMPLETELY BEFORE INSTALLING THIS PRODUCT *****

Installation Manual P/N#: 11080500

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KIT CONTENTS:

Please check to make sure that you have all the parts listed in this kit **before** you start the disassembly your truck.


1080500 – BD X2 Monitor		
1805000	1800508	1800502
		
<i>X2 Monitor Assembly</i>	<i>Monitor Holder</i>	<i>Thermocouple w/ Harness</i>
Qty: 1	Qty: 1	Qty: 3


1800503	1800504	1800506
		
<i>Sensor Fitting Adapters</i>	<i>Main Harness (includes oil sensor)</i>	<i>X2 Installation Care Kit</i>
Qty: 3	Qty: 1	Qty: 1


1800507

<i>USB Cable (for internet updates)</i>
Qty: 1

Accessories

Pillar Mounts

P/N#	Application	
1080570	Powerstroke 1999-2002 7.3L	
1080571	Powerstroke 2003-2007 6.0L	
1080572	Powerstroke 2007-2008 6.4L	

P/N#	Application	
1080551	Cummins 1998½-2002 24V w/ Speaker	
1080553	Cummins 1998½-2002 24V w/o Speaker	
1080552	Cummins 2003-2007 24V HPCR	

P/N#	Application	
1080560	Duramax 6.6L 2001-2007 w/o Speaker	
1080561	Duramax 6.6L 2001-2007 w/ Speaker	

Others

Fuel Pressure Monitoring Kit

P/N#	Application
1080150	All
1800505	Ram Xpower Control

Tools Needed

- Power Drill, 21/64" Drill Bit, 1/8" NPT Tap, Teflon Tape

Pre-Installation

The BD X2 Monitor is a powerful monitor that has the ability to monitor up to 7 engine parameters, with up to 4 displaying at a time. However, the X2 still monitors up to all 7 parameters simultaneously with the option to set warnings for up to 6 parameters. De-fueling options are available based upon 4 of these parameters. While monitoring these parameters, the X2 also records the highest/lowest value of all parameters being monitored. In addition to recording the min/max readings you also have the ability to data log these parameters. The X2 also has the ability to control multiple power modules.

There are many more features to the X2 which will be explained in detail further on in the manual.

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U.S. Shipping Address: 88-446 Harrison St, Sumas, WA 98295 U.S. Mailing Address: P.O. Box 231, Sumas, WA 98295

Phone: 604-853-6096 | Fax: 604-853-8749 | Internet: www.bd-power.com

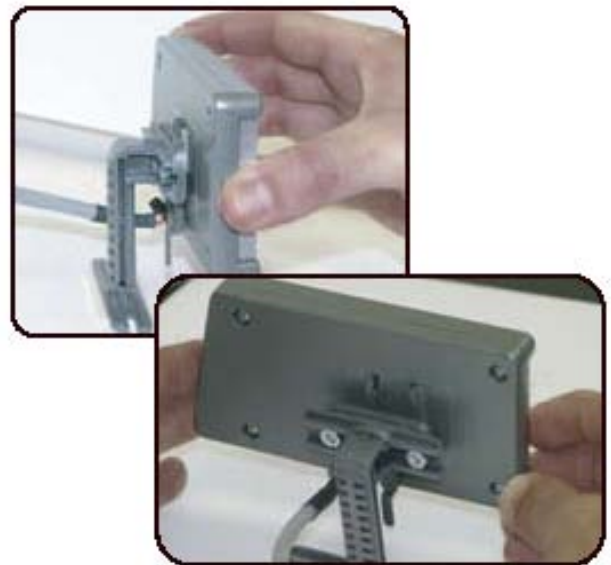
Installation

Choose a location in your vehicle where you want to mount the X2. It is important to do a test fitting to make sure that is plainly visible while driving, but not an obstruction of your driving view. We recommend beside the A-Pillar on the driver's side. The rest of these instructions assume that you chose this location. If you choose a different location, you may have to use different techniques to route the cable harness under the dash.

Loosen or remove the A-Pillar. You need the pillar to be loose enough to route the connectors down the pillar and beside the dash. The ultimate goal is to get the 3 connectors on the end of the cable harness under the dash and below the steering wheel. Most A-Pillars have plenty of room to route the cable and still install the A-Pillar back in the factory position without any modifications. It is okay for the pillar to be tight against the cable as long as it doesn't have enough pressure to damage the harness.

Once the cable is routed, pull any slack down under the dash, but leave enough room to stand the X2 up in the mounted position.

Clip the assembled base onto the X2. Hold the X2 with the base intact in the position you want to mount it. Make sure the viewing angle is correct for the location. If the base needs to be adjusted, you may do so by using a #2 Phillips head screwdriver. Simply loosen the 2 screws holding the base onto the adjustable disk. Do not remove the screws completely; just loosen them enough to move the X2's position. Once you have your desired angle, tighten the screws.



There are two ways to secure the base to your dash. You may permanently mount it with the 2 supplied screws or you can use the supplied double sided 3M Tape. This tape is strong enough to hold your gauge in position and is also removable.

If Using Screws: Holding the X2 in place, carefully mark a spot on the dash on both sides of the disk where the screw slots are located. Carefully drill a 1/8" hole in these spots for a pilot hole. You want to make sure to try and drill in the center of the provided slots so that you leave some room for adjustment. Holding the gauge back into place, carefully install the screws into the pilot holes. Although the dashes are fairly thick it is important to not over tighten the screws and strip the plastic material.

If Using Tape: Clean the desired mounting area and the bottom of the mount with the provided alcohol wipe. Apply the double sided tape to the bottom of the mount. It is best

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to only peel one side of the tape protector off at a time. Once you are ready to mount it, carefully stick it to the dash. Once it is in its desired location, press down firmly onto the dash. It is best to apply pressure on all parts of the base that has the tape on so it takes a good hold.

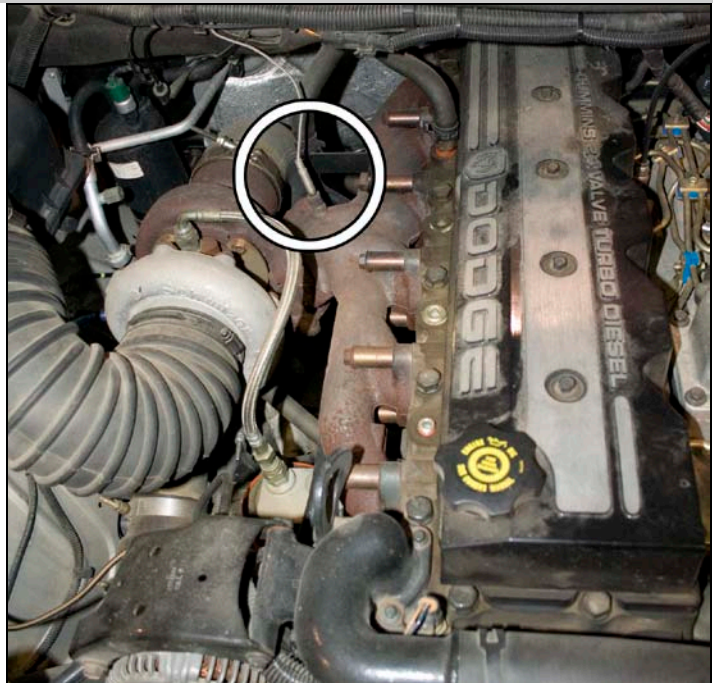
Thermocouple Installation

Vehicle Specific Placement

Please review the recommended positioning for the thermocouple for your specific vehicle.

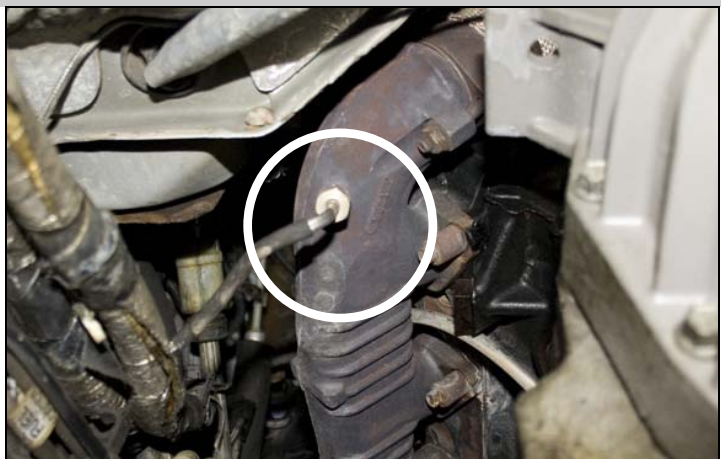
Dodge 1998-2006

On the passenger side of the vehicle locate the exhaust manifold. On the top side of the manifold between cylinders #2 and #3 is the ideal location for the thermocouple.



Ford 1999-2006

On the driver's side of the vehicle, locate the exhaust manifold. You will need to drill from underneath the vehicle. The ideal location for the thermocouple is located just as the manifold turns up to the turbo inlet pipe. Make certain that you drill at an angle that will accept the length of the thermocouple.



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GM 2001-2006

Remove the passenger side fender well. Once this is removed, you will see the exhaust manifold. Towards the rear of the manifold there is a flange that the manifold bolts to. Just in front of this flange is the ideal place to drill for the thermocouple.



Generic Installation of the Thermocouple

This section provides instructions for the generic installation of the thermocouple.

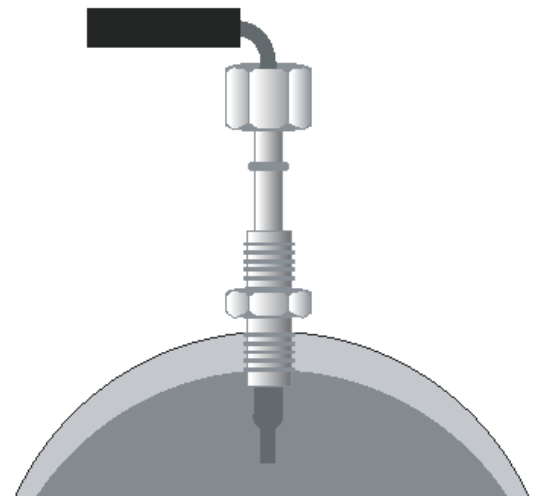
Pre-Turbo Installation

You must drill a 21/64 hole in your exhaust manifold. There are 2 ways to do this – the best way is the way that makes you most comfortable. You can remove the manifold to do this or you can do it on the vehicle while the engine is idling. It is also desirable to drill a 1/8" pilot hole. Leaving the engine idling will allow any small shavings to safely exit the exhaust. It is recommended to apply a small amount of grease to the drill bit before drilling.

Use a 1/8-27 or 1/8NPT tap to make threads in the hole you just drilled. You will not want to run the tap all the way into the manifold. This is a tapered tap so the threads at the top are larger than the ones on the bottom. You need to tape it far enough to screw the thermocouple bushing into the manifold.

Screw the thermocouple bushing into the manifold. Be careful not to over tighten it.

Insert the supplied thermocouple into the bushing and tighten the locking nut.



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Post-Turbo Installation

Drill a 21/64 hole into your turbo down pipe. There is no need for the engine to idle or to remove the exhaust piece from the truck. The metal shavings will simply exit the exhaust system when you run the engine.

Use a 1/8-27 or 1/8NPT tap to make threads in the hole you just drilled. You will not want to run the tap all the way into the manifold. This is a tapered tap, meaning that the threads at the top are larger than the ones on the bottom. You need to tap it far enough to screw the thermocouple bushing into the exhaust pipe.

Screw the thermocouple bushing into the pipe. Be careful not to over tighten because it is easy to strip the threads in the thin exhaust pipe.

Insert the supplied thermocouple into the bushing and tighten the locking nut.

Wiring Installation

Dodge 1998-2002 5.9L

1. Find the lead wire. This is a 2-wire harness with an orange and black wire. The larger connector needs to be connected to the thermocouple.
2. Route the lead wire across the engine bay to the driver's side. Tie the lead wire out of the way of any moving or hot parts to avoid damage to the wires.
3. On the driver's side firewall there is a rubber plug. Cut a slit in the outer portion of the plug to route the small connector and wire into the cab.
4. Plug the small 2-wire plug into the corresponding plug on the cable harness.
5. Lay wiring harness #1 out on your engine. The green plug will go inside the cabin using the same location you routed the lead wire through.
6. Locate the engine's MAP sensor. This is on the driver's side of the engine and behind the fuel filter canister. The year model determines the shape of the connector.
 - a. For 1998-2000 trucks, the MAP sensor is round (triangle). There are 2 wires in the top of the plug and 1 wire in the bottom of the plug. Connect the supplied T-Tap to the wire that is on the bottom of the plug. This should also be labeled pin "C" on the connector.

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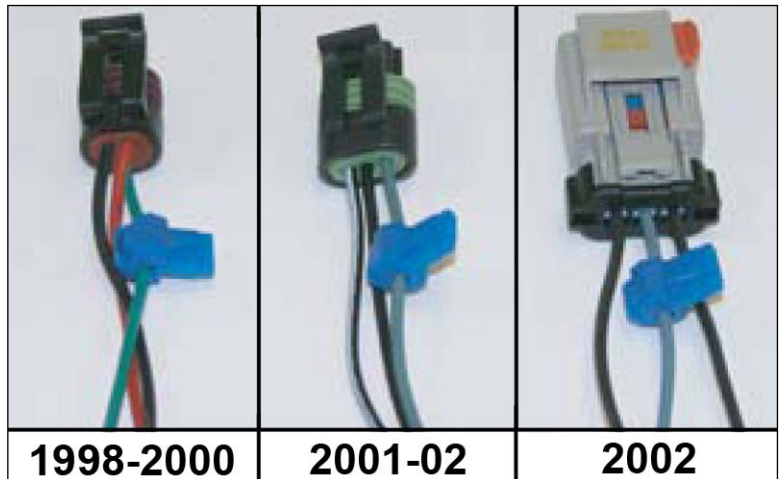
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- b. For 2001 trucks, the MAP sensor is an oval shape. It also has 3 wires. Connect the supplied wire tap to pin "C" on the plug. To locate pin C, look at the back of the plug where the wires go into the plug and the retaining clip is on top, pin "C" is on the right side.



- c. For 2002 trucks, the MAP sensor is also an oval shape, but it also has a plastic red lock that you must remove to remove the sensor. It also has 3 wires. Connect the supplied T-Tap to the wire that is in the center of the plug.

If you have a power module installed, you will need to connect to the same wire on the module's wiring harness to receive an accurate reading. Only tap the wire of the plug that is going into the sensor. Do not tap the wire on the factory plug when you are using a power module. This will result in a false reading.



7. Connect the blue wire to the T-Tap.
8. Locate the Engine Coolant Temperature Sensor (ECT) on the front of the engine. This is a 2-wire connector located on the top of the engine, in front of the valve cover.
9. Connect the orange wire to the T-Tap.
10. Find the 1/8" male x 1/4" female and the 1/4" male x 1/8" female brass fittings supplied in the kit.
11. Screw the 1/4" male end of the brass fitting into the 1/4" female fitting. Use Teflon tape to make sure that it will not leak.

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12. Screw the supplied 1/8" temperature sensor into the 1/8" female side of the brass connector.
13. Locate test port #2 on your transmission. This port is on the passenger side of the vehicle. The transmission is round on the front passenger side corner. Moving towards the rear of the transmission you will see an inset part of the transmission. There is a small plug in the test port. Remove the plug.
14. Using Teflon tape, screw the temperature probe and fittings into the test port. Do not over tighten.
15. Route the purple wire from the wiring harness to the temperature sensor.
16. Remove the nut and washers from the sensor and install the purple wire. Replace the washers and tighten the nut to secure the wire.
17. Go over the wiring harness and secure it to the vehicle, out of harms way using the supplied wire ties. Keep all wires as far away from moving parts and hot parts of the engine as possible.
18. Slide the green plug through the rubber grommet where you ran the lead wire. Pull enough of the wire harness inside the cab so that the switch port connection (white and black wires) and the black wire with the ring terminal and the red wire with the fuse tap are inside the cab.
19. Find the bolt located by the firewall and remove it. Place the bolt through the ring terminal of the black wire and screw it back into its location.
20. Open the fuse box, located on the inside of the truck on the driver's side of the dash. You will be required to open the driver's side door to access the fuse compartment.
21. Remove fuse #17 and install the fuse tap over the leg of the fuse. Re-install the fuse.
22. Once everything is secure and installed, you will want to start your engine. The X2 comes pre-set for these 4 parameters. To make sure everything is installed correctly, use these basic guidelines:



EGT temperatures should be in the 250-350°F (120-175°C) ranges, depending on engine temperature and outside temperature. Boost pressure should read 0psi at idle and up to 5psi while revving the engine at the idle position. ECT should be similar to your factory gauge. If the vehicle is cold, it should read close to ambient temperature and slowly rise.

Transmission temperature will most likely read ~100°F (35°C). It can take up to 20 miles, depending on the outside temperature, driving style and load to reach temperatures above 100°F (35°C). Operating temperatures range from 110-180°F (40-80°C) dependant upon load and driving style.

23. Using the supplied wire ties, tie up the wire and cable harness under the dash.

Dodge 2003-2006 5.9L

1. Find the lead wire. This is a 2-wire harness with an orange and black wire. The larger connector needs to be connected to the thermocouple.
2. Route the lead wire across the engine bay to the driver's side. Tie the lead wire out of the way of any moving or hot parts to avoid damage to the wires.
3. On the driver's side firewall there is a rubber plug. You can either pop the rubber plug out or cut a slit in it to route the small connector and wire the cab.
4. Plug the small 2-wire plug into the corresponding plug on the cable harness.
5. Lay wiring harness #1 out on your engine. The green plug will go inside the cabin using the same location you routed the lead wire through.



6. Locate the engine's MAP sensor. This is on the driver's side of the engine, next to the valve cover. It has 4 wires coming from it.



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7. Connect the supplied wire tap to pin "D". When you look at the back of the plug where the wires go into the plug and retaining clip is on top, pin "D" is on the right side. If you have a power module installed, you will need to connect to the same wire on the module's wiring harness to receive an accurate reading. Only tap the wire of the plug that is going into the sensor. Tapping the factory wire when using a power module will result in a false reading.
8. Connect the blue wire to the wire tap.
9. Locate the Engine Coolant Temperature Sensor (ECT) on the front of the engine. This is a 2-wire connector located on the top of the engine in front of the valve cover.
10. Due to having various wire colors used by the factory it is recommended to use a voltmeter to determine the correct wire. With the key in the on position, check voltages on both wires. One wire should be ground or read .006 and the other wire should read .9-3.5V. Connect the wire that has voltage on it. Once the proper wire is determined, install the supplied T-Tap. On 2003-2004 models you should connect to pin "2" as labeled on the top of the connector. On 2005-2006 models, you should connect to pin "B" as labeled on top of the connector.
11. Connect the orange wire to the T-Tap.
12. Find the 1/8" male x 1/4" female and the 1/4" male x 1/8" female brass fittings supplied in the kit.
13. Screw the 1/4" male end of the brass fitting into the 1/4" female fitting. Use Teflon tape to make sure that it will not leak.
14. Screw the supplied 1/8" temperature sensor into the 1/8" female side of your brass connector.
15. Locate test port #2 on your transmission. This port is on the passenger side of the vehicle. The transmission is round on the front passenger side corner. Moving towards the rear of the transmission you will see an inset part of the transmission. There is a small plug in the test port. Remove the plug.



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16. Using Teflon tape, screw the temperature probe and fittings into the test port. Do not over tighten.
17. Route the purple wire from the wiring harness to the temperature sensor.
18. Remove the nut and washers from the sensor and install the purple wire. Replace the washers and tighten the nut to secure the wire.
19. Go over the wiring harness and secure it to the vehicle, out of harms way using the supplied wire ties. Keep all wires as far away from moving parts and hot parts as possible.
20. Slide the green plug through the rubber grommet where you ran the lead wire. Pull enough of the wire harness inside the cab so that the switch port connection (white and black wires) and the black wire with the ring terminal are inside the cabin.
21. Find the bolt located by the firewall and remove it. Place the bolt through the ring terminal of the black wire and screw it back into its location.
22. In the engine compartment, locate the red wire with the installed fuse tap.
23. Open the fuse box located under the hood on the driver's side fender.
24. Remove fuse #28 and install the fuse tap over the leg of the fuse. Re-install the fuse.
25. Once everything is secure and installed you will want to start your engine. The X2 comes pre-set for these 4 parameters. To make sure everything is installed correctly, use these basic guidelines:

EGT temperatures should be in the 250-350°F (120-175°C) ranges, depending on engine temperature and outside temperature. Boost pressure should read 0psi at idle and up to 5psi while revving the engine at the idle position. ECT should be similar to your factory gauge. If the vehicle is cold, it should read close to ambient temperature and slowly rise.

Transmission temperature will most likely read ~100°F (35°C). It can take up to 20 miles, depending on the outside temperature, driving style and load to reach temperatures above 100°F (35°C). Operating temperatures range from 110-180°F (40-80°C) dependant upon load and driving style.

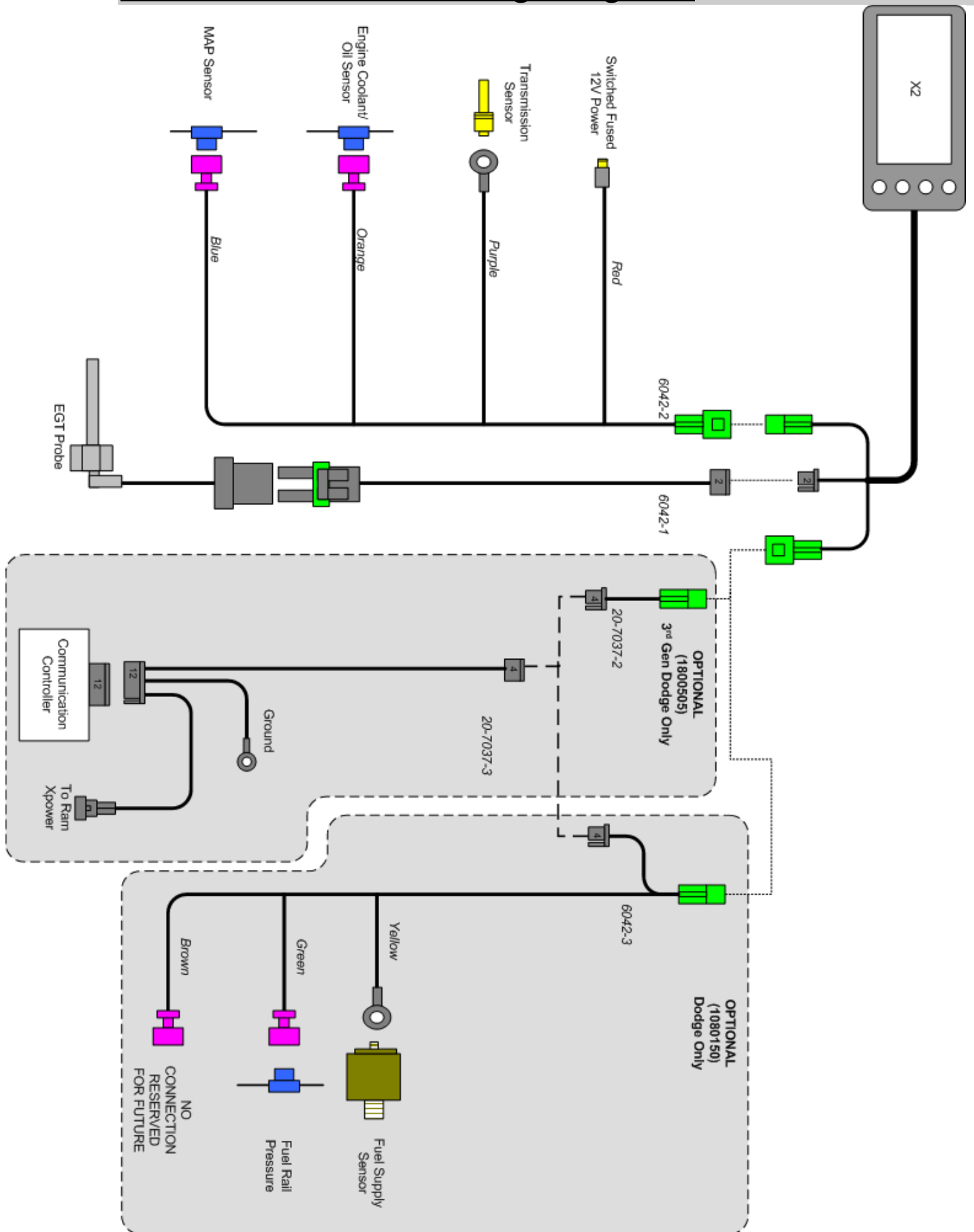
26. Using the supplied wire ties, tie up the wire and cable harness under the dash.

Optional Ram Xpower Control #1800505

With the X2 Monitor you now have the ability to control your Dodge Ram Xpower. You can set EGT limits as well as adjust the horsepower on the fly with a simply up click or down click.

Follow the below diagram to connect the X2 to the communication controller and then to the Ram Xpower.

X-Power Control Wiring Diagram



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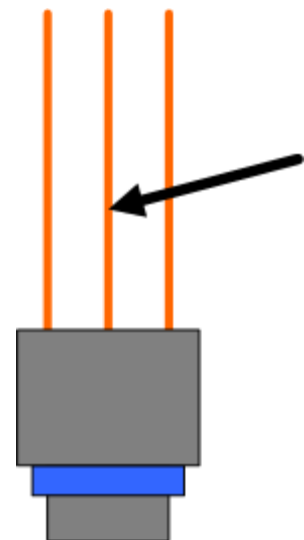
Optional Ram Fuel Pressure Monitoring Kit #1080150

With the X2 Monitor you can also monitor the auxiliary fuel pressure as well as the rail pressure on your Dodge Common Rail engine (2003-06). If you have a 1999.5 to 2002 Dodge you can utilize the auxiliary fuel pressure sensor only and not the rail pressure sensor. For the connections you do not reuse, you should zip tie them out of the way.

Rail Pressure Sensor (3rd Gen Dodge Only 2003-06)

On the top of the intake to the engine on the driver's side you will need to locate the rail pressure sensor. This sensor is a three wire type.

Use the supplied scotk-lok and connect to Pin # 2 or the center wire. With the scotk-lok connected, then connect the green wire with the male spade connector from the wiring harness to it.



Auxiliary Fuel Pressure

First you will need to install the supplied banjo bolt and the new sealing washers into the intake of either the VP44 or CP3. Make sure that you install it into the supply line (larger line) and not the return line (smaller line). Once the banjo is installed you can install the fuel pressure sender into the banjo bolt. The thread is 1/8NPT so you will want to snug the connection up otherwise it will leak. We advise against using Teflon tap as there is no filter between this connection and your injection pump. Once this connection is made you can then attach the ring terminal/yellow wire of the harness.

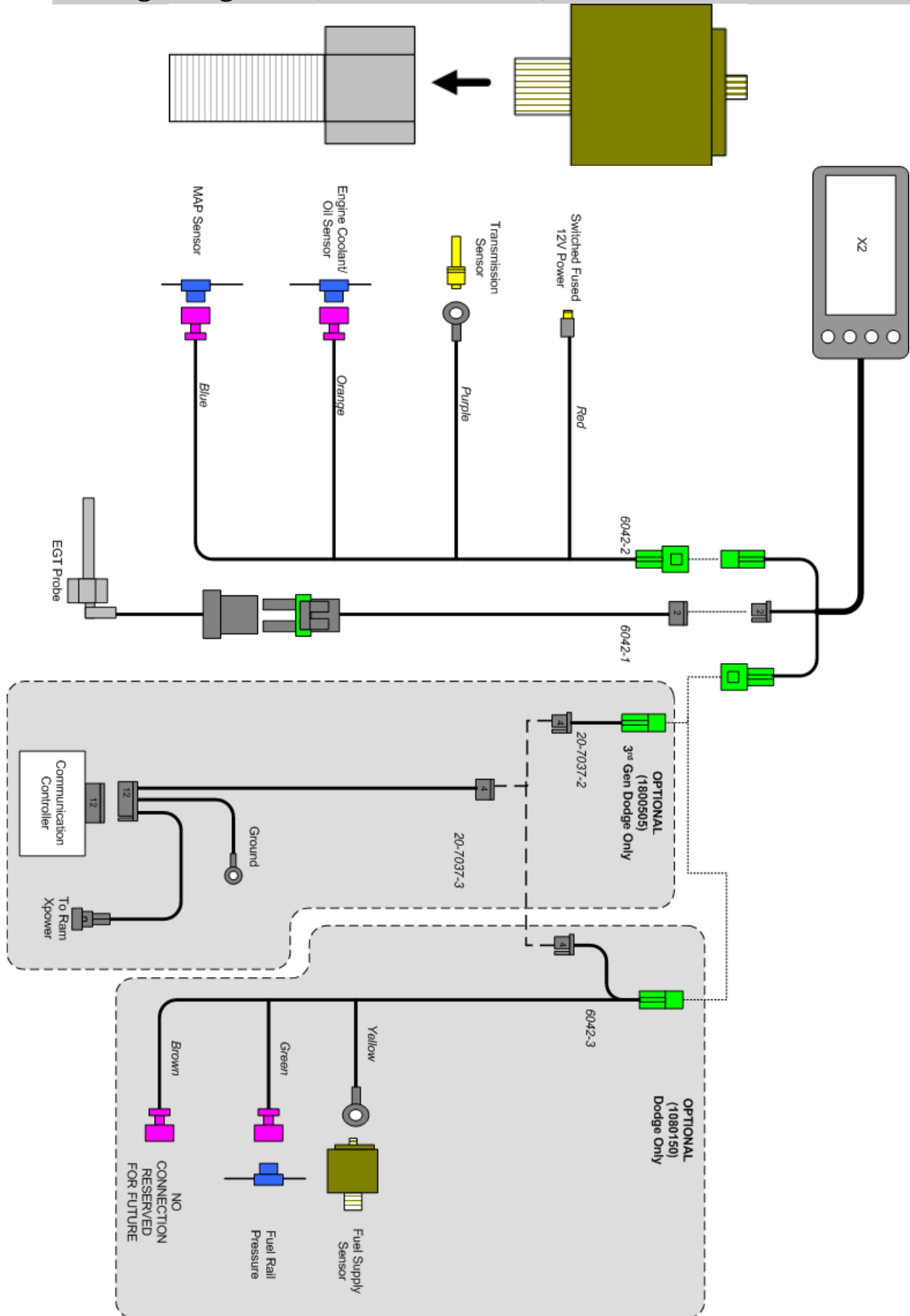
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Wiring Diagram (Fuel Pressure)



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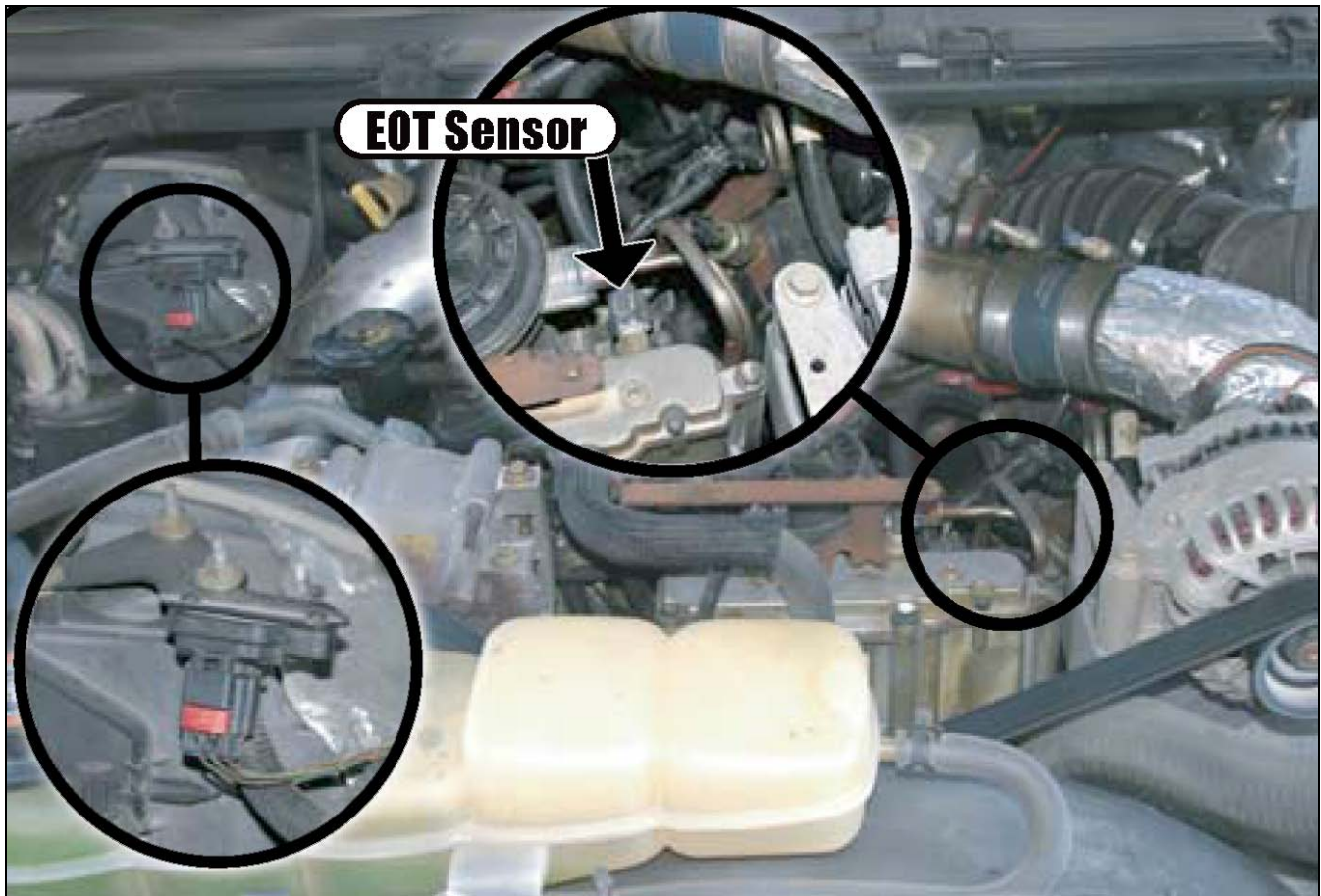
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Ford 1999-2003 7.3L

1. Find the lead wire. This is a 2 wire harness with an orange and black wire. The larger connector needs to be connected to the thermocouple.
2. Route the lead wire from the thermocouple to the driver's side firewall. There is a plastic plug that is diamond shaped on the firewall. Pop the plug out from the inside. You can either leave the entire plug out or drill a hole large enough to fit the lead wire plug and the plug from harness #1 into the cab. Tie the lead wire out of the way of any moving or hot parts to avoid damage to the wires.
3. Plug the small 2-wire plug into the corresponding plug on the cable harness.
4. Lay wiring harness #1 out on your engine. The green plug will go inside the cab using the same location you routed the lead wire through.
5. Locate the engine's MAP sensor. This is on the passenger side of the engine, beside the hot side of the intercooler tube. It has 3 wires coming from it.



6. Connect the supplied wire tap to the wire in the middle of the connector. If you have a power module installed you will need to connect to the same wire on the module's

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wiring harness to receive an accurate reading. Only tap the wire of the plug that is going to the sensor. Tapping the factory wire when using a power module will result in a false reading.

7. Connect the blue wire to the wire tap.
8. Locate the Engine Oil Temperature Sensor (EOT) towards the front of the engine. This is a 2-wire connector located on the top of the engine just behind the High Pressure Oil reservoir. The sensor will be mounted horizontal to the truck. *Note: On the 7.3L engines we monitor the oil temperature instead of coolant temperature. This will cause the temperatures to be slightly higher than water and you should adjust your warnings and warm-up module accordingly.*



9. Connect the supplied wire tap to pin #2. If you are holding the connector with the clip release facing up and looking at the back side where the wires enter the connector, then the correct wire should be on the left side.

10. Connect the orange wire to the wire tap.

11. Locate the high pressure test port on your transmission. This port is on the driver's side of the vehicle. There is a small plug in the test port. Remove the plug.



12. Using Teflon tape, screw the temperature probe and fittings into the test port. Do not over tighten.

13. Route the purple wire from the wiring harness to the temperature sensor.

14. Remove the nut and washers from the sensor and install the purple wire. Replace the washers and tighten the nut to secure the wire.

15. Go over the wiring harness and secure it to the vehicle out of harms way using the supplied wire ties. Keep all wires far away from any moving or hot parts.

16. Slide the green plug through the rubber grommet where you ran the lead wire. Pull enough of the wire harness inside the cab so that the switch port connection (white and black wires), the black wire with the ring terminal, and the red wire with the fuse tap are inside the cab.
17. Find the bolt located by the firewall and remove it. Place the bolt through the ring terminal of the black wire and screw it back into its location.
18. Open the fuse box located on the driver's side below the steering wheel. You will need to remove the dash panel to access the fuse box.
19. Remove fuse #27 and install the fuse tap over the leg of the fuse. Re-install the fuse.
20. Once everything is secure and installed, you will want to start your engine. The X2 comes pre-set for these 4 parameters. To make sure everything is installed correctly, use these basic guidelines:

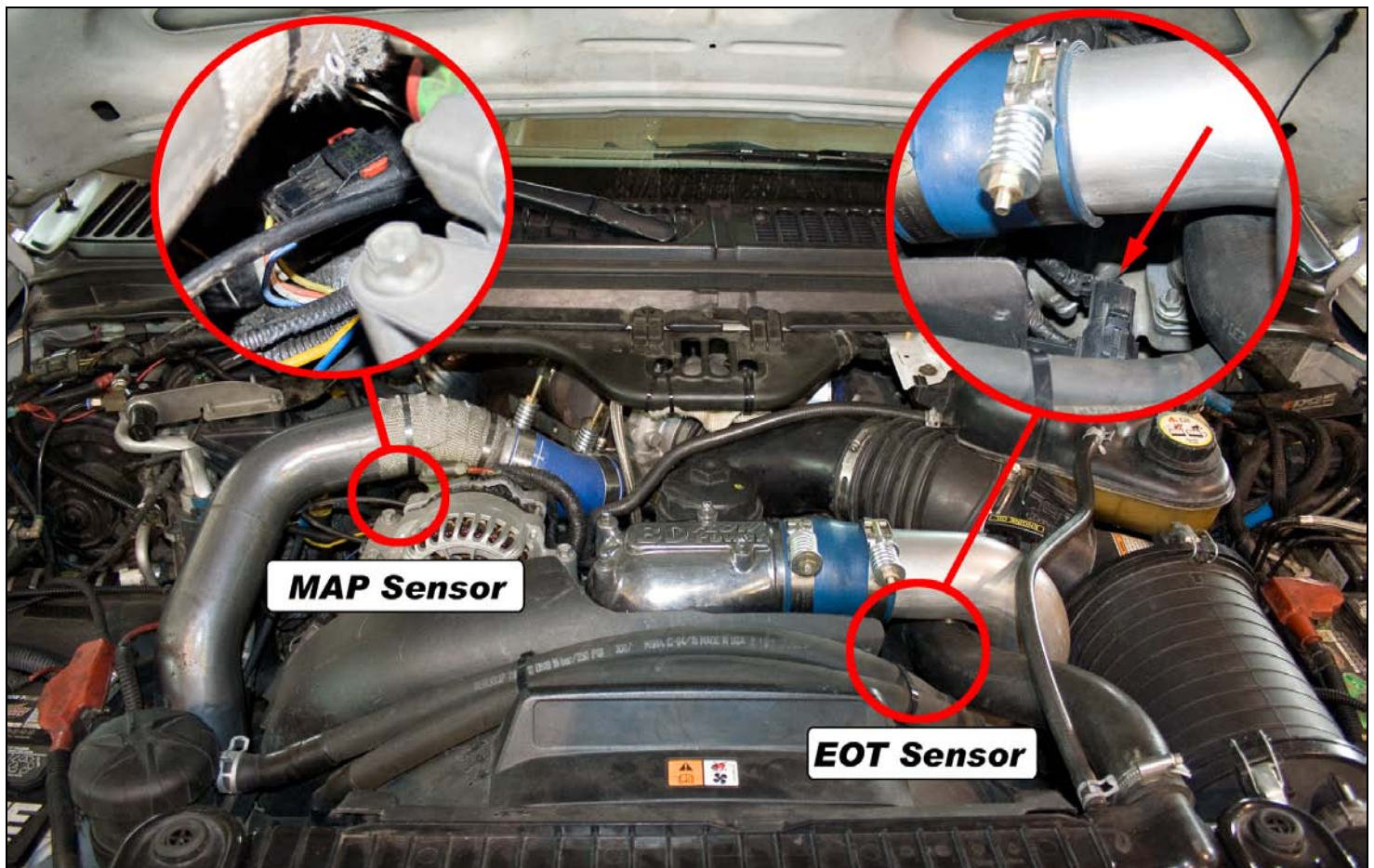
EGT temperatures should be in the 250-350°F (120-175°C) ranges, depending on engine temperature and outside temperature. Boost pressure should read 0psi at idle and up to 5psi while revving the engine at idle. ECT should be similar to your factory gauge. If the vehicle is cold, it should read close to ambient temperature and slowly rise.

Transmission temperature will most likely read ~100°F (35°C). It can take up to 20 miles, depending on the outside temperature, driving style and load to reach temperatures above 100°F (35°C). Operating temperatures range from 110-180°F (40-80°C) dependant upon load and driving style.

21. Using the supplied wire ties, tie up the wire and cable harness up under the dash.

Ford 2003-2006 6.0L

1. Find the lead wire. This is a 2-wire harness with an orange and black wire. The larger connector needs to be connected to the thermocouple.
2. Route the lead wire from the thermocouple to the driver's side firewall. There is a plastic plug that is diamond shaped on the firewall. Some trucks have foil tape that has to be removed for access through the firewall instead of the plastic plug. From the inside, pop the plug out. You can either leave the entire plug out or drill a hole large enough to fit the lead wire plug and the plug from harness #1 into the cab. Tie the lead wire out of the way of any moving or hot parts to avoid damage to the wires.
3. Plug the small 2-wire plug into the corresponding plug on the cable harness.
4. Lay wiring harness #1 out on your engine. The green plug will go inside the cabin using the same location you routed the lead wire through.
5. Locate the engine's MAP sensor. This is on the passenger side of the engine, next to the hot side of the intercooler tube. It has 3 wires coming from it.



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6. Connect the supplied wire tap to the wire in the middle of the connector. IF you have a power module installed, you will need to connect to the same wire on the module's wiring harness to receive an accurate reading. Only tap the wire of the plug that is going into the sensor. Tapping the factory wire when using a power module will result in a false reading.

7. Connect the blue wire to the wire tap.

8. Locate the Engine Coolant Temperature Sensor (ECT) on the front of the engine, just below the upper radiator hose. This is a 2-wire, gray connector.

9. Connect the supplied wire tap to pin #2. If you are holding the connector with the clip release facing up and looking at the back side where the wires enter the connector, the correct wire should be on the left side.



10. Connect the orange wire to the wire tap.

11. Locate the high pressure test port on your transmission. This port is on the driver's side of the vehicle. There is a small plug in the test port. Remove the plug.



12. Using Teflon tape, screw the temperature probe and fittings into the test port. Do not over-tighten.

13. Route the purple wire from the wiring harness to the temperature sensor.

14. Remove the nut and washers from the sensor and install the purple wire. Replace the washers and tighten the nut to secure the wire.

15. Go over the wiring harness and secure it to the vehicle (out of harms way) using the supplied wire ties. Keep all wires as far away from hot or moving engine parts as possible.

16. Slide the green plug through the rubber grommet where you ran the lead wire. Pull enough of the wire harness inside the cab so that the switch port connection (white and black wires), the black wire with the ring terminal, and the red wire with the fuse tap are inside the cab.

17. Find the bolt located by the firewall and remove it. Place the bolt through the ring terminal of the black wire and screw it back into its original location.
18. Open the fuse box, located on the driver's side below the steering wheel. You will need to remove the dash panel to access the fuse box.
19. Remove fuse #45 and install the fuse tap over the leg of the fuse, and then re-install the fuse.
20. Once everything is secure and installed, you will want to start your engine. The X2 comes pre-set for these 4 parameters. To make sure everything is installed correctly, use these basic guidelines:

EGT temperatures should be in the 250-350°F (120-175°C) ranges, depending on engine temperature and outside temperature. Boost pressure should read 0psi at idle and up to 5psi while revving the engine at idle. ECT should be similar to your factory gauge. If the vehicle is cold, it should read close to ambient temperature and slowly rise.

Transmission temperature will most likely read ~100°F (35°C). It can take up to 20 miles, depending on the outside temperature, driving style and load to reach temperatures above 100°F (35°C). Operating temperatures range from 110-180°F (40-80°C) dependant upon load and driving style.

21. Using the supplied wire ties, tie up the wire and cable harness under the dash.

Duramax 2001-06

1. Find the lead wire. This is a 2-wire harness with an orange and black wire. The larger connector needs to be connected to the thermocouple.
2. Route the lead wire across the engine bay to the driver's side. Tie the lead wire out of the way of any moving or hot parts to avoid damage to the wires.
3. On the driver's side firewall, there is a rubber plug. Cut a slit in the outer portion of the plug to route the small connector and wire into the cab.
4. Plug the small 2-wire plug into the corresponding plug on the cable harness.
5. Lay wiring harness #1 out on your engine. The green plug will go inside the cabin using the same location you routed the lead wire through.

Locate the main engine plugs. These are located on the driver's side of the engine, directly above the valve cover. There are 2 large connectors stacked on top of each other. You are looking for the smaller plug that is on the top. This is a 24-pin connector. Connect the supplied wire tap to pin "C8". This should be a light green wire located in the top row of wires and nearest to the firewall.



6. Connect the blue wire from your X2 to the blue wire tap.

If you have an aftermarket transmission pan you may now install the 1/8" NPT sensor into the oil pan fitting. On factory transmission there is also a test port located on the bottom and towards the front of the transmission. You may desire to get the proper "AN" fitting to take a reading at this location, but it is not recommended due to the fact that the sensor could be damaged from protruding too low off of the transmission. We recommend using the 1/8" NPT probe to measure oil temperature on the Duramax engines.

7. Find the 3/8" x 1/8" NPT bushing included with your kit.
8. Using Teflon tape, install the temperature probe into the bushing.

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9. Locate the oil filter housing. This is easiest to find from under the driver's side of the engine. On the oil filter housing, look for the 3/8" bushing that uses an 8mm hex head for removal. This port should be located towards the front of the housing and should be facing the driver's side front tire. Have a rag ready as you will spill some oil. Make sure that the vehicle has cooled off as the oil can be very hot.



10. Using Teflon tape, install the bushing into the port. Be careful not to over-tighten it.
11. Route the purple wire from the X2 wiring harness to the temperature sensor. Remove the nut and washers from the sensor and install the purple wire.
12. Replace the washers and nut onto the temperature sensor. Make sure that the nut is secure but do not over-tighten it.
13. Go over the wiring harness and secure it to the vehicle (out of harms way) using the supplied wire ties. Keep all wires as far away from moving or hot parts of the engine as possible.
14. Slide the green plug through the rubber grommet where you ran the lead wire. Pull enough of the wire harness inside the cab so that the switch port connection (white and black wires), the black wire with the ring terminal and the red wire with the fuse tap are inside the cab.
15. Find the bolt located by the firewall and remove it. Place the bolt through the ring terminal of the black wire and screw it back into its location.
16. Open the fuse box located on the inside of the truck on the driver's side of the dash. You will be required to open the driver's side door to access the fuse compartment.
17. Re-install the fuse. Attach the red wire with the fuse tap to the fuse labeled "IGN"
18. Once everything is secure and installed, you will want to start your engine. The X2 comes pre-set for these 4 parameters. To make sure everything is installed correctly, use these basic guidelines:

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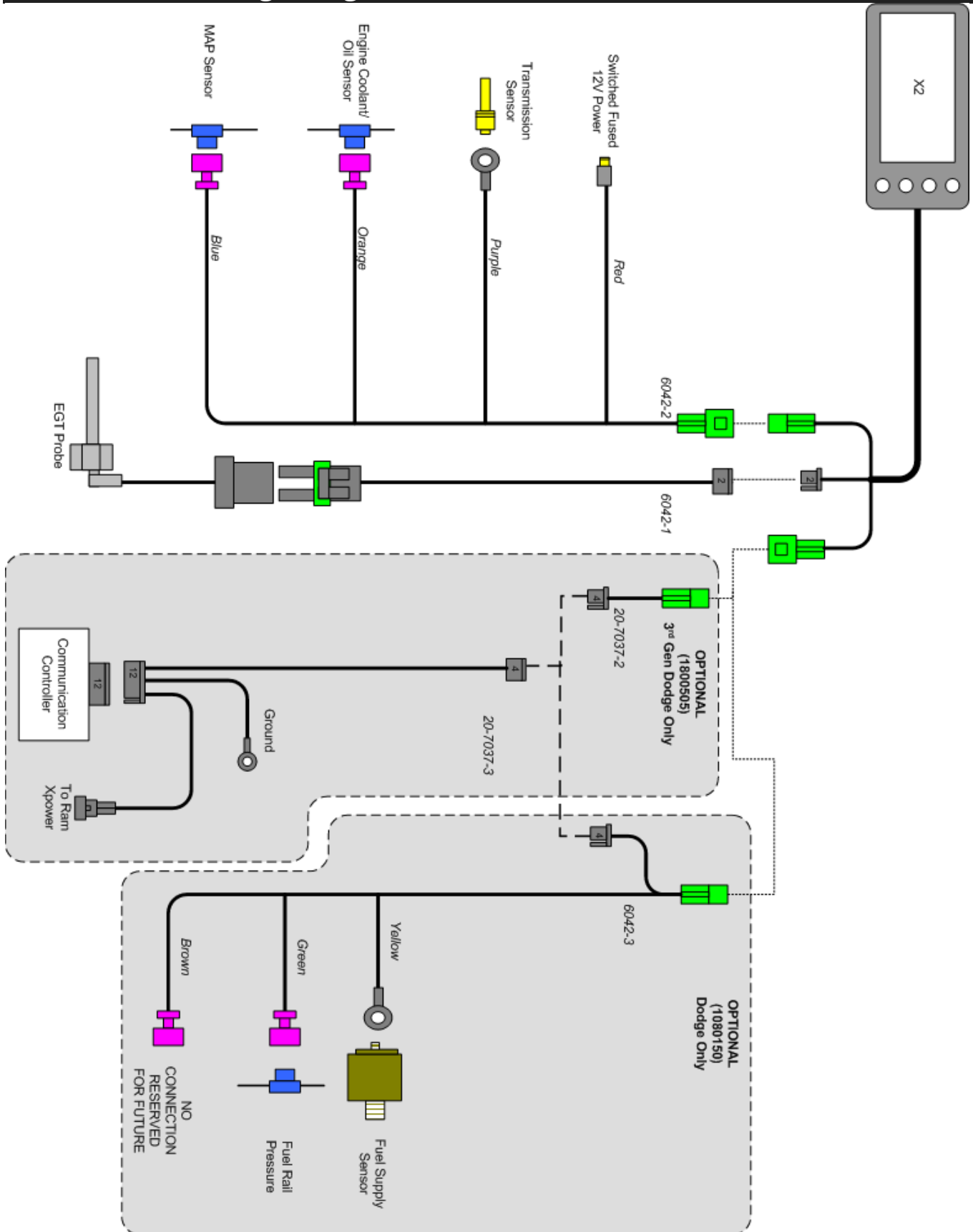
EGT temperatures should be in the 250-350°F (120-175°C) ranges, depending on engine temperature and outside temperature. Boost pressure should read 0psi at idle and up to 5psi while revving the engine at idle. ECT should be similar to your factory gauge. If the vehicle is cold, it should read close to ambient temperature and slowly rise.

Transmission temperature will most likely read ~100°F (35°C). It can take up to 20 miles, depending on the outside temperature, driving style and load to reach temperatures above 100°F (35°C). Operating temperatures range from 110-180°F (40-80°C) dependant upon load and driving style.

NOTE: Coolant temperature on 01-06 Duramax's is not currently supported. This may be a feature that will be available with a future update available via the web.

19. Using the supplied wire ties, tie up the wire and cable harness under the dash.

Universal Wiring Diagram



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Display Functions

The X2 has 4 buttons for control. The buttons have a reference on the display screen for ease of use.

The top button is the **Menu/Escape** button. This button can be used to enter the Main Menu anytime you have the X2 in the monitoring mode. Simply press the top button once and you will enter the Main Menu.

The top button is also the Escape (back) button. Once you are in the main menu you can press the top button again to go back to the main display. While in any other menu, this button will bring you back one menu level. You can use this button to completely escape from the menus if you desire.

The 2nd and 3rd buttons are used to move up and down in the menus. You may also hold a button to scroll rapidly through any menu. These buttons are also used for adjusting power levels up and down if the X2 is connected to a module/chip.

The bottom button is the **Select** button. Use this button to choose your options in the menu. This button will advance you to the next menu or screen.

The X2 uses a highlighted cursor so that you can easily navigate the menu. The selection that the cursor is over will be in black and the numbers/letters will appear in white.

The X2 defaults to a 4-function display upon initial startup. EGT/Boost PSI/ Transmission Temp and Coolant Temp will be displayed. The power level will be defaulted at 0. De-fueling and all warnings will be turned to the off position.

Main Menu

To get to the main menu, press the top or menu button one time. You will see the following menu:



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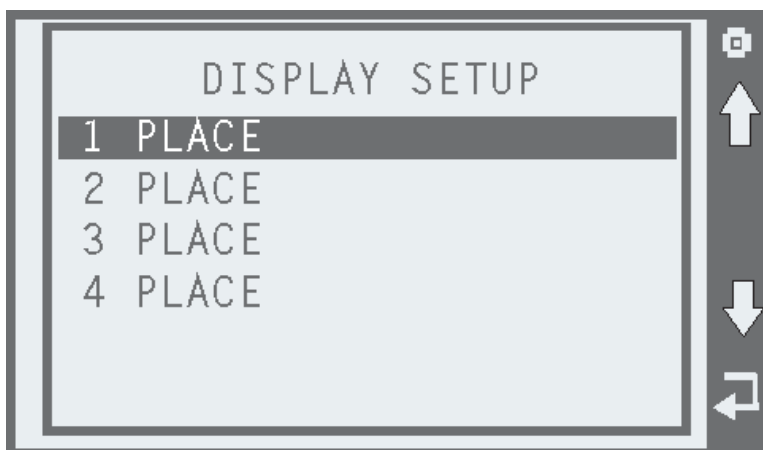
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Display Menu

The X2 has 4 different display options. Depending on how many parameters you choose to view at one time will determine the correct layout for you. Below are examples of all 4 display options. Once you select your desired number of functions to view, you will be able to customize that view to your liking.

Selection the display menu will show you the following screen:



Selecting any of the above options will allow you to set up how you display the monitored parameters. A check mark will show you which parameters you have already selected.

Once you make your selection, you will be returned to the main menu. You may move to another area of the menu or you may choose the exit button. You may also just use the Esc/Back button if you desire. The X2 will save any changes you make.

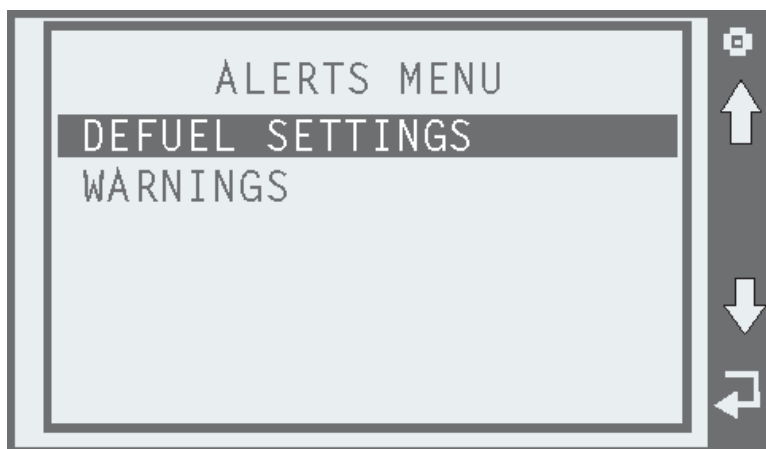
Alerts Menu

The alerts menu is where you can set up engine de-fueling if you have a module or chip, or you may set warnings.

You will see this menu if you select alerts:

Defueling Settings

Selecting the defuel setting will show you all of the parameters that you may defuel your engine on as long as they are monitored. You may select one or all of the parameters to defuel your engine on, but it is recommended to be practical in your selections. The defuel function is meant for safety under normal driving and towing conditions. Selecting values that will be reached on a normal basis will affect drivability as



the truck will constantly be defueling. If you are drag racing it is recommended to turn the defuel settings to OFF. The defuel settings will be functional even if you choose not to view the parameter.

Example: If you choose a 1 function display for EGT, but you want to defuel based on boost, the X2 will display EGT at all times, but it will defuel the engine when the boost level reaches your set maximum. The X2 will return the full amount of power that you have selected once the parameter that was exceeded is back within a normal operation range.

Warnings

Once you enter the warnings menu, you will be able to set a visible warning to any monitored parameter. You do not have to be viewing the parameter in order for it to give a warning. You may set as many warnings as you desire. Once again, it is recommended to keep your warnings practical as constant warnings flashing on your screen may become undesirable. The X2 has the ability to display as many as 4 different warnings at one time.

If one warning is reached, then the X2 will switch to a 1 function display, and display the parameter that has reached the maximum. If two warnings are reached, the X2 will show the 2 function display with a warning on each side. The 3 and 4 function screens will appear if 3 or 4 warnings are reached. The X2 will continue to display the warnings until the parameters fall back below your set maximum, or you can reset the warnings.

Once again, it is not necessary to view any of the parameters that you choose to set warnings for. The warnings are meant for parameters that you choose not to watch and that you want the X2 to watch for you. This gives you the ability to view only those parameters that you desire to see all the time.

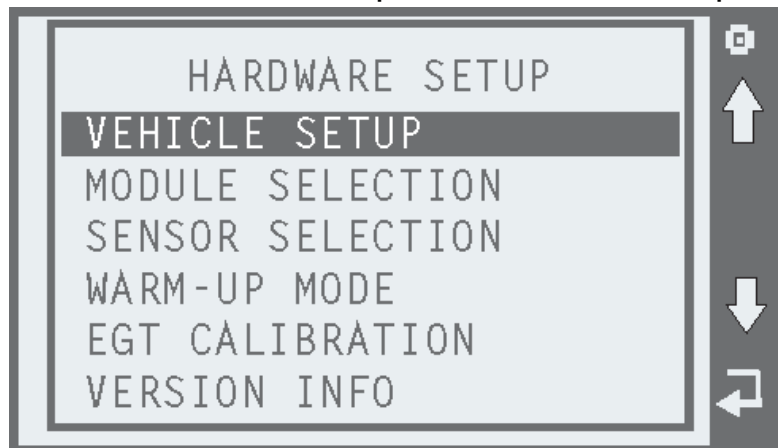
Setup

This menu allows you to select your particular vehicle, choose a power module or chip to control, turn sensors on and off, set warm-up mode, calibrate your EGT gauge, or retrieve version and serial numbers.

The setup menu is as follows:

Vehicle Setup

This menu allows you to choose what vehicle you are installing the X2 in. If you choose to move it to another vehicle, you



may switch vehicles at any time. It is important to select the proper vehicle as the proper data is needed for coolant and boost monitoring.

Module Selection

This provides the list of the supported power modules and chips that you can control. Some modules and chips are not supported on the standard version of the X2 and may require additional hardware.

Sensor Selection

This section allows you to turn parameters on or off. If you choose to view a parameter that is turned off, the X2 will display OFF in the corresponding window that it is to be viewed in. If you are connected to this parameter and choose to monitor it you must turn it to ON.

Warm-Up Mode

The Warm-Up Mode is only for vehicles using a module or chip. This allows you to choose what temperature your module or chip starts adding power. The X2 will turn the power adder to the last used power level. The default is at zero. This works for any module or chip that the X2 is controlling. If your module already has cold engine protection you can turn this off, or you may want to raise the temperature at which it starts adding power. The X2 will supersede the module's set warm-up temperature as long as the turn-on point is higher than the module's.

EGT Calibration

This function allows you to slightly alter the EGT reading of your gauge. If you already have an analog gauge that you trust, you want to use an existing thermocouple, or you have a thermocouple test tool, you may dial the X2 in to read exactly like your existing gauge. The amount of scaling is not large and is used for fine tuning if you desire. The X2 comes set to match perfectly with the supplied thermocouple and should only be altered if you have the proper equipment.

Version Info

This is where you may retrieve your software version number as well as the Commander's serial number. This is very helpful information if technical assistance is ever needed. The version number will also be needed in order to download updates to the X2.

Data Logging

This is where your records are stored. The X2 keeps a log of all minimum and maximum values it records from the time you start your truck. Each time you turn your vehicle off, the X2 resets the log and starts a new one. If you desire to reset your parameters while the vehicle is running you may do so by selecting RESET ALL.

To retrieve the logged data, simply select the RECORDS item, and then select the desired parameter.

Backlight

The X2 is equipped with a fully adjustable backlight. By selecting the backlight menu you will be able to dim or brighten the backlight to suit your viewing needs.

Technical Support

If you require technical support for this product, please call our Technical Support hotline at (800) 887-5030 between 8am – 5pm, Monday to Friday, Pacific Standard Time (PST). You can also post a technical support question on the BD Power Forums, located at <http://www.bd-power.com/forum/>