

Brief description

The main purpose of the ACC system is to control the heating and ventilation units. It is to ensure that comfortable climatic conditions are achieved as soon as possible after starting the car and that these are subsequently maintained. The ACC unit comprises of a panel with display and buttons, and an in-built control module. Normally, the control module automatically regulates the following functions:

Temperature, separate for passengers and driver

The control module feeds current to a stepping motor that adjusts the position of the driver's zone air-blending flap. A further stepping motor adjusts the position of the air-blending flap of the front-seat passenger zone, and via a link the air-blending flap for the rear-seat passengers. The air-blending flaps mix cold air that has passed over the evaporator with warm air that has passed over both the evaporator and heat exchanger. The temperature at head height is calculated for the front-seat passenger and driver. The initial values are:

- cabin temperature
- outside temperature
- time since the engine was last running
- time since engine was started
- mixed air temperatures
- fan speed
- sun intensity

The calculated temperatures are compared with those set by the driver and passenger on the ACC unit display. The set temperatures are adjusted slightly to compensate for the outside temperature so that the experienced temperature is equivalent to the temperature set. As soon as a difference arises, the mixed air temperature must be raised or lowered. The control module turns the relevant air-blending flap until the desired temperature is achieved. The link to the air-blending flap for the rear-seat passengers is set so that the temperature in the rear seat follows that of the front-seat passenger.

When the lowest mixed air temperature is set for both zones, the control module cuts off the flow of coolant to the heat exchanger using a vacuum operated valve so that the maximum cooling effect is achieved.

Certain engine variants are equipped with a circulation pump to improve the flow of coolant through the heat exchanger. The control module starts the pump when the engine speed and outside temperature are low.

Air distribution

The control module supplies current to a stepping motor that turns the air distribution flap of

the driver's and front-seat passenger zone, and via a link the air distribution flap for the rear-seat passengers. In other words, air distribution is the same in the passenger and driver's zone.

The air is distributed to the defroster, floor/rear-door windows or panel outlets/rear centre outlets. Air distribution depends on the mixed air temperature set for the driver's zone. For high values (the driver's zone needs to be warmed) defrost/floor is selected. For low values (the driver's zone needs to be cooled) floor/panel or panel is selected. When starting in cold weather defrost is initially selected.

Fan speed

The control module regulates a control unit that supplies the fan motor with current. The fan current is lowest when the mixed air temperature is the same as the desired temperature for both zones (neither zone needs to be heated or cooled). The current increases as soon as a zone needs to be cooled or heated. When starting in cold conditions, the outside temperature and temperature of the coolant determine the current. The fan current is limited when the engine is not running.

Air recirculation

The control module supplies current to a DC motor which turns the air recirculation flap.

Air recirculation is selected 45 seconds after starting the engine if the outside temperature is high and the desired mixed air temperature is low for both zones (both zones need to be cooled substantially).

Air recirculation is also selected in the following three cases:

- when the outside temperature is very high
- when the outside temperature is high and the car speed low (performance of the A/C falls)
- when the outside temperature and coolant temperature are high (risk of engine overheating)

A/C

The control module requests the A/C compressor to cut in if the outside temperature exceeds 5°C and ECON is not selected.

P bus and I bus

For further information about P bus and I bus, see [System overview](#)