VW Climatronic (by Hella) Self-Diagnostics

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Here are a few instructions on how to decipher useful information from the VW Climatronic control panel. Especially attractive is the fact that you do not need any sort of diagnosis equipment, and can read out one value or the other while stopped at a light, for example.

The description of reading error codes, performing the control surface test, and onboard-diagnosis is limited to the Hella control unit, as pictured below. This unit is found in the Golf IV *[ed: in Europe]* and in the Passat 3B/3BG. Externally identical control units from VDO were also used in some of the same cars, which have the same pinouts, but whose Self-diagnosis channels are assigned differently. User beware!

Reading the Internal Error Memory:

Ignition ON.
To activate the readout: Press and hold the „ECON“ and „Recirculate“ buttons simultaneuously for about 2 seconds.

Any error codes present will now be displayed. To scroll to the next error code, press the „Warmer“ button. When all codes have been displayed, „000“ is displayed.

If there are no errors present, „444“ is displayed.

To clear the error codes: After the last code is displayed, (i.e. after „000“ is displayed), press and hold „ECON“ for at least 2 seconds. „444“ will be displayed as confirmation that there are no more codes present.

To exit the Internal Error Memory Mode: briefly press the „ECON“ button.

List of Possible Error Codes:

(Error Code / Error Location /	Error Type)
FFFF Control Unit	0x25
0119 Vehicle Speed Sensor	0x25
0214 Supply Voltage	0x06, 0x07
021A Reference Votlage	0x06, 0x07
0510 Temperature Sensor – Dash Vent (1296)	0x1d, 0x1e
0511 Temperature Sensor – Footwell Vent (1297)	0x1d, 0x1e
030B Outside Temperature Sensor – Front Bumper	0x1d, 0x1e
0313 Temperature Sensor – Fresh Air Inlet	0x1d, 0x1e
0332 Temperature Sensor – Evaporator	0x1d, 0x1e
0333 Refrigerant Pressure Sensor	
0318 Air Conditioner Pressure Switch	0x23
031D Photosensor for Sunlight Intensity	0x1d, 0x1e
0382 Compressor Valve	
04F7 Temperature Flap Servo Motor	0x25
04F8 Central Flap Servo Motor	0x25
04F9 Fresh Air Blower	0x25
04FA Recirculation Flap Servo Motor	0x25
025B Footwell/Defrost Flap Servo Motor	0x25
04B6 Standing Time Signal	0x25
0538 CAN-Bus	
0513 Gateway	
053D Kombi	
04AE Gateway Database Version	
0414 Control Unit Not Coded	0x23
043F Basic Settings Not Accomplished	0x23

Actuator Test

All components of the Climatonic system are exercised during this test.

Requirements:
Ignition off, Motor off, Vehicle stopped, Battery voltage 15 < 15.5 V.

To begin the self-test routine, simultaneously press and hold „ECON“ and „Recirculate“ then turn on the iginition (do not start engine) while keeping the buttons pressed, and continue pressig the buttons for about 2 seconds more. All LCD segments in the Climatronic display will now illuminate.

During the following automatic actuator test (duration ~30 seconds), all actuators will be exercised in a serial fashion. In addition, all control unit inputs (Sensors, Motors, Servos, etc) will be checked that can be checked with th motor off. During the test all

buttons are disabled, and all LCD segments are black. Once initalized, the self-test cannot be interrupted via the control panel nor via VAG-COM. Upon completion of the test, the control unit automatically switches into „Internal Error Memory Mode“ (see above.)

To leave „Internal Error Memory Mode“, press the „ECON“ button.

On Board Diagnosis

On Board Diagnosis (OBD) mode is available with/without the motor running and also while the vehicle is moving.

To enter OBD mode, simultaneously press the „ECON“, „Colder“, and „Fan Speed Down“ buttons. Scroll through the diagnosis channels using the „Warmer“ and „Colder“ buttons. The climatronic will continue to operate in the mode it was in before OBD mode was entered *(unless you don’t hit the buttons all simultaneously, in which event you may lower the temperature setting , fan speed, or go into Econ mode by accident... it requires a practiced touch to not do any of these things)*

To exit OBD mode, press the „ECON“ button.

Note:

There are different channel assignments, depending on the manufacturer. [ed: *I believe only Hella units were installed on US-bound Passats, but I’m not 100% sure on that*] If there is a plausible speed value in channel 16, then the following assignments apply. Other units have the speed on channel 17 or 19, in which case the following chart isn’t applicable.

Depending on the vehicle, all available channels may or may not be in use.

[ed: * *below means I’m not 100% sure on the meaning of the channel label*]

„Bit“ in the units column indicates the binary values 0=false, 1=true.

Hella Climatronic OBD Channels

	Channel	***Displayed Value***	***Units***
	0	Program Number	Dig.
	1	Interior Temperature	°C
	2	Sunlight Intensity - Delayed	10 W/m^2
	3	Sunlight Intensity - Instantaneous	10 W/m^2
	4	Exterior Temperature - Delayed	°C
	5	Exterior Temperature - Bumper	°C
	6	Exterior Temperature - Fresh Air Inlet	°C
	7	Vent Temperature - Footwell	°C
	8	Vent Temperature - Dash	°C
	9	Blower Voltage - Set Value	0.1 V
	10	Blower Voltage - Actual	0.1 V
	11	Temp.-Flap Set-Value	Dig.
	12	Central-Flap Set-Value	Dig.
	13	Recirc. Flap Set-Value	Dig.
	14	Footwell/Defrost Flap Set-Value	Dig.
	15	Motor Run Time	Hr.
	16	Vehicle Speed	mph (km/h if not USA)
*	17	START_AP	Dig.
	18	Recirc. Flap	Dig.
	19	Compressor Error Code	See Appendix
*	20	PI_STELLMAX Ausbl-Reg.	Dig.
*	21	INT_STELL Ausbl-Reg.	Dig.
*	22	Epsilon Ausbl-Reg.	Dig.
	23	Vent Temperature - Actual	°C
	24	Vent Temperature - Set Value	°C
	25	Temp. Flap (-) Limit	Dig.
*	26	RMP Temp. Flap	Dig.
	27	Temp. Flap (+) Limit	Dig.
	28	Central Flap (-) Limit	Dig.
*	29	RMP Central Flap	Dig.
	30	Central Flap (+) Limit	Dig.
	31	Recirc. Flap (-) Limit	Dig.
*	32	RMP Recirc. Flap	Dig.
	33	Recirc. Flap (+) Limit	Dig.
	34	Footwell/Defrost Flap (-) Limit	Dig.
*	35	RMP Footwell/Defrost Flap	Dig.
	36	Footwell/Defrost Flap (+) Limit	Dig.
	37	Standing Time	Min. (255 = No Data)
	38	Compressor-PWM	Dig. (0-200)
	39	Evaporator Temperature - Set Value	°C
	40	Evaporator Temperature - Actual Value	°C
*	41	Evaporator - I-Stell	Dig.
*	42	Evaporator - Epsilon	Dig.
	43	Refrigerant Pressure	bar

	44	BiLevel Mix/Dash Vent Flap	Dig.
	45	Motor Temperature	°C
	46	Compressor Current - Set Value	mA
	47	Compressor Current - Actual Value	mA
	48	Compressore Current - Maximum Value	mA
	49	Compressor RPM	100/min
	50	Radiator Cooling Fan Control Signal	%
	51	Windshield Wiper Mode	Dig. (0=Off, 1=Int, 2=On)
*	52	Fdk-Correction wrt Wiper Mode	Dig.
	53	Blower Voltage Correction wrt Wiper Mode	0.1 V
	54	Part Number	
	55	VW-Number	
	56	HELLA-Number	
	57	Test-1	
	58	Test-2	
	59	Test-3	
	60	Test-4	

Expanded Diagnosis Channels for CAN-Variants

	61	open	
	62	Terminal 15	Bit
	63	Hot Lamp	Bit
	64	Exterior Temperature - Filtered	°C
	65	A/C Shutoff	Bit
	66	Motor RPM	10 RPM
	67	Dimming	%
	68	Map Cooling	Bit
	69	Land Version	2=USA; 1=Japan; 0= ROW

Transmitted Data

	70	open	
	71	Auxiliary Heater (PTC On)	Bit
	72	Compressor On	Bit
	73	Heater Off	Bit
	74	Exterior Temperature - Plenum - Unfiltered	°C
	75	Compressor Load	Nm
	76	Blower Load	%
	77	Radiator Fan Load	%
	78	Check Engine Light	Bit

Compressor-Cutout-Codes (Appendix to Channel 19)

Code	*Compressor Cutoff Condition*
0	None
1	Excessive Refrigerant Pressure
2	Blower Defective + Uist < 3 V
3	Low Refrigerant Pressure
5	4s after Motor Start
6	ECON-Mode
7	OFF-Mode
8	Function of Exterior Temperature
10	Low Voltage
11	Motor Temperature > 118°C
12	Motronic Interface
13	Terminal 15 Voltage > 17 V
14	Function of Evaproator Temperature
15	No Vehicle Coding
16	Compressor Current
17	Pressure Sensor Defective (only with externally regulated compressor)
18	Motor RPM (only B5.5 W8)

Notes on individual channels

The vehicle speed displayed in **Channel 16** is not extremely accurate, despite its digital display. It basically serves to regulate the amount of fresh air intake in proportion to the vehicle speed – no mor and no less. [ed: *After comparing with my GPS speed, I've found the channel 16 speed on my car to read closer to actual than the speedometer, but it tends to err one or two mph slower than actual... use as a speedo at your own risk.*]

The **Channel 40** evaporator temperature can roughly establish whether the cooling power of the A/C is working optimally or not. Indepent of the possibly subjective perceptions of the inhabitants, this is an objective measure of the achieved evaporator temperature before later mixing with warmer air as necessary. Even in the hottest of temperatures, when set to „Lo", the A/C should achieve an evaporator temperature in the neighborhood within minutes, and after at most a half hour of easy driving, should reach a steady state of 3 °C.

System Errors

If a system error was detected during the last driving cycle, all the LCD segments will blink 2 times per second for 15 seconds after the ignition is turned on.

The following stationary errors will also set a system error:

- VAG-Tester Function 04 - Basic Settings not performed.
- VAG-Tester Function 07 - Parameter Coding not completed.
- Exterior temperature sensor (Fresh Air Inlet and/or Bumper) defective.
- Pressure switch/sensor defective.
- Interior temperature sensor defective.
- Reference voltage.