

Audi S2/RS2 Climate Control

If you've ever wondered if you can fit climate control into your S2 then what follows will help you

- It is possible to fit climate control that will look and work as the standard Audi system fitted to LHD cars and A4s
- Budget £300 - £500 for parts assuming you've already got manual air-con.
- Dashboard will have to come out so take the opportunity to replace the heater matrix whilst you're in there
- It's not "plug n play". The wiring & fitting is involved so paying for someone else's labour could make this very expensive



Audi teased us with this photo from a brochure of the day.

They used this photo of a LHD car in the UK brochures

S2s in the UK never had the option of climate control. Earlier US cars had the option of a clunky vacuum controlled system and then for LHD S2s along came the electronic version also used on other contemporary LHD Audis in both Europe and the US. The same system was also used for the first few years on the A4. This gives lots of possibilities for using second-hand bits.

I've put together some information on what's involved in converting an S2 to have climate control like this. It's not a step by step guide, just some hopefully helpful pointers. Nor is it a plug n play conversion unless someone offers to make up a bespoke wiring loom. It is a complex wiring challenge with over 100 connections to make. Starting with the loom from a LHD car *may* help – but I didn't go that route so I don't know. In fact my car didn't start with air conditioning fitted at all.

You will need to use [S2central.net](http://www.s2central.net) to get the appropriate wiring diagrams e.g. www.s2central.net/S2_Schematics/B/B75.PDF

In a standard S2, Bowden cables actuated by the rotary heating control knobs move flaps inside the heater unit to control temperature and direct air to the various outlets. Climate control works by reading various sensors around the car and using them to keep the car interior to the settings you've selected by driving motors that move the same flaps. In auto mode the climate control unit (CCU) decides where to direct the air or you can over-ride that with the buttons on the control panel. The key sensor is the car interior temperature. This drives the system to keep the temperature at that sensor the same as the one you've set on the CCU so it follows that this sensor should be positioned somewhere close to you the driver. If you've still got your original Owners Manual then you'll find that Audi have helpfully teased you even more by giving all the details for operating the climate system.

The most challenging item you need is this electric motor controlled central heater unit. It has to be a RHD one as you need the air to enter on the left hand side coming from the blower fan and air-con evaporator. The luck is that just such a unit was created for the RHD A4. You can't fit the whole system from an A4 as the car is wider and the gas pipes for the air-con go through the bulkhead at different places so the trick is to connect the central unit from an early A4 ('96, '97 possibly up to '00) with climate control to the rest of a standard S2 system and you then get a complete system which will fit. I believe the part number is 8D2 820 353 A but can't confirm as I didn't buy mine by part number and the unit itself doesn't have a recognisable part number on it.

The heater unit is attached to the fan and evaporator unit by a number of clips which you can see in the following photograph. If you remove the clips on your existing unit you'll find the ex A4 unit with flap motors will just clip in its place. It has been reported that you can do this in situ which saves you having to have the air-con discharged before you start but access to the some of the 6 clips is very limited and in the report I read it wasn't possible to get all the clips back on this way.

The unit has three flap motors on it and they correspond directly to the three flaps the old cables worked. One flap sets the temperature (V68) and works by directing air through or around the heater matrix. The second flap selects air for the screen or your feet (V85) and the third flap controls air going out to the central vents (V70). Over by the fan there is a fourth flap that selects outside air or recirculated air. If you've already got manual air-con this flap is there driven by a vacuum motor and an air valve. The CCU will control this air valve replacing the manual switch on the dashboard. V71 is not used and connections to it can be ignored. Later CCUs can control 4 flap motors and give individual temperature control to driver and passenger. I do not know if a unit from a later A4 ('99 on?) with these facilities will fit.



You'll recall those two difficult to access penny washered nuts you have to remove from the engine side of the bulkhead to release the old heater unit. They attach to a bracket that you have to remove from your old heater and move to the A4 one with a new support you'll have to fabricate at the top.

The other item you need is the climate control unit (CCU) E87 like this:



Details on part numbers are in Appendix A. They come up for sale regularly on ebay.co.uk out of A4s and on ebay.com from a variety of Audis. On early ex US Audi 80's units the display will be orange, on the later A4 ones it will be red which matches the S2 instrument colours. You can change from one colour to the other by opening up the unit and changing the colour filter behind the display.

Ex Audi 80, 90 and LHD S2s CCUs will expect a coolant temperature sensor which is fitted in the heater matrix coolant circuit – although I believe the unit will work if you don't fit it. Later ex A4 CCUs don't have the coolant temperature sensor, they just estimate how hot the engine is from how long the engine has been running or standing. They will have a dashboard sunshine sensor though. What you choose to fit will depend on the version of CCU you have and your preference. In fact the CCUs are remarkably tolerant of missing sensors substituting standard values from inside the CCU if a particular sensor isn't present. Obviously that can't work for all sensors. I've read that you can change the software version in the CCU using VAGcom. That may be so, but I haven't tried or had to do it. Whilst the CCU connector pinouts have stayed the same over many versions and years the internal electronics has changed so I doubt if you can reprogramme say a very early unit into one of the last. Starting with the A4 some of the compressors had a speed sensor inside them which the CCU reads to detect if the drive belt is slipping or broken. Again, there has been some debate on the forum about using VAGcom to reprogramme around this but it isn't a problem I've had. The standard S2 compressor does not have a speed sensor in it and I'm running an ex '96 A4 CCU with no problems and no reprogramming.

If you do manage to find a loom, heater unit and CCU from the same A4 that will give you the advantage of a CCU set up to that heater and the CCU connector shells you need.

As well as the motor driven heater unit and climate control CCU, you need to fit these sensors.

The sensors are

Outside air temperature (G17)

This is situated behind and below the N/S headlight in front of the radiator. In standard cars it is the same sensor as the one for the outside temperature display at the bottom of the instrument binnacle. In climate cars this sensor is connected to the climate CCU first and the CCU passes the reading on to the temperature display. This adds complexity and would mean changing the wiring (and possibly the temperature display itself) so I decided to leave the temperature sensor/display alone and fit another sensor in the same place just wired to the climate CCU. The Audi sensor is expensive – over £40 I understand – but in reality it's just a NTC thermistor so I substituted an equivalent from RS Components part number 191-2140 which cost less than £1.

Fresh Air intake duct temperature (G89)

This is under the scuttle pollen filter before the fan motor and is a direct fit into the space used by the temperature switch on manual air-con cars that turns the air-con off at temperatures below around 2 degree C. This is to ensure the evaporator doesn't freeze up because if it does it will stop any air from entering the car. The CCU combines the reading from this sensor with that from G17 to get the value it uses for the outside air temperature.

Interior temperature (G56)

This critical sensor measures the temperature of the interior of the car and its position is important to ensure the system works properly.

On early cars it was situated behind the slots in the ceiling housing around the interior light. On LHD climate S2s it's underneath the crash pad to the side of the glove box drawing in air just by the central screen vent using associated motor V42 – you can just see the opening in the crash pad in the top right of the first picture. To replicate this position means major surgery to your crash pad and leaves you with components you can't get at again easily if they fail and no way to reverse out of the conversion should you ever want to as you'll now have a hole in your crash pad.

On A4's and later Audis it was moved to a central dashboard position equivalent to the position of the audio slot in an S2. Unfortunately in the S2 there isn't room to copy this position exactly so where you fit the sensor is a decision you'll have to make. Wherever you do decide to fit this sensor you've got to allow for the rubber pipe and motor to fit in behind it as it won't work properly if cabin air isn't being drawn over it.

The position adopted on A4's is where many other cars mount the same sensor so I decided to try and emulate that as best I could, i.e. dashboard around chest height. I don't have heated seats on my car so there were vacant slots in the row of switchgear. By moving the switches along and using parts from my donor A4 centre dash section I incorporated the sensor to the right of the little storage tray you can see in the following pictures. You could also just drill a hole in a blank switch and draw the air in through that.

This arrangement won't suit everyone and another suggestion is to obtain the sensor used by the Saab 9000 climate system and mount it in the dashboard to the left of the steering wheel or in place of an unused switch. This sensor has the benefit of having its own self-contained fan motor system which is much more compact than Audi's separate arrangement of fan motor and sensor joined by a rubber tube so finding somewhere to mount it is much easier. If you go the Saab sensor route you would need to swap the actual temperature sensor inside over to the Audi one as they are different but that is an easy thing to do. (Audi use a NTC thermistor, Saab a diode as their temperature sensing element)



Saab sensor & motor part number
9630740



Also in this picture you can see the frame the CCU sits in (8A0 820 391) which I removed from my A4 donor dash and fitted in place of the standard heater controls. This provides the support for the CCU. Then there's a trim frame (8A0 820 425) that surrounds the CCU and gives the final look.



In this picture you can see the rubber hose that runs from the back of G56 to the motor V42 (not in the picture) that draws air over the sensor. There's just room for the motor behind the dash at this point which is to the left of the steering column, as you can see in the next photo.



View of motor V42 looking up from the driver's foot well through where the undertay fits.

Coolant temperature (G62)

I chose to ignore this sensor as it adds complexity and cost for little benefit – it's used by the CCU to know when the engine is warm enough to ramp up the fan speed when you've started out from cold. It's not fitted to A4s as the climate CCU calculates engine temperature from how long the engine has been running or stopped and I planned to use a CCU from an A4. If you're using an earlier CCU and this sensor is missing the CCU will assume coolant temperature is 90 degrees and carry on.

Sunlight (G107)

Only fitted from A4's onwards. I fitted mine in the central screen defroster grill whilst I had my dashboard out.



Low pressure switch (F73)

This switch feeds +12 volts to the compressor clutch as long as the air-con system has sufficient pressure in it. The CCU doesn't control this switch but it does monitor it so it knows if you're out of gas for instance. If you are & turn the air-con on, it will ensure the air-con symbol isn't illuminated in the display. The CCU drives the compressor relay, not the power feed to the compressor which comes through the low pressure switch. For the compressor to engage, both the CCU and the low pressure switch must be active.

High pressure switches (F23 & F118)

These two switches fitted to the condenser radiator under the bonnet work in a very similar way as they do for a manual air-con system. As the pressure rises the first switch closes (F23). This switch is wired in parallel with the radiator low speed thermal switch (F54) and so brings in the radiator fan at speed 2. If the pressure continues to rise then the second switch opens (F118). This is read by the CCU and it turns the drive to the compressor off.

Heater fan control unit (J126)



Whilst not strictly a sensor, on climate systems the fan motor speed is controlled by this red electronic unit which is adjacent to the fan motor in the same space previously occupied by the resistor unit used on standard cars using the airflow to keep it cool. Again, this can come from an A4 and is most easily fitted during the obligatory dashboard out. Also readily available on eBay.

The CCU uses the after-run relay to energise radiator fan speed 1 whenever the compressor is engaged.

Connecting it all up

If you haven't got the loom from a LHD car you need connectors for all the sensors and especially the connectors for the CCU. I bought the 4 bare connector housings needed for the climate CCU and a load of single repair wires with the contacts crimped to them and made up my own looms from there. Repair wires are approximately 1m lengths of yellow coloured wire with the appropriate connector pin crimped on each end (000 979 003A). If you cut the repair wire in half that gives you two wires with pins so you need half the number of repair wires to pins you're going to use on the back of the CCU. Not every pin on the back of the CCU has a connection you'll be using. The repair wires are the same for connectors A, B & C with a larger wire size for D. Once you've populated the relevant pins in each connector you need to mark the individual wires before you fit the connector shroud.



The E87 CCU connectors are numbered D, A, B, C

Connectors A to C are all low current, mostly inputs.

D is outputs, drive to the flap motors and power in

I chose to solder and wrap in self-amalgamating tape each of my yellow wires as it connected to the rest of the car with the exception of the feeds to the flap motors. The wiring diagram shows the pin numbers for the CCU and the flap motor but none of the connections in between. I was suspicious from the way the wiring changed pin numbers at the few intermediary connectors I had that corrections were being made "in line" and I also knew each flap motor whilst working the same way, had a unique part number. With all this I wasn't sure the CCU would drive the motors in the correct direction so I wanted to retain some flexibility to be able to change the wiring to the flap motors round. I did this by using connector strips from Maplin (SJ54) that plugged together and because they used screw terminals, allowed me to change the wiring easily. What I found was that the wiring diagram was correct for all flap motors except the temperature control one. By that I mean that if the wiring diagram indicates CCU pin D4 goes to the central flap motor pin 1 it does, but for the temperature flap motor, the motor drive pins 1 & 2 need to be changed over and the potentiometer pins 3 & 4 need to be changed over as well. I believe Audi realised this and made the change at the temperature flap motor wiring connector.

The only heavy current connections in the system are the feed to the fan motor via the fan speed control unit. The CCU only handles relay & motor drive currents.

From sheet B75 on the S2Central.net web site

www.s2central.net/S2_Schematics/B/B75.PDF

you can see all the connections you need to make but in many cases there are several options of *where* you might make a particular connection.

The tables in Appendix A are ones I made up to help me. They list each pin on the CCU, what it does, your options for that particular signal and which one I used in my car.

Where the table lists "JSE relay box" that was my under bonnet box interface for the two high pressure switches on the condenser radiator, temperature sensor, fused +12 volt battery feed from the alternator and also contained my compressor relay. This was necessary as my car

started without air-con at all. Those of you who already have manual air-con, you'll need to refer to the wiring diagrams to work out where to make those connections to the CCU. Several of them come to relay 4 (J153 – switch unit for magnetic clutch) which you'll have to replace with a simple relay and reroute some wires to the CCU.

Note there is one big difference between non air-con ABY cars and ABY cars with air-con and that is the polarity of the wiring around the radiator fan temperature switch and associated fan relays. On non air-con cars, the temperature switch connects to ground, on air-con cars it switches to +12volts.

When it's all done you'll end up with something looking like this



Initial start up checks

Unless you've been very dextrous you'll have had to disconnect the evaporator at the bulkhead to fit the new central heater unit so your first job will be to have the air-con system regassed.

You can check out the system without any gas, it will just refuse to turn on the compressor or illuminate the air-con symbol on the display but the rest will work fine. Check you can control the fan speed using the "+" & "-" buttons on the display. If you select the minimum setting the fan will stop and the recirculation flap will engage. With the fan running check that the air flow flaps move the way you'd expect, i.e. when you select "screen", you get air on the screen not your feet etc. You'll need the engine running with some temperature in it to check out the temperature flap. If you keep pressing temp "+" the displayed selected temperature will rise until it stops at max. At this point warm/hot air should be coming out the heater. Do the reverse & check for cold. As you'll see from my notes earlier, this was reversed for me & I had to change wires over to get the heater flap to go in the correct direction!

With gas in the system, check that the compressor engages when you select air-con and the radiator fan starts to run at fan speed 1. If nothing happens, remember the ambient temperature has to be above approx. 3 degrees and check the low pressure switch is closed indicating there is enough gas in the system. Without the low pressure switch closed nothing will happen.

Using smoke from a candle etc. check that air is being drawn in over the interior temperature sensor. If there's no airflow over the sensor, interior temperature regulation will be all over the place.

If you have any problems at this stage you can use the information in Appendix C to enter the diagnostic mode and read values on the CCU display or hook up VAGcom.

I'm sure I haven't covered everything but I'm happy to answer questions via the S2forum where my user name is johne. I also have a couple of spare CCU units and a motorised heater unit left over from my testing which I can lend out or maybe even sell.

Appendix A

Audi S2 digital climate control

E87 Climate Control Unit connector pin functions

Connector A

A	Description	I/P O/P	Possible connections	Chosen connection	Wire colour
1	K diagnostic wire	I/P	Motronic pin 55, T10e/1, T2z/2, T10 pin 10 aux relay panel, A CEP eyelet	T10 pin 10	gn/ro
2	A/C on status	O/P	Motronic pin 41, J155 pin 3, T5h pin2 (red 5 way connector by aux relay panel)	T5h pin 2	sw/ge
3	Int. roof temp. sensor	I/P	Audi 80 (USA?) only	NOT USED	
4	Drive to int temp sensor motor	O/P Active low		Wired direct	
5	Panel lights dimmer (E20)	I/P	Radio dimmer, T26/5 (yellow), T6w/1 (feed to aux instrument cluster)	T6w pin 1	gr/bl
6					
7	Intake duct temp. sensor, G89	I/P		Wired direct	
8	Outside air temp. sensor, G17	I/P	RadioSpares sensor part number 191-2140	Via JSE relay box	Green/grey outer
9	Ground			Ground block	
10	Interior temp. sensor – dash panel	I/P		Wired direct	
11	High temp cut out	I/P	Motronic pin 46, F76 electronic thermostswitch pin 2 (R), T5h pin 4 (red 5 way connector by aux relay panel)	T5h pin 4	bl/ws
12	Ground		Control unit ground	Ground block	

bl	blue
br	brown
ge	yellow
gn	green
gr	grey
li	purple
ro	red
sw	black
ws	white

Connector B – mostly inputs

B	Description	I/P O/P	Possible connections	Chosen connection	Wire colour
1	Outside temp feed to Autocheck	O/P		Not used by me	
2					
3	????		T5h pin 5 (red 5 way connector by aux relay panel)	Empty on my car	
4					
5					
6					
7	Coolant sensor	I/P	Not used by later (A4) versions of computer	Not used by me	bl/br
8	Temp. flap pot centre wire	I/P	Pin 5 (yellow wire at flap motor)	Wired direct	ge
9	Central flap pot centre wire	I/P	Pin 5 (yellow wire at flap motor)	Wired direct	ge/ws
10	Feet/face flap pot centre wire	I/P	Pin 5 (yellow wire at flap motor)	Wired direct	ge/bl
11					
12					
13					
14					
15					
16					
17	Air flow flap pot centre wire	I/P		NOT USED	
18	Sunlight sensor	I/P	G107 pin 3 (Pin 2 is ground) A4 cars & later	Wired direct	
19					
20					

Connector C – mostly inputs

C	Description	I/P O/P	Possible connections	Chosen connection	Wire colour
1	???				
2	High pressure cut-out	I/P		JSE relay box	Yellow/grey outer
3	Low pressure switch monitor	I/P		JSE relay box & low pressure switch	White/black outer
4	Vehicle speed	I/P	T26a/18 (blue connector) or T10 pin 9 Aux panel	T10 pin 9	ws/bl
5	Compressor speed sensor	I/P	Some A4 only	NOT USED	
6	RPM	I/P	T26/22 (yellow), T10 pin 7	T10 pin 7	li
7	Light switch	I/P	T6q/1 (red connector near fuse box), S14 fuse (J58a) Feed to Aux instruments lights relay T6W pin 4	T6W pin 4	gr/gn
8	+5v reference for pots	O/P	All flap motors, connector pin 3	Wired direct	
9					
10					
11	Monitor of heater fan speed	I/P	Fan control module pin 2	Wired direct	
12	Full throttle inhibit A/C	I/P	Motronic pin 6, T6q/2 (red 6 pin connector near fuse box), T5h pin 1 (red 5 way connector, by aux relay panel)	T5h pin 1	gn/sw
13	Perm +12v	I/P		JSE relay box	Red, black outer
14	+12v X load dump	I/P	Existing heater fan supply, fuse S17	Wired direct	
15					
16	Drive for heater fan control unit	O/P	Fan control module pin 1	Wired direct	

Connector D drive outputs

D	Description	Possible connections	Chosen connection	Wire colour
1				
2	Temp. flap motor +ve drive	Flap motor pin 1 (white wire)	Wired direct	
3	Face/foot flap motor +ve drive	Flap motor pin 1 (white wire)	Wired direct	
4	Central air flap motor +ve drive	Flap motor pin 1 (white wire)	Wired direct	
5	Air flow +ve drive	Used as replacement for recirculation flap solenoid on later A4s	NOT USED	
6	Recirculate flap solenoid		Wired direct	
7	NOT USED			
8	Compressor relay drive	Relay pin 86	JSE relay box	Green/black outer
9	+12 v X load dump supply		Heater fan supply	See list below
10	Temp. flap motor -ve drive	Flap motor pin 2 (brown wire)	Wired direct	
11	Face/foot flap motor -ve drive	Flap motor pin 2 (brown wire)	Wired direct	
12	Central air flap motor -ve drive	Flap motor pin 2 (brown wire)	Wired direct	
13	Air flow motor -ve drive		NOT USED	
14	Ground		Wired direct	
15	Ground		Wired direct	
16	Radiator fan speed 1 drive	J155 pin 5/87a, J26 relay 3 K4 or T5g/2 (green 5 pin connector in aux relay carrier), T6q/3 (red 6 pin connector behind dash panel, centre)	J155 pin5/87a	ro/br br/sw

These common connections also have to be made

To +12 V 30 C13

To +12 V X (I used the fused supply to the fan motor)

V2 blower, F73 low pressure switch, C14, D9, N63 recirc valve, V42 temp. sensor motor, A/C relay pin 85

To +5 V reference (C8)

C8, Pin 3 flap motor 1, Pin 3 flap motor 2, Pin 3 flap motor 3

To 0 V ground

J126 heater fan control unit pin 3, D14, D15

To 0 V A/C ground

Pin 4 flap motor 1, Pin 4 flap motor 2, Pin 4 flap motor 3, A9, A12, G89 intake temp. sensor, G56 dash temp. sensor, G17 outside temp sensor & F118 high pressure switch, G107 pin 2 sunlight sensor

Appendix B

Details I have for the various climate control computer units by part number.

Part number	Comments
8A0 820 043B	US Audi 80/90's circa 1992
8D0 820 043 D - G	Regulation is only switched off in OBD during output diagnostic test mode & basic setting
8D0 820 043 after H	For all vehicles up to m.y. 96
8D0 820 043 K or L	Version with only one display (m.y. 99)
8D0 820 043 after M	Version with only one display (m.y. 99 on)
8L0 820 043 A - C	For all vehicles up to m.y. 97 (lighting via terminal 58 & 58d)
8L0 820 043 after D	For all vehicles up to m.y. 98

Inside a CCU



The CCU “reads” the sensors in a similar way to the Motronic ECU. The sensors are switches or NTC thermistors with one side connected to ground. The other side is connected to the CCU & it feeds current through them and measures the subsequent voltage informing the CCU of what the sensor is reading.

For the motors, the CCU outputs out a fixed +5 volts on pin C8 which is fed to one side of the potentiometer inside each flap motor unit. The other side is grounded. As the motor and hence it's associated flap change position, the potentiometer in the flap motor which is connected mechanically to the flap is moved as well allowing the CCU to read the voltage from the potentiometer and know where the flap is.

The white and brown wires connect to the motor. The yellow wire is the output from the potentiometer that the CCU reads for position and the grey and green wires have +5 volts and ground fed to them from the CCU.



Internals of a flap motor – in this case the temperature flap one. Position sensing potentiometer is bottom right

The CCU has 4 bulbs to illuminate the display and switches. The outer pair illuminating the switches, clear 2W (body colour light green), inner pair illuminating the two display panels, clear 0.9W (body colour green).

If like me your car is your daily driver you may have to do this work in stages. If you do the dash out part, install the new flap motor heater unit, sun sensor, fresh air duct intake sensor and provision any new wires you need through the bulkhead you can reinstall the dash.

Use a 9volt battery on the white & brown wires to set the central air flap to open (you can use the external flaps to open or close off the air), the foot/face flap to an intermediary position and refit the old resistor fan speed control. Wire a 9 volt battery to the temperature flap motor white and brown wires via a reversing momentary toggle switch and you can now control the heater temperature and use the car for as long as you need until you have time to do the remainder of the wiring & install of the CCU. I existed like this for several years!!

The following table gives the resistance of the three temperature sensors at different temperatures which you can use to check they are working correctly but also to find substitutes like I did for G17 the outside air temperature one at a much cheaper price than the Audi ones.

Temperature sensor resistances (based on ambient temperature, resistance in k

Temperature measured at mounting location of sensor	Instrument Panel Interior Temperature Sensor -G56-	Outside Air Temperature Sensor -G17- and Fresh Air Intake Duct Temperature Sensor -G89-
-40°C (-40°F)	(100)	(34.7)
-30°C (-22°F)	(52.7)	18.1
-20°C (1°F)	(28.5)	9.95
-10°C (14°F)	16.2	5.59
0°C (32°F)	9.40	3.28
5°C (41°F)	7.27	2.54
10°C (50°F)	5.66	1.99
15°C (59°F)	4.45	1.57
20°C (68°F)	3.50	1.25
25°C (77°F)	2.79	1.00
30°C (86°F)	2.23	0.80
35°C (95°F)	1.80	0.65
40°C (104°F)	1.45	0.53
50°C (122°F)	0.79	0.36
60°C (140°F)	0.67	0.25
70°C (158°F)	0.47	-
80°C (176°F)	0.33	-

Appendix C

This table is taken from the article linked here by [Mark Quinn](#) where there are more details. Whilst the diagnostic mode certainly works, when I tried it on my unit, some of the values didn't match up with the code.

Unlocking the Secrets within the Climate Control Panel (2000)

[Mark Quinn](#) 2000

Changing Degree Temperature Display

Press and hold the recirculation button. Then press the temperature up ("+") button to switch between degrees Celsius & Fahrenheit on the Climate Control Temperature and Instrument Panel Outside Temperature displays.

Accessing On-Board Diagnostic codes

Press and hold the recirculation button. Then press the manual flow control up arrow. You should see a 1c. Press the temperature up ("+") or down ("-") buttons to select a code number. Then press the recirculation button again. The value should display. Press the temperature up or down button again to display another code.

NOTE: Air Flow Motor (V 71) and Potentiometer (G 113) are not installed in USA/Canada vehicles. Disregard values displayed for these components.

Code	Displayed Value
1	System malfunction - displayed as a Diagnostic Trouble Code (DTC), see chart below
2	Digital value of Interior Temperature Sensor, in Headliner (G 86)
3	Digital value of Interior Temperature Sensor, in Instrument Panel (G 56)
4	Digital value of Fresh Air Intake Duct Temperature Sensor (G 89)
5	Digital value of Outside Air (Ambient) Temperature Sensor (G 17), front
6	Digital value of Outside Air (Ambient) Temperature Sensor
7	Digital value of Ambient Temperature Sensor At Fresh Air Blower (G 109)
8	Digital value of Temperature Regulator Flap Motor Potentiometer (G 92)
9	Delta value of Temperature Regulator Flap
10	Non-corrected specified value of Temperature Regulator Flap
11	Digital value of Central Flap Motor Potentiometer (G 112)
12	Specified value of Central Flap
13	Digital value of Footwell/Defroster Flap Motor Potentiometer (G 114)
14	Specified value of Footwell/Defroster Flap
15	Digital value of Air Flow Flap Motor Potentiometer (G 113)
16	Specified value of Air Flow Flap
17	Vehicle Speed (km/h)

18	Actual Air Blower voltage (Volts)
19	Specified Fresh Air Blower voltage (Volts)
20	A/C Compressor (A/C Clutch) voltage (Volts)
21	Number of low voltage occurrences, non-transient
22	Cycle condition of A/C Refrigerant High Pressure Switch (F 118)
23	Cyclings of the A/C Refrigerant High Pressure Switch (F 118)
24	Cyclings of the switches, absolute non-fluctuating
25	Analog/Digital value, Kick-Down Switch
26	Analog/Digital value, Engine Coolant Temperature (ECT) Warning Light
27	Engine Speed (RPM)
28	N/A
29	A/C Compressor speed in rpm (Equals Engine Speed x 1.28)
30	Software version
31	N/A
32	Potentiometer malfunction counter, Temperature Regulator Flap
33	Potentiometer malfunction counter, Central Flap
34	Potentiometer malfunction counter, Footwell/Defroster Flap
35	Potentiometer malfunction counter, Air Flow Map
36	Feedback value, cold end-stop, Temperature Regulator Flap Motor Potentiometer (G 92)
37	Feedback value, hot end-stop, Temperature Regulator Flap Motor Potentiometer (G 92), max. Stop
38	Feedback value, cold end-stop, Central Flap Motor Potentiometer (G 112)
39	Feedback value, hot end-stop, Central Flap Motor Potentiometer (G 112)
40	Feedback value, cold end-stop, Footwell/Defroster Flap Motor Potentiometer (G114)
41	Feedback value, hot end-stop, Footwell/Defroster Flap Motor Potentiometer (G114)
42	Feedback value, cold end-stop, Air Flow Map Motor Potentiometer (G 113)
43	Feedback value, hot end-stop, Air Flow Map Motor Potentiometer (G 113)
44	Vehicle operation cycle counter
45	Calculated interior temperature (internal software, in digits)
46	Outside (ambient) temperature, filtered, for regulation (internal software)
47	Outside (ambient) temperature, unfiltered, (internal software, in deg C)
48	Outside (ambient) temperature, unfiltered, (in digits)
49	Malfunction counter for speedometer (vehicle speed) signal
50	Standing time (in minutes)
51	Engine Coolant Temperature (ECT) in deg C
52	Graphics channel 1 - A/C compressor switch-off conditions are identified by illuminated segments of the "88.8" display. See chart below.
53	Graphics channel 2 - Climate system electrical outputs are identified by illuminated segments of the "88.8" display. See chart below.
54	Control characteristics
55	Outside (ambient) temperature, in deg C or deg F depending on setting on A/C control head

56	Temperature in deg C, from Interior Temperature Sensor, in Headliner (G 86)
57	Temperature in deg C, from Interior Temperature Sensor, in Instrument Panel (G 56)
58	Temperature in deg C, from Fresh Air Intake Duct Temperature Sensor (G 89)
59	Temperature in deg C, from Outside Air (Ambient) Temperature Sensor (G 17), front
60	Temperature in deg C, from Ambient Temperature Sensor At Fresh Air Blower (G 109)
61	Software version (latest)
86	Display Check (All Segments of Climate Control display light up