BAVARIAN AUTOSPORT

Power Programmer Instructions

CAUTION: *It is imperative to follow all of the instructions completely and correctly or you may damage your BMW's Engine Control Unit (ECU).*

NOTE: *Before obtaining any service on your BMW, restore the stock settings on your ECU. If your dealer/service tech restores the settings to stock (which they often do) the Power Programmer will no longer work on your BMW.*

NOTE: *The Power Programmer is designed to work only on BMWs that are US or Canadian spec; it will not work on BMWs built for Europe, Asia, etc.*

Various OBD-II equipped BMWs

PART NUMBER:

BAVPP3

IMPORTANT NOTES:

Do not even think about beginning this procedure without reading all of these instructions first..

The Power Programmer can only function on a stock ECU. If your BMW has a performance programmed ECU, the Power Programmer will not work.

99 thru 00 models with 2.5 and 2.8 liter engines
- Please ensure that you have previously had the "00E-A01 Fault Readiness/O2 Readiness Codes Not Set" emissions recall update performed by your dealer, if applicable. See Appendix B for a list of the BMW models affected by this recall. Failure to have the recall update performed prior to using the Power Programmer may cause a "Software Unknown" failure (code 147).

M3 95 thru 99 with automatic transmission - See Appendix A, for instructions on disconnecting the Transmission Control Unit prior to performing the Power Programmer upgrade. This procedure must be done before continuing.

528i and 540 99 on - Disconnect fuses #17 and #31 in the glove box fuse panel prior to using the Power Programmer.

740i 99 on - Disconnect fuse #17 in the engine compartment fuse panel prior to using the Power Programmer.

PROCEDURE:

1. Locate the round 20-pin diagnostic port in the engine compartment. The port will be in close proximity to the left or right shock tower or in the vicinity of the intake manifold. The port is covered by a $2^{3}/_{4}$" diameter, round screw-on cap. Unscrew and remove the cap.

2. To ensure a constant voltage for proper operation of the Power Programmer, attach a high quality battery charger to the vehicle, capable of a minimum charge rate of 10 amps. Connect the charger **directly to the vehicle battery**, observing all necessary safety precautions such as the wearing of safety goggles.

3. Turn charger on to a minimum charge rate of 10 amps and ensure that charging is occurring.

NOTE: The importance of proper battery voltage cannot be emphasized enough; failure to maintain proper voltage throughout the procedure may result in an inoperable vehicle where the only solution would be the physical replacement of control modules at the owner' expense. Please evaluate the age and condition of you BMW's battery before proceeding.

4. Lower the driver and passenger side windows. Doors should be closed. Engine hood should already be open.

5. Wait a minimum of 15 minutes for the engine to cool and the vehicle battery to charge, assuring ample reserve power.

6. Before using the Power Programmer, clear the buttons by pushing and releasing each button 4 to 6 times.

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7. Insert the Power Programmer into the diagnostic port by aligning the center index pin properly, while rotating the locking collar so that the entire device lowers and locks into position. Usually you will hear a slight "click" as the locking ring seats fully on the port's housing.

8. Turn the ignition switch to the ON position but **do not** activate the starter ("Check Engine" lamp **must** light up). Do this through the open driver's window. Do not open the door.

9. **Assure that ALL electrical loads are OFF** (radio, climate control, courtesy lamps, etc) **and** that devices capable of turning themselves on (e.g. cell phone) are disabled temporarily. Do not open any of the vehicle's doors.

10. The Power Programmer's "STATUS" LED should now be steadily illuminated **green**.

11. Press the "UPGRADE" button and within 3 seconds, the **"STATUS"** LED will begin to pulsate **green** indicating the transfer of programming data between the vehicle's ECU and the Power Programmer.

12. Sit back and watch, but **do not** touch anything inside the vehicle or the Power Programmer itself under any circumstances. **Do not open the vehicle doors as this can disturb programming.**

13. In 1 to 7 minutes, the **red** "ACTIVE" LED will turn on while the **green** "STATUS" LED continues to pulsate indicating that the Power Programmer is entering the reprogramming phase.

14. In another 1 to 4 minutes, the **red** "ACTIVE" LED will turn off, while the **green** "STATUS" LED will continue to pulsate; this is the final CHECK phase of the reprogramming procedure.

15. Finally, in about 1 to 4 minutes, the **green** "STATUS" LED will stop pulsating and illuminate steadily. This is your indication that the programming upgrade has been verified. (If you see a solid **green** "STATUS" LED AND a solid **red** "ACTIVE" LED, this indicates that a RESTORE TO STOCK procedure was successfully completed.)

16. You may now open the vehicle door and turn the ignition completely off. Wait at least 30 seconds, but **do not** remove or disconnect the Power Programmer at this time.

17. If the vehicle is a **M3 95 thru 99 with automatic transmission**, at this time you MUST reconnect the Transmission Control Unit that was previously disconnected (see appendix A), before proceeding.

18. If the vehicle is a **528i or 540i 99 on**, then reinstall fuses 17 and 31.

19. If the vehicle is a **740i/il 99 on**, then reinstall fuse 17.

> **NOTE:** At this point, it would help to have an assistant to turn the key or watch the Power Programmer. During the next two steps, things happen both subtly and quickly!

20. With the Power Programmer still connected to the vehicle, turn the ignition switch to the ON position but **do not** activate the starter (Check Engine lamp **must** light up).

21. Watch (but **do not** touch) the Power Programmer, the **green** "STATUS" LED will begin to pulsate almost immediately indicating the transfer of some final information to the vehicle's ECU. This phase lasts only about 10-15 seconds before the **green** "STATUS" LED illuminates steadily. (In other words, if you are slow getting from the ignition switch around to look at the Power Programmer, you may miss this short-lived event.) Once the **green** "STATUS" LED is illuminated steadily, you may proceed.

22. You may now turn the ignition completely off. Then, wait at least 30 seconds.

23. Remove the Power Programmer from the diagnostic port and recap the port.

24. Turn off and remove the battery charger.

25. Close and secure the hood.

26. Start the engine and go for a ride!!

> **NOTE:** Should the Power Programmer encounter any exceptions or difficulties, the **red** "ACTIVE" LED will flash out a 3-digit code at a pace of 0.5 second per flash. All codes begin with a single flash, and none of the digits will repeat. If you encounter any flash codes, refer to the chart on the next page.
> **FAIR WARNING:** The Power Programmer will work only for the car on which it is first installed. Attempting to use this product on more than one vehicle will disable the Power Programmer and void your right to return the product for refund or exchange..

The following codes indicate that your BMW could not be successfully programmed for some reason; it is, however, still drivable. Follow the advice below to correct the situation. If you must return the ECU and/or Power Programmer for analysis, please contact Bavarian Autosport Customer Service first for shipping instructions.

CODE | DESCRIPTION

123 **Vehicle voltage too low** – You must maintain at least 12.5 volts for programming! The vehicle battery is not sufficiently charged or is beyond its servicable life - or the charger is not working or has insufficient output.

124 **Programming voltage too low** – Battery voltage has dropped during the programming process. You must insure a sufficient charge for programming! The vehicle battery is not sufficiently charged or is beyond serviceable life, or the charger is not working or has insufficient output.

125 **Programming voltage needed, not present** – contact Bavarian Autosport Customer Service.

142 **ECU hardware unknown** – Return ECU and Power Programmer for analysis.

143 **ECU contents not stock** – Your existing ECU programming is not stock (original). The Power Programmer can only function on a stock programmed ECU.

147 **ECU software unknown** – Return Power Programmer for analysis.

152 **Injector stock storage failure** – Return Power Programmer for analysis.

153 **Injector not prepared** – Return Power Programmer for analysis.

162 **Vehicle mismatch** – Power Programmer was previously used, or attempted to be used, on a different BMW. The unit will only work on one car.

163 **Bad user request** – You have attempted to install the upgrade when the ECU has already been upgraded, or attempting to restore the stock programming when the ECU has already been restored to stock or has not been upgraded at all.

The following codes indicate that your BMW could not be successfully programmed for some reason and that **its drivability is in question** due to the failure. Please note when and/or where this failure occurred in the process and the state of the **red** "ACTIVE" and **green** "STATUS" LEDs. Contact Bavarian Autosport Customer Service immediately!

132 ECU NOT RESPONDING

134 ECU MESSAGE VERIFY ERROR

135 PROTOCOL ERROR BUSY

136 PROTOCOL ERROR REJECTED

137 PROTOCOL ERROR PARAMETER

138 PROTOCOL ERROR FUNCTION

139 ECU REPLY IS NOT KNOWN

145 ECU FINAL VERIFY FAILURE

146 ECU ERASE FAILURE

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Power Programmer Instructions - Appendix A

IMPORTANT NOTE: *Before programming the M3 with automatic transmission, the Transmission Control Unit (TCU) must be temporarily disconnected. Access to the TCU may be eased by first unbolting the air pump, which is directly in front of the firewall door, and "flexing" it's pipes and wires out of the way. Do not disconnect the harness connector from the air pump assembly!*

M3
95 thru 99 with Automatic Transmission

PART NUMBER:

BAVPP3

1. The TCU is located in the engine compartment behind a door on the passenger-side firewall. Raise the hood and remove plastic push rivets from the foam insulator (arrows) and remove the insulator from the firewall door.

Step 1

2. Remove the firewall access door by removing the Phillips head screws (arrows).

Step 2

3. The TCU is the TOP unit. Press the front (connector end) down to release it from the spring retainers (1 and 2).

4. Pull the TCU forward and down.

Steps 3&4

5. Disconnect the harness from the TCU by swinging the spring clip (2) forward and out, and removing the plug (1) by swinging the "clip end" away from the Control Unit body.

Step 5

6. After Power Programming is completed, reconnect the TCU harness plug and place the Control Unit on the left and right rails of its mounting. Slide it in inclined upwards, as far as it will go. Once in this position, swing the Control Unit front (connector end) upward to engage the spring retainers (1 and 2).
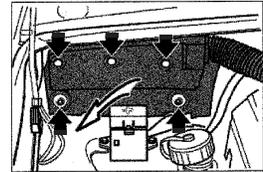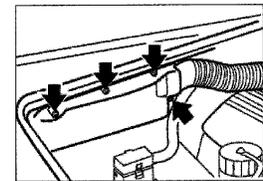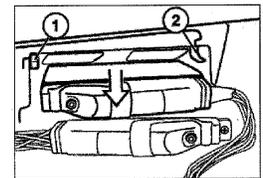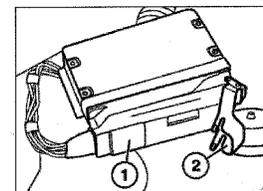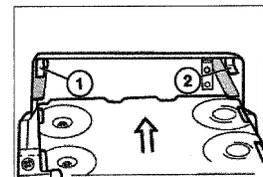
Step 6

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Power Programmer Instructions - Appendix B

Voluntary Emissions Recall 00E-A01 Fault Access / O2 Readiness Codes

PART NUMBERS

BAVPP3

In an August 2000 letter, BMW notified customers that certain 1999 & 2000 model year automobiles (listed below) equipped with 2.5 liter and 2.8 liter engines may not fully meet EPA and CARB on-board diagnostic requirements. They suggested that the owners of the affected automobiles contact their Authorized BMW center to schedule the repair, a reprogramming of the ECU. Depending on the original "level" of the software in the vehicle, this update can also have other beneficial effects. Because of this, we have chosen this "software level" as the base level needed for our Power Programmer performance upgrades. If this recall is applicable to your BMW and you have not yet had it performed, please do so before attempting to upgrade for the first time.

If for some reason you are unable or unwilling to obtain this update, please note that it is very likely that your first upgrade session will fail with a "Code 147" and you will need to then return your Power Programmer for an analysis of your current software level. This will not affect the drivability of your BMW; it will merely delay your upgrade.

The following vehicles are listed as being possibly affected:

SERIES	PRODUCTION DATES
528i, 528iA, 528iT, 528iAT	2/99 thru 7/99
328i, 328iA, 323i, 323iA	3/98 thru 7/99
328Ci, 328CiA, 323Ci, 323CiA	3/99 thru 7/99
328iC, 328iCA, 323iC, 323iCA	2/99 thru 7/99
Z3 Roadster/Coupe 2.8, 2.8A	4/99 thru 7/99
Z3 Roadster 2.3, 2.3A	9/98 thru 7/99

If your BMW is listed above, please verify that this recall has been performed or if necessary have it performed prior to using the Power Programmer.

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