

## Vag-Tacho Real Time Temp Mod... Mod to the Mod

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 **EZTutty** Discussion starter · May 1, 2012 (Edited by Moderator)

Well I bought Vag-Tacho a few months ago, and other than enabling the Miles to Empty and Lit Needles I didn't really play with it much; but I was looking into the Real Time Temperature Gauge mod, but decided I wanted to know how and why it works.

I saw some graphs that another member on here made which helped me a lot, but I've since improved on the original mod after noticing a few things about the readings.

It's worth noting before I start this was done on a Mk4 R32 with Cluster Part No - **1J0 920 929J**, and whilst this may also work on other similar clocks I cannot guarantee this!

Here's a Graph of the Original Scale (Add: 2D4 - 2DF) & Stepper Motor Position (Add: 2E0 - 2EB): -



As you can see from the Red Line it shows the original flat spot at 90°C that we all know about, the green line shows the original modified values, and the blue line is the Input Scale.

However the original mod only adjusted 2 of the positions of the Stepper Motor (Green Line), whilst this removes the flat spot and makes the gauge appear to give a 'real time' reading, it's far from accurate, other than perhaps 90°C as the plot lines cross at this point (this was checked by using VCDS and looking at the Coolant Temperature Data from the Instruments Measuring Blocks. (I don't have the original calibration data; I wish I had made a note of this now!))

Firstly I realised from looking at the Original Stepper Motor Position (Red Line on graph) that this should be a straight line and not a curve, as you can tell by the 2 straight angled lines either side of the 'flat spot', there is also another flat spot low down (covered by the green line), as you can see the original mod (Green Line) doesn't remove the low down flat spot, and doesn't linearize the Motor Position.

So I took the First and Last motor positions and calculated the other 4 positions to plot a linear line on the graph as can be seen here (Green Line): -



I also tried reducing the First and Last positions, but this shortened the range of the gauge (tested using Instruments Output Test on VCDS), so I stuck with the original First and Last values.

After converting the new values to Hex and uploading to the clocks the new calculated values VCDS Output Test gave me a Full Gauge sweep and midpoint check at exactly 90°C, however the temperature Indicated on the Gauge vs. Indicated from VCDS Instrument Measuring Blocks was still different (45°C actual was displaying 60°C on the gauge).

After some playing around I Determined the Linearized gauge was correct and that I needed to adjust the Scale, I started by keeping the original curve, but adding random offsets to the Base Figure. I was getting closer but I could only get the gauge to read correct at individual positions and not throughout the range. I also noticed that the original Curve seemed to change around the original Flat Spot; also it seemed illogical for it to be a curve, as it would appear the gauge uses an Actual Temperature Value calculated in the background (I assume the reading I see in VCDS), and not the Resistance direct from the Sender. So the Temperature vs. Resistance Curve of the Sender is already accounted for when the conversion to °C is done.

So I plotted another linear line keeping the original First and Last figures, this gave me a More Constant Error across range of the gauge, so I tweaked the First and Last figures (treat these as a sort of Zero and Span) and plotted a new line, after a couple of attempts I found a good set of figures (when plotted on the first graph the new line crossed the old line at the midpoint which is a good sign; however I haven't shown this graph here). So i converted my new values to Hex and uploaded them to the Clocks.

Here's my results;

Code:	
[U][B]Gauge Reading (°C)[/U]	[U]VCDS Coolant Temp (°C)[/B][/U]  
50	51  
55	56 
65	66 
75	76 
80	81 
85	85 
90	90 
95	95 
100	100 
105	104

As you can see the Gauge is within 1°C throughout most of its range, and the centre point (90°C) is spot on; this is very good for a gauge with 10°C Increments, and most likely more accurate than the Temperature Sender is required to be anyway!

I couldn't go any further than this using 'real' engine temperatures as the car regulates it's temperature, but I'm confident that the 110-130°C will also be within 1°C given the new 'linear plots. This could of course be checked by connecting a Potentiometer or set of Resistors that Correspond to known

Here are the Addresses and Hex Values I used

**Scale**

- 2D4 - 90
- 2D5 - 01
- 2D6 - 12
- 2D7 - 02
- 2D8 - 94
- 2D9 - 02
- 2DA - 16
- 2DB - 03
- 2DC - 98
- 2DD - 03
- 2DE - 1A
- 2DF - 04

**Stepper Position**

- 2E0 - 33
- 2E1 - 00
- 2E2 - 4E
- 2E3 - 01
- 2E4 - 69
- 2E5 - 02
- 2E6 - 84
- 2E7 - 03
- 2E8 - 9F
- 2E9 - 04
- 2EA - BB
- 2EB - 05

Use Vag-Tacho to dump the EEPROM to an .eep file, then use a Hex editor (such as XVI32) to edit the hex file with the figures above. Then upload the modified file to the Clocks using Vag-Tacho.

I won't go into any further detail about this, as I'll assume for you to have done the Mod in the first place that you already know how to do this.

Just to note, that you do this at your Own Risk, and I cannot be held responsible.

Hope this is useful to someone

EZT

[See less](#)

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2008 Audi TTS S-Tronic  
1988 Peugeot 205 GTI with GTi-6 Engine Conversion

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**SplitPersonality** · #2 · May 1, 2012



Was with you til "well":top:

If you are going to have just one car, for gods sake make sure its German!

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**EZTutty** Discussion starter · #3 · May 1, 2012



Lol... bit deep isn't it, i clearly have wayyy to much time on my hands!

2008 Audi TTS S-Tronic  
1988 Peugeot 205 GTI with GTi-6 Engine Conversion

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**haf1zur** · #4 · May 1, 2012



i remember doing this on mine a while back

great mod

3.2 and a 1/4L = No Wheelspin, just Whiplash

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**ad04and** · #5 · May 1, 2012



Nice thorough explanation. Plus your use of graphs etc., really does help clarify what can be achieved with this mod.

Good work.

Land Rover R/R Evoque Dynamic 2.2 SD4 (190PS / 420Nm 9-speed Auto with Paddle Shift), 4WD, RSC, EDC, EBD, HDC, DSC, TCS, EBA, TPMS, Corris Grey / Santorini Black, Vortex Ebony Leather, 20" Split Spoke

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J **jon\_R32** · #6 · May 1, 2012



another thing to add on the list of cluster mods I need doing.

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just out of interest how many people actually have the real time temp mod done??

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 **Gti Fly** · #8 · May 1, 2012

⋮

Great right up thanks!!

Out of interest, after doing the mod, what sort of ranges do you now see on the temp gauge?

I'm intested in knowing what sort of water temps our cars run from day to day driving, inc hard maniac driving

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 **birdiemachine** · #9 · May 1, 2012

⋮

Where do I buy vag tacho and can I do this on a mk5?

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 **EZTutty** [Discussion starter](#) · #10 · May 1, 2012

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Pottering about town temp seems to hover around 80-95°C, in traffic it gets to about 105°C before the fans kick in and bring it down, i'd imagine on the motorway it'd sit around 80°C.

Don't think this works on a Mk5, as i imagine they use a different clock set.... i could be wrong tho, i don't really know about the mk5.

2008 Audi TTS S-Tronic  
1988 Peugeot 205 GTI with GTi-6 Engine Conversion

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J **jon\_R32** · #11 · Jun 18, 2012

⋮

Do you have the original epp file I can compare to mine? Im keen todo this mod, and would like to see what the values where you changed originally so I can be sure Im not cocking it up.

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 **JamesBaby** · #12 · Jun 18, 2012

⋮

Very impressed with all your work on this. Kudos due!!





**simonmac** · #13 · Jan 1, 2013



cheers for this info, you've taken the mod to the next level. i have been trying to figure this out for a while.

VagCom/VCDS. VDS-Pro, VAGTacho, MPPS ECU Flash/Read, Fault code reading, key coding, SKC Pin code Retrieval, auto locks, remote windows, Miles to Empty, alarm beeps, lit needles, Immobiliser programming,



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I've done this on two cars and about to do a 3rd today very good mod!

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**alexmac** · #15 · Jan 2, 2013



Looks good! I don't quite understand it all. Does this vag-tacho unlock codes so you can do things like open windows with the key fob?

How much does the kit cost and how do you use it?

And what's the "lit needles mod"?

Sorry for all the questions and to slightly high jack your thread, it's something I have never researched on.

Cheers

Alex mac

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J

**jon\_R32** · #16 · Jan 2, 2013



vag tacho doesn't do the window mod thats another programme mate and you need a older pc todo it.

vag tacho allows cluster mods, so lit needles, miles to empty, welcome message and this temp gauge mod. You can get it off ebay for about 20quid lead and software. Although there may be a member by you who can do this for you and it might be best as if your not sure you can ruin the dash.

The lit needles makes the needles on the dash light up all the time.

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**alexmac** · #17 · Jan 2, 2013



jon\_R32 said: [⬆](#)

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and it might be best as if your not sure you can ruin the dash.

The lit needles makes the needles on the dash light up all the time.

Ah! Sweet sounds good. Cheers for that jon\_R32


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