

! ATTENTION!

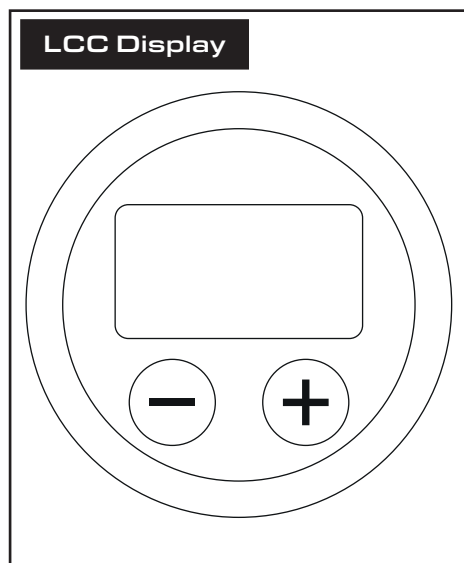
This instruction is for LELIT
authorised technicians only



INSTRUCTIONS

LCC technical menu

PL162T



SETTINGS/ PARAMETERS MODIFICATION IN THE TECHNICAL MENU

To enter the technical menu:

- With the machine off, keep pressed both $\ominus$ and $\oplus$ of the LCC, switch the machine on and wait until the display shows KP, then release the $\ominus$ and $\oplus$ of the LCC.
- With the left button can scroll the parameters.
- With the right button you can enter to program the chosen parameter.
- Once you are in the programming phase of the chosen parameter, the value will blink on the display and you can increase it pressing $\oplus$ or decrease it pressing $\ominus$.
- Once you finished modifying the settings, wait three seconds and the display will stop blinking and the LCC stores the data. Turn the machine off.

PARAMETERS

KPc: up value, when this value increases, the heating element heats more frequently in the ascent phase, therefore it generates more inertia which means more degrees than the value set by the user. On the contrary, if you decrease this value, the heating element heats less frequently in the ascent phase, therefore it generates less inertia which means less degrees than the value set by the user.

Allowed values: 0.0÷99.9

Default value: 0.4

KIc: maintenance value, it increases the cycles of activation of the heating element when it's in standby mode.

Allowed values: 0.0÷9.99

Default value: 0.04

KDc: down value. Increasing this value, LCC activates the heating element more frequently when the boiler is in the descent phase, if the value is increased, more impulses are given, therefore it decreases a little bit less.

Allowed values: 0.0÷99.9

Default value: 12.0

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Bc: minus value, compared to the set value within which the LCC works (expressed in Fahrenheit).

Allowed values: 1÷40

Default value 15

KPs: when this value increases in the steam boiler, the heating element heats up more frequently in the ascent phase, therefore it generates more inertia which means more degrees than the value set by the user. This value has to be set in decimals such as 0,9 - 1 - 1,1 - 1,2 - 1,3 etc.

Allowed values: 0.0÷99.9

Default value: 20.0

KIs: steam boiler maintenance value, it increases the cycles of activation of the heating element when it's in standby mode. This value has to be set in decimals such as 0,9 - 1 - 1,1 - 1.2 - 1.3 etc.

Allowed values: 0.0÷9.99

Default value: 0.0

KDs: down value. Increasing this value, LCC activates the heating element more frequently when the boiler is in the descent phase, if the value is increased, more impulses are given, therefore it decreases a little bit less. This value has to be set in decimals such as 0,9 - 1 - 1,1 - 1,2 - 1.3 etc.

Allowed values: 0.0÷99.9

Default value: 20.0

Bs: minus value, compared to the set value within which the LCC works in the steam boiler.

Allowed values: 1÷40

Default value: 0

Ec: offset LCC/coffee boiler, setting the value 0, LCC adjusts the set temperature, setting 10, LCC adjusts the boiler temperature with 10 degrees (expressed in Celsius or Fahrenheit depending on the set parameter) more than the value set by the user.

Allowed values: 0÷50

Default value: 10



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Es: offset LCC/steam boiler, setting the value 0, LCC adjusts the set temperature, setting 5, LCC adjusts the boiler temperature with 5 degrees (expressed in Celsius or Fahrenheit depending on the set parameter) more than the value set by the user.

Allowed values: 0÷5

Default value: 0

TR: real value of the coffee temperature shown on the LCC: with the value 0, the temperature is the same than the set temperature, with the value 1, the LCC indicates firmly the real temperature (with swing ranges of 15°C below and 10°C above the set-point-only after first adjustment).

Allowed values: 0÷1

Default value: 0

ToT: total dose counter.

SHT: Shot timer, indicates the time after the coffee extraction, the display shows the time reached during the extraction.

Allowed values: 1÷20

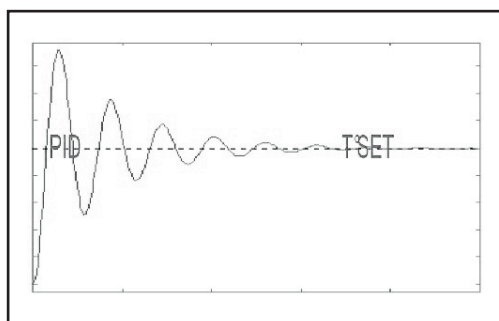
Default value: 20

LCC RESET

If you wish to reset the LCC, with the machine “OFF”, keep pressed the right button “+”, turn the machine ON and wait until the display shows “PRESET DONE” then turn the machine “OFF” again.

FUNCTIONS OF THE PID VALUES

The default regulation of the temperature is realized according to an algorithm called PID.



The constants that determine the thermoregulation are called:

- Proportional constant **Kp**
- Integrative constant **Ki**
- Derivative constant **Kd**
- The proportional range is the range, within which the temperature is set by the PID, outside it the heating element is regulated by ON/OFF.

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The three constants and the proportional range have to be adapted to the espresso machine, depending from the heating element power, the boiler dimensions, the fluidic and its dispersion. This regulation usually requires a bit of time in order to get the best possible result.

We call “**set point value**” or “**T°SET**” the boiler temperature it has to have during normal functioning.

- If, during the heating or maintenance phase, the temperature excessively swings around the T°SET, with values that do not weaken in time, the proportional constant Kp needs to be diminished.
- If, in the maintenance phase, the temperature excessively swings around the T°SET, with a very long swing period and with values that do not weaken in time, the integrative constant Ki needs to be diminished.
- If, in the heating or maintenance phase, the temperature has an excessive swing and it's often more than the T°SET but then weakens in time, the derivative constant Kd needs to be diminished.
- If, in the heating phase, the temperature tends to be below the T°SET and gets more and more far away from it, the derivative constant Kd needs to be increased.
- If, in the heating phase, the temperature tends to be below the T°SET, in a constant way, the proportional constant Kp needs to be increased and also the integrative constant Ki needs to be slightly increased.
- If, in maintenance phase, the temperature tends to be below or above the T°SET value in a constant way, the integrative constant Ki needs to be increased and also the proportional constant Kp needs to be slightly increased.

