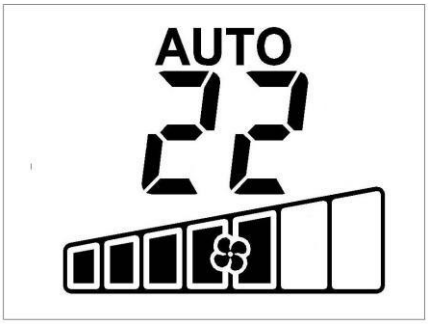
SDL
V02.50.512
FUNCTIONAL SPECIFICATION

1. SDL Climate Controller

This Small Dimension Line (SDL) has been developed to control the blower speed proportionally to the temperature deviation between set point temperature and T cabin temperature sensor.

The control unit use an internal (in car) temperature sensor.

On the display is visualized the selected temperature (set-point temperature).



The temperature values are displayed in Celsius degrees (°C).

2. Set point temperature

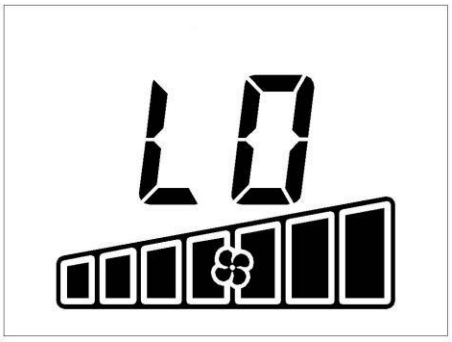
The set point temperature (or selected temperature) represents the value of the desired temperature inside of the vehicle.

This value can be changed pressing the  push buttons from 16°C to 28°C (step 1°C) and also it is possible to select the **LO** mode (maximum cold) and the **HI** mode (maximum heat).

When is select the **LO** mode the control init realize the following functions:

- Maximum blower speed

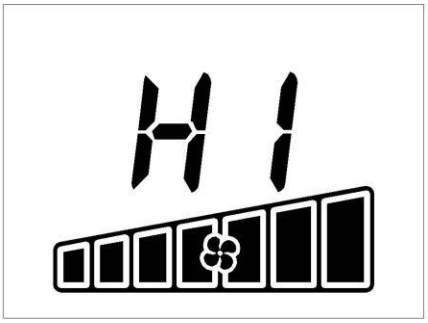
On display appear:



When is select the **HI** mode the control init realize the following functions:

- High blower speed (according to the HI speed set parameter value)

On display appear:



3. Blower speed control

The SDL manages seven outputs for the blower speed, with analogic voltage output 0-5V.

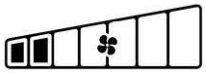
The next diagram shows the control logic of these outputs.

The user can modify manually the blower speed by pressing the push buttons.

The symbol **AUTO** is switched off (semi automatic mode).

The blower speed inserted is shown by the bar number lit.

For example:



2nd speed

4th speed

7th speed

4. Internal temperature sensor

In case of malfunction of the internal temperature sensor, the SDL displays the error code and enters in the manual mode.

In case of anomaly of this sensor, an error code appears instead of the selected temperature value:

E3 when the internal temperature sensor is open

E4 when the internal temperature sensor is short circuited.

5. Operating mode

The HCC works in the following operating modes:

- Automatic mode
- Manual mode
- Off mode
- Diagnostic mode
- Programming mode

81 1 Automatic mode

This represents the normal operating mode.

The functions associated at the push-buttons are the following:

switches system on and regulates the blower speed automatically depending of the set-point temperature and of the Tcabin actual value.

increments the set-point temperature value of 1°C

decrements the set-point temperature value of 1°C

decrements the blower speed value

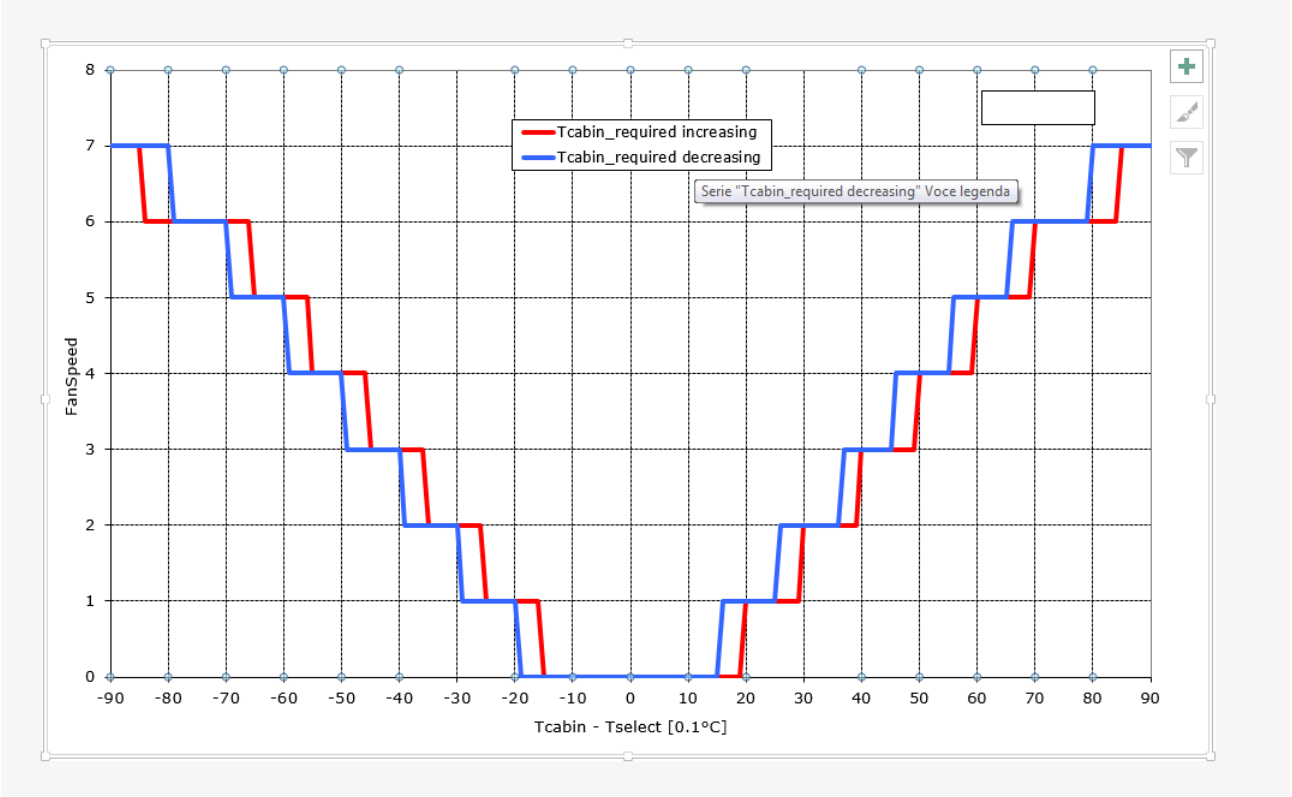
increments the blower speed value

Not used

Not used

In automatic mode (symbol **AUTO** on) the blower speed is select in according with the selected temperature and the internal temperature.

It is used 28 thresholds compared to the difference between the internal temperature and the selected temperature.



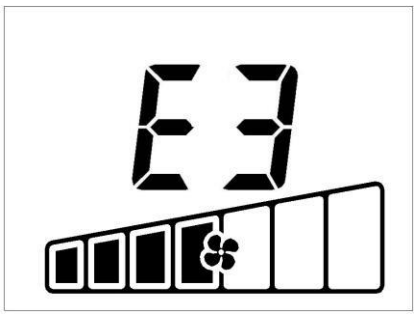
And correspondent blower speed %:

130	Table_Vout_PWM_Linear_A[0]	0	0
131	Table_Vout_PWM_Linear_A[1]	30	30
132	Table_Vout_PWM_Linear_A[2]	40	40
133	Table_Vout_PWM_Linear_A[3]	50	50
134	Table_Vout_PWM_Linear_A[4]	60	60
135	Table_Vout_PWM_Linear_A[5]	65	65
136	Table_Vout_PWM_Linear_A[6]	75	75
137	Table_Vout_PWM_Linear_A[7]	100	100

82 2 Manual mode

When the internal temperature sensor is faulty (open circuit or short circuited), on the display appears an error code (**E1** to **E4**) and the control unit operates in manual mode.

The symbol AUTO is switched off.



83 3 OFF mode

By pressing the  push-button when the blower speed is null.
On the display no symbols appears.

For return at the normally operating mode it is sufficient press the  or  push-buttons.

84 4 Diagnostic mode

The diagnostic mode is activated by pressing the 

push button during the first 2 seconds of the control unit power on.

On the display appear some information relative at the version of the control unit (for example Sd, 08, etc) and then the evaporator temperature value is displayed.

In case of anomaly of this sensor, an error code appears instead of the selected temperature value:

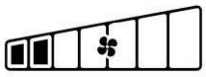
The symbol AUTO is switched off.

841 .1Blower speed control

By pressing the  push buttons the status of the blower outputs will change.

The selected blower speed is shown by the bar number lit.

For example:

 2nd speed

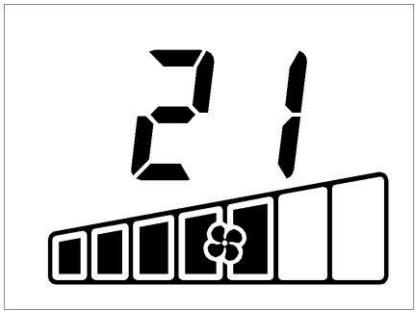
 4th speed

 7th speed

When the user manually selects a null blower speed, the AC compressor is switched off.

8.4.2 Internal air temperature sensor control

By pressing again the  push button when is displayed the external temperature, the internal temperature sensor value is display for about 6 seconds.



The value displayed is blinking to highlight that you are viewing the internal temperature.

In case of malfunction of this sensor, an error code will be visualized instead of the temperature value:

E3 when the internal temperature sensor is open

E4 when the internal temperature sensor is short circuited.

8.4.3 Diagnostic mode exit

To exit from diagnostic mode press the push-button 

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8.5 5 Programming mode

By pressing contemporaneously the push-buttons  and  during the first 2 seconds of the control unit power on, the SDL enters in the parameter programming mode.

On the display appears the message " **Pr** ", " **SL**" for about 2 seconds and successively **00** with the symbol  lit.

By pressing contemporaneously the push-buttons  and  during the first 2 seconds of the control unit power on, the SDL enters in the parameter programming mode.

On the display appears the message " **Pr**", **"HA"** for about 2 seconds and successively **00** with the symbol  lit.

In this operating mode is possible to modify and memorize the programmable parameter values .

By repressing contemporaneously the same push buttons the control unit goes out from the programming mode.

It is advisable to switch off and switch on again the control unit after have modified the parameters, because the modification for some of these are acquired by the power on.

The values displayed are in hexadecimal format.

The functions associated at the push buttons (for both programming mode) are the following:

push-button

Memorize the set value by associating this at the selected parameter.

For confirming that the memorizing has happened, the symbol **AUTO** will lit for a few seconds.

 push-button

Changes the visualized data (parameter identifier or parameter value).

The symbol  is lit when the parameter identifier is visualized, while when the parameter value is visualized the symbol  is lit.

 push-button

The visualized datum increases by 1 (parameter identifier or parameter value).

 push-button

The visualized datum decreases by 1 (parameter identifier or parameter value).

 store the default value

For confirming that the memorizing has happened, the symbol 

will lit for a few seconds.

6. Electric diagram