

Smarty

MADS Electronics - Micro Tuner model S-04
2003– 2006 Dodge Ram
5.9L, 24 Valve, Cummins Diesel Engine

Instruction manual



PLEASE READ THIS ENTIRE INSTRUCTION MANUAL BEFORE PROCEEDING

www.madselectronics.com

THIS IS A HIGH PERFORMANCE PRODUCT USE AT YOUR OWN RISK

**This product is intended for OFF ROAD USE ONLY
This product is not intended to be used to break the law**

Do not use this product until you have read the following agreement.

This agreement sets forth the terms and conditions for the use of this product.

The installation of this product indicates that the buyer has read and understands this agreement and accepts the terms and conditions.

DISCLAIMER OF LIABILITY

MADS Electronics, its distributors, jobbers and dealers (hereafter Seller) shall be in no way responsible for the product's proper uses and service. **THE BUYER HEREBY WAIVES ALL LIABILITY CLAIMS.**

The buyer acknowledges that he is not relying on the Sellers skill or judgement to select or furnish goods suitable for any particular purpose and that there are no liabilities which extend beyond the description on the face hereof, and the buyer hereby waives all remedies or liabilities expressed or implied, arising by law or otherwise (including without any obligation of the seller with respect fitness, merchantability and consequential damages) whatever or not occasioned by the sellers negligence.

The Seller disclaims any warranty and expressly disclaims any liability for personal injury and damages. The buyer acknowledges and agrees that the disclaimer of any liability for personal injury is a material term for this agreement and the buyer agrees to indemnify the Seller and to hold the Seller harmless from any claim related to the item of the equipment purchased. Under no circumstances will the seller be liable for any damages or expenses by reason of use or sale of any such equipment.

The Seller assumes no liability regarding the improper installation or misapplication of its products. It is the installers responsibility to check for proper installation and in doubt contact the manufacturer.

The buyer is solely responsible for all warranty issues from the manufacturer.

LIMITATION OF WARRANTY

MADS Electronics (Hereafter Seller) gives Limited Warranty as to description, quality, merchantability, and fitness for any particular purpose, productiveness, or any other matter of the Seller's product sold herewith. The Seller shall be in no way responsible for the products proper use and service and the buyer hereby waives all rights other than those expressly written herein. This warranty shall not be extended, altered or varied except to be a written instrument signed by Seller and Buyer.

The warranty is limited to one (1) year from the date of sale and limited solely to the parts contained within the products kit. All products that are in question of warranty must be returned prepaid to the Seller and must be accompanied by a dated proof of purchase receipt. All Warranty claims are subject to approval by MADS Electronics.

Under no circumstances will the Seller be liable for any labour charged or travel time incurred by in diagnosis for defects, removal, or reinstallation of this product or any other contingent expenses.

Under no circumstances will the Seller be liable for any damage or expenses incurred by reason of the use or sale of any such equipment.

In the event that the buyer does not agree with this agreement: **THE BUYER MAY PROMPTLY RETURN THIS PRODUCT, IN A NEW AND UNUSED CONDITION, WITH A DATED PROOF OF PURCHASE TO THE PLACE OF PURCHASE WITHIN TEN (10) DAYS FROM THE DATE OF PURCHASE FOR A FULL REFUND.**

THE INSTALLATION OF THIS PRODUCT INDICATES THAT THE BUYER HAS READ AND UNDERSTANDS THIS AGREEMENT AND ACCEPTS THE TERMS AND CONDITIONS.

CAUTION

This *MADS Electronics* product is intended for use on unmodified stock engines. Remove any performance enhancing electronic devices and make sure the ECM has been returned to STOCK if you have used another manufacturer's programmer before the Smarty Micro Tuner.

The use of this product to change the performance characteristics of your vehicle could invalidate the warranty provided by the vehicle manufacturer. Consult your vehicle warranty before using the product on your vehicle.

NEVER CONNECT BOTH THE SMARTY CONNECTORS AT THE SAME TIME!

This could damage Smarty and the computer USB port.

NEVER UNPLUG SMARTY WHILE IT IS UPDATING YOUR ECM.

Smarty can recover without pulling fuses, or disconnecting batteries, BUT do not intentionally create this situation. When Smarty is DONE with ECM updates, ABS changes, or clearing DTC codes, it may be unplugged, even if Smarty does not display the typical "Unplug Smarty and Turn Key OFF" screen.

It is recommended that you do not store your Smarty Micro Tuner in your vehicle if ambient temperatures in your area fall below 32°F. Excessively low temperatures can cause malfunction or damage to Smarty Micro Tuner that is not covered by the MADS Electronics warranty.

In the case of ECM replacement, restore the ECM back to the STOCK software before the ECM replacement. Smarty works only with one vehicle and one ECM at a time while it is VIN Locked. Under no circumstances we will refund, repair, or warranty units that are send in and result VIN # locked.

RESTORE ECM TO STOCK SOFTWARE BEFORE ANY SERVICE ASSISTANCE.

If you need to return your vehicle to a service center, restore the vehicle ECM to its STOCK program by following the instruction in this manual. The service center might reprogram your vehicle with an updated, STOCK, software ECM reflash **without** your knowledge. If your vehicle has not been returned to its STOCK program prior to a service visit and the ECM is reflashed, the Smarty Micro Tuner will no longer be able to program your vehicle. Such failure is not covered by the *MADS Electronics* warranty. Under no circumstances will we refund, repair, or warranty units that are sent in that are locked.

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1. Before you begin

Your vehicle's STOCK program

Your vehicle's ECM **must** contain the manufacturer's STOCK factory program. If you have used a programmer from another aftermarket company you must use their product to return your ECM back to STOCK condition before proceeding. If you have a performance-enhancing device installed, it must be removed.

Service Centers

If you need to return your vehicle to a service center, restore the vehicle ECM to its STOCK program. The service center might reprogram your vehicle with an updated, STOCK, software ECM reflash **without** your knowledge. If your vehicle has not been returned to its STOCK program prior to a service visit and the ECM is reflashed, the Smarty Micro Tuner will no longer be able to program your vehicle. Such failure is not covered by the MADS Electronics warranty.

Under no circumstances will we refund, repair, or warranty units that are sent in that are locked.

Locking and Unlocking Smarty.

Once Smarty is used on a vehicle, it is VIN # LOCKED to that vehicle AND to that ECM. Smarty can be used only on that vehicle to update ECM software and ABS (speedometer) changes. In order to unlock Smarty, you must use Smarty to return the ECM to the STOCK software, otherwise, Smarty will remain locked. Only Smarty can unlock itself. Follow the instructions in this Manual to return your vehicle to STOCK software. Once unlocked, Smarty may be used on a different vehicle. While Smarty is VIN# Locked, it can still be used to read and clear Diagnostic Trouble Codes (DTCs) on a vehicle and ECM that it is NOT locked to.

Vehicle preparation

Before connecting the Smarty Micro Tuner to your vehicle, make sure that all power-draining accessories are turned off: Radio, headlights, lights, cell phones, etc. All those devices need to be turned off. Please apply the parking brake before you begin a download.

As the Smarty Micro Tuner needs full battery voltage to program, ensure your vehicle battery is fully charged and NOT connected to a battery charger.

Do not disturb or remove the connection cable during the updating operation.

Smarty preparation

During the first use, Smarty reads the identification parameters of your vehicle. After the first use, Smarty can be used only with your vehicle.

Returning the ECM to STOCK software restores Smarty into the original, unlocked condition.

2. Smarty overview

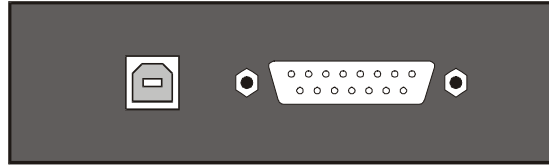
Keyboard operation

Smarty's keyboard is composed of 12 keys:

- Numerical keys from 0 to 9, used to select menu options and enter numerical values
- Right arrow key, used to confirm the selected operation
- Left arrow key, used to go one step back in the operation flow

Connectors

Two connectors are available in Smarty's upper edge:



USB ECM Cable

- **USB Connector:** Used for connecting Smarty to a personal computer for updates. The update softwares can be downloaded from *MADS Electronics* internet site (www.madselectronics.com). A USB cable is not included. Standard USB 1.1 or USB 2.0 cables can be used to connect Smarty to your personal computer.
- **15 pin Connector:** Used to connect Smarty to the vehicle through the vehicle's diagnostic port with an OBD II cable. The OBD II – J1926 diagnostic connector cable is included in Smarty's box. Note: Connecting any other cable to the 15 pin connector invalidates *MADS Electronics* warranty, because it could damage Smarty.

Smarty automatically switches on when one of the two connections described above is made.

NEVER CONNECT BOTH CABLES AT THE SAME TIME. This could damage Smarty and the computer USB port. Such failure is not covered by the *MADS Electronics* warranty

3. Connecting Smarty to your vehicle

- Turn on the ignition key to the RUN position. **DO NOT START THE ENGINE.**
- Plug the furnished OBD II cable into the 15 pin connector in the top edge of Smarty and **GENTLY** tighten the screws by hand. Over tightening these two screws **DOES NOT** make a tighter or better connection. The screws are provided to keep the plug held gently to Smarty.
- Plug the Smarty cable into the diagnostic port on your vehicle. The diagnostic port is located inside the cab, to the passenger side of the steering wheel, at the bottom of the dash panel near the floor.

4. Updating the ECM

First time update.

Turn on the ignition key to the RUN position. **DO NOT START THE ENGINE.**

Plug Smarty's cable into the diagnostic connector of your vehicle. Smarty will display:

Smarty S-04 V:3.00A D:1.00A

The second line of the display shows the firmware version and the tuning data version.

Both the internal firmware and the tuning data information can be updated connecting a personal computer. (See *MADS Electronics* internet site for more details.) Then the main menu appears:

1=ECM Update 2=Read DTC codes

From the main menu, press '1' to select *ECM Update*.

Smarty will try to communicate with the ECM. If the connection cannot be established, Smarty asks you to switch off the ignition key:

Turn key OFF
Press '>'

Turn the ignition key to "OFF". Press the '>' key. Smarty will then ask you to switch the ignition key "ON" in order to retry the connection:

Turn key ON
Press '>'

Turn the ignition key to the "RUN" position. DO NOT START THE ENGINE. Press the '>' key. When the connection has been established, Smarty shows the current installed software. During the *first* programming, the following screen will appear which indicates a STOCK ECM program is installed:

Present SW:STOCK
Press '>'

Smarty will read the serial number of your vehicle and the serial number of your ECM, then store them into its onboard memory for future reference. From this moment on, Smarty will work only with your vehicle until your vehicle is restored back to the stock settings by Smarty.

Press the '>' key. Smarty will ask you to select one of the CaTCHER software versions to load into the ECM:

Choose CaTCHER
Press a # key

You can choose one of TEN different CaTCHER versions according to the desired performance. Enter the single digit number (from 0 to 9), that corresponds with the software number to be programmed into your ECM. When you have entered the preferred CaTCHER software number, Smarty asks you to confirm the selection before installing the new software into the ECM: (example software #5 has been entered):

Program SW: 5
Press '>'

Press the '<' key to return back one step and enter a different software number.

Press the '>' key to confirm your selection and to begin the updating session. You will see the following screen:

PROGRAMMING
Please wait

After a few seconds, a numeric counter begins with the percentage of the transmitted software. At the end of the download (when 100% is reached) Smarty will update the functional parameters of the ECM. Typical programming time is two minutes. The following screen will appear:

Updating ECM
Please wait

At the end of the updating session, the following screen appears:

UPDATE DONE

After a few seconds Smarty displays the following screen:

Unplug Smarty
Turn key OFF

Please unplug Smarty from the diagnostic port and turn the Key off for 30 seconds.
Remember to restore the STOCK software before returning your vehicle to a service center.

Changing Software

Turn on the ignition key to the RUN position. **DO NOT START THE ENGINE.**

Plug Smarty's cable into the diagnostic connector of your vehicle. Smarty will display:

Smarty S-03 #
V:3.00A D:1.00A

When the “ # “ symbols are displayed on the first line, Smarty is VIN# locked to a vehicle.
The second line of the display shows the firmware version and the tuning data version.
After a few seconds the main menu will appear:

1=ECM/ABS Update
2=Read DTC codes

Once Smarty is VIN# Locked, the ABS control system can be accessed in order to correct the wheel height.

Press the '1' key, and Smarty displays the following screen:

1=ECM Update
2=ABS Update

Press the '1' key to select *ECM Update*.

Smarty will try to communicate with the ECM. If the connection cannot be established, Smarty asks you to switch off the ignition key:

Turn key OFF
Press '>'

Turn the ignition key to “OFF”. Press the '>' key. Smarty will then ask you to turn on the ignition key in order to retry the connection:

Turn key ON
Press '>'

Turn the ignition key to the “RUN” position. **DO NOT START THE ENGINE.** Press the '>' key. When the connection has been established, Smarty shows the currently installed software. After the first update, the following screen will appear displaying the CaTCHER software currently installed in the ECM: (See example below for Smarty software #5).

Present SW: 5
Press '>'

Press the '>' key. Smarty asks you to select either CaTCHER Software Versions (see Change CaTCHER Programs below) or the STOCK software:

1=CaTCHER SWs
2=Stock SW

Return to STOCK program.

Press the '2' key. Smarty asks for confirmation to restore the ECM to STOCK software:

Program STOCK SW
Press '>'

Press the '>' key. The ECM is restored to STOCK software and Smarty is unlocked. Smarty can now be used on another vehicle.

Change CaTCHER programs.

Press the '1' key in the above described menu. Smarty asks you to enter the CaTCHER software number (0 to 9) that is to be loaded into the ECM:

Choose CaTCHER
Press a # key

Enter the single digit number (from 0 to 9) that corresponds with the software number to be programmed into your ECM. When you have entered the preferred CaTCHER software number, Smarty asks you to confirm the selection before installing the new software into the ECM: (example software #9 has been entered):

Program SW: 9
Press '>'

Press the '<' key to return back one step and enter a different software number.

Press the '>' key to confirm your selection and to begin the updating session. You will see the following screen:

PROGRAMMING
Please wait

After a few seconds, a numeric counter begins with the percentage of the transmitted software. At the end of transmission (when 100% is reached), Smarty will update the functional parameters of the ECM. Typical programming time is two minutes. The following screen will appear:

Updating ECM
Please wait

At the end of the updating session, the following screen will appear:

UPDATE DONE

After a few seconds Smarty displays the following screen:

Unplug Smarty
Turn key OFF

Please unplug Smarty from the diagnostic port and turn the key of for 15 seconds.

Recovery of the ECM

If an interruption occurs during an Update or the Update operation is terminated before the normal end for any reason the ECM will not be operational. You must recover the ECM using Smarty to resume the update process.

Attention! The engine will not start before the ECM has been recovered properly!
(The Wait to Start Light will flash continuously)

DON'T PANIC!

MADS Electronics has developed a special boot loader software that is used during all the ECM Updates. Unlike the OEM DRBIII tool, there is no need to pull fuses or disconnect the batteries! No tools are needed! At *MADS Electronics* we've done our homework!

Just follow the directions on Smarty's display.

Smarty will handle the situation for you in a few simple steps.

Unplug Smarty, then, plug it in again. After a few seconds the usual main menu will appear.

1=ECM/ABS Update
2=Read DTC codes

Press the '1' key, and Smarty displays the following screen:

1=ECM Update
2=ABS Update

Press the '1' key to select *ECM Update*.

Smarty will try to establish the communication with the ECM. The connection cannot be established because the last updating session has been interrupted. Smarty knows that the last update has not been performed correctly, and will recognise the not operational ECM condition.

Smarty asks you to switch off the ignition key:

Turn key OFF
Press '>'

Turn the ignition key to "OFF". Press the '>' key. Smarty will then ask you then to turn ON the ignition key in order to retry the communication:

Turn key ON
Press '>'

Turn the ignition key to the "RUN" position. **DO NOT START THE ENGINE.** Press the '>' key. The communication cannot start yet. Smarty shows the following message:

A previous update has been interrupted
Press '>' to restore ECM to Stock

The message is longer than the display, so the message will repeatedly scroll across the screen. Press the '>' key. The recovery operation starts. You will see the following message:

PROGRAMMING
Please wait

After a few seconds, a numeric counter with the percentage of the transmitted software will appear. At the end of the transmission (when 100% is reached), Smarty will update the functional parameters of the ECM. The following screen will appear:

Updating ECM
Please wait

At the end of the recovery operation, the following screen appears:

UPDATE DONE

After a few seconds Smarty displays the following screen:

Unplug Smarty
Turn key OFF

Please, unplug Smarty from the diagnostic port and turn the ignition key off for 15 seconds. The job is done. The ECM has been returned to the STOCK software and Smarty is no longer VIN# Locked. You're ready to start from the beginning again.

5. Reading Key-on counter

Smarty leaves no footprint, all the trip data stored inside ECM remains untouched. As an example you can verify that the Key-on counter remains stored.

From the main menu, press the '2' key to select the data read function.

1=ECM/ABS Update
2=Data Read

From the data read menu, press the '1' key to select this function.

1=Key-on counter
2=DTC codes

Smarty will try to establish communication with the ECM. If the Key was not turned into the on position Smarty will display this message:

Turn key OFF
Press '>'

Pressing the '>' key, Smarty asks you to turn on the ignition key to retry the connection:

Turn key ON
Press '>'

When the connection has been established, Smarty shows the key-on counter:

```
Key cnt: 567
Press '>'
```

Please remember that everytime the key is switched off, as at the end of the programming, the key-on counter increases.

6. Reading DTC's

Reading Diagnostic Trouble Codes

The DTC (Diagnostic Trouble Code) reader function present in Smarty Micro Tuner is for convenience purpose only.

MADS Electronics makes no warranty to the accuracy of the interpretations.

The description of all the DTC is shown on Smarty's display.

Many logged codes are transitory, they are automatically reset.

From the main menu, press the '2' key to select the data read function.

```
1=ECM/ABS Update
2=Data Read
```

From the data read menu, press the '2' key to select this function.

```
1=Key-on counter
2=DTC codes
```

Smarty will try to establish communication with the ECM.

If the Key was not turned into the on position Smarty will display this message:

```
Turn key OFF
Press '>'
```

Pressing the '>' key, Smarty asks you to turn on the ignition key to retry the connection:

```
Turn key ON
Press '>'
```

When the connection has been established, if no DTC codes are present, the following screen appears:

```
No DTC stored
Press '>'
```

If one or more DTC's are stored, Smarty shows the number of DTC's present with the following screen:

```
8 DTC present
Press '>'
```

With the keys '<' and '>' all the present DTC codes can be displayed, one code at a time with the following screen:

DTC #1 – P0108
MAP sensor volta

The first line of display shows the DTC “P” code. The second line shows the DTC code description. If the DTC code description is longer than the physical dimension of the display, the description will scroll across the screen.

Clearing DTC codes

At the end of the DTC code list, Smarty can either clear all the stored DTC codes from the ECM memory or exit:

1=Clear DTC
2=Exit

Press the '1' key, to clear all the DTC codes stored in the ECM.

Press the '2' key, the DTC codes will not be erased and Smarty will return to the main screen.

When the erasing operation has been completed, the following screen appears:

DTC Cleared
Press '>'

7. ABS Update

Tire height update

Once Smarty is VIN# Locked (i.e. a CaTCHER software has been loaded in the ECM) the speedometer of the vehicle can be adjusted according to the tire height.

From the main menu, shown below, press the '1' key.

1=ECM/ABS Update
2=Data Read

To change the tire height, choose the ABS update function:

Press the '2' key, in the second menu as shown below:

1=ECM Update
2=ABS Update

Smarty will try to establish the communication with the ABS.

If the ignition key was not turned to the “RUN” position Smarty will display this message:

Turn key OFF
Press '>'

Press the '>' key, then Smarty will prompt you to turn on the ignition key to retry the connection:

Turn key ON
Press '>'

When the connection has been established, Smarty shows the current tire height (Curr Tire:) in the top line of the screen:

```
Curr.Tire:40.00"  
New Tire: . . "
```

Type in the correct tire height with the numerical keys, entering a decimal point is not required. Any tire height from 25.00" to 45.00" can be chosen in 0.05" increments. If you enter an increment other than 0.05", Smarty will round it to the next correct increment. The '<' key can be used to change entries.

After you have entered the correct tire height, press the '>' key. Smarty will prompt you for confirmation to proceed:

```
New Tire:42.25"  
Press '>' to start
```

The '<' key can be used return to the previous screen to change the New Tire size.

Press the '>' key, to start updating the ABS unit with the new tire height.

A typical ABS change will take only a couple of seconds.

When the operation has been successfully completed, the following screen appears:

```
PROGRAM DONE
```

The ABS unit does not always change, so Smarty will re-read the tire height from the ABS unit and display the results as shown in the following screen:

```
Curr.Tire:42.25"  
Press '>'
```

If the ABS unit did not change to the new tire height, Press the '<' key to return to the previous screen, and re-enter the correct tire height.

When the tire height change is completed, press the '>' key. Smarty will display the following screen:

```
Unplug Smarty  
Turn key OFF
```

Please, unplug Smarty from the diagnostic port and turn the ignition key off for 30 seconds.

Notes: To increase the speedometer reading, increase the tire size.

To decrease the speedometer reading, decrease the tire size.

The ABS accuracy is questionable. Verify the speedometer reading with a GPS or by pacing a vehicle with a speedometer know to be accurate.

8. Updating Smarty

Both the internal firmware and the tuning data information can be updated through USB connector.

Please see *MADS Electronics* internet site (www.madselectronics.com) for more details and software download.

Appendix A: Error messages description

This section contains all the possible error messages shown by Smarty:

Error message	Cause	Solution
CCD ERROR #	The communication with ABS unit doesn't work	Check connection cable or check ABS unit
COMM. TIME OUT	The ECM of the vehicle doesn't answer to Smarty	Turn the ignition key on (DO NOT START ENGINE) or Check the connection cable
ECM Changed	The ECM unit of the vehicle has been changed	Restore the original ECM back to STOCK before changing ECM
Empty Memory, Please Update	The last Update operation (through USB port) has been unsuccessfully completed. Smarty memory has been corrupted.	Repeat the Update operation. The data files are available on the <i>MADS electronics</i> internet site.
INTERNAL ERROR #	Smarty internal malfunction	Call MADS Electronics assistance
Memory Error	A malfunction in the Smarty's memory	Call MADS Electronics assistance
Memory Written Wrong Data File	The update file transmitted to Smarty through USB port is corrupted	Download again the update file from MADS Electronics internet site and update Smarty with the correct file
PROGRAM ABORTED	The ECM update function has been interrupted	Restore the ECM to STOCK with the recovery procedure.
S/N Verify Error	The serial number of your vehicle has not been verified	Check connection cable
SW Version doesn't Match S/N	The ECM software version doesn't match with the serial number	Please contact MADS Electronics or the seller.
UNKNOWN SOFTWARE	Your vehicle contains a software version unknown to Smarty	Please contact MADS Electronics or the seller.
VIN# Locked	Smarty has been connected to a different vehicle	Restore the original vehicle back to STOCK before connecting Smarty to a new vehicle
WRONG COMMUNIC.	The communication between Smarty and the ECM unit is disturbed	Check the connection cable or the battery charge level
WRONG VIN#	The serial number of your vehicle is not valid	Wait 30 seconds with the ignition key on and try again

Warranty

How Do You Get Service?

If something goes wrong with your Product during the warranty period, use the following procedure to return the Product to *MAD Electronics*.

1. Restore the STOCK software to your vehicle ECM. DO NOT RETURN A VIN # LOCKED SMARTY.
2. Download and fill out the Assistance Request Module available from *MADS Electronics* internet site or send an e-mail to *MADS Electronics* (e-mail information is available from *MADS Electronics* internet site) Include the following:
 - Information from your sales receipt (electronic copy would be appreciated). The sales receipt must be from the location where you purchased your Product and must include the name of the business where you purchased the Product and the address of the business.
 - Serial number of the product
 - A brief written description of the problem
 - Your *address and other personal information to contact you*
3. *Contact MADS Electronics* distributors for immediate assistance