

Lindberg blue V0914 vacuum oven

Normal Operation

When the controller is turned on for the first time, it will show "150" "ON" "0041" "1.07" before displaying the measured temperature and the last temperature target set point.

DO NOT EXCEED 250°C

The pressure is read on the dial. With the vacuum pump running, the pressure will be about 25inHg which is equivalent to 846 mbar, 635 torr, or 0.845 atm.

Operating parameters

Please refer to the Yokogawa UT150 user manual for a full description of the parameters.

Symbol	Name/meaning	Setting 2019-06-20	Unit
A1	Alarm set point	(configurable)	°C
CtL	Control mode	PID	PID control
At	Auto-tuning	0	Stop auto-tuning
P	Proportional band	16.8	
I	Integral time	1083	seconds
d	Derivative time	271	seconds
Ct	Control output cycle time	5	seconds
FL	PV input filter	0	OFF
B5	PV input bias	0	0% of measured range
LoC	Key lock	0	No key lock

It will take about 80 minutes to go from 21.0°C to 150.0°C at atmospheric pressure and no load in the oven except for the shelves. The temperature will not overshoot 150.0°C, though.

DO NOT EXCEED 250°C

Changing the target set point (SP)

After the set point has been configured, the orange output light may illuminate or start flashing. The output light may turn off while the oven is warming up. This is how the controller normally works.

Changing the Alarm 1 set point (A1)

If the red AL1 light is lit, the measured temperature (PV) has exceeded the alarm 1 (A1) set point, and the output is disabled by a relay opening up. The alarm is non-latching so the relay will close and the AL1 lamp will turn off once the measured temperature value goes below the alarm set point.


Do not use the alarm setting as a means of shutting the oven on and off.

Use or change the target set point instead.


The alarms are relay outputs. Since a relay has a limited life, excessive on/off actions will shorten the life of the alarm.

Sector 12 wet lab, 433 E030

Step 1:
Confirm that the controller shows the operating display ① during normal operation (PV and SP are displayed on the indicators).




Step 2:
Press the Δ or ∇ key to change the displayed SP value to the required value. In this example, SP is changed to 200°C.




The period flashes while the value is being changed.

Step 3:
Press the ENT key once to register the setting. The period goes out. SP is now changed.

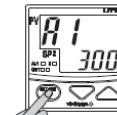


The period goes out.

Step 1:
Confirm that the controller shows the operating display ① during normal operation (PV and SP are displayed on the indicators).

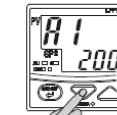


Step 2:
To enter the operating parameter setting display, press the ENT key for at least 3 seconds. If your controller has the /AL or /HBA option, the display for the Alarm 1 setpoint (A1) appears. (If not, control mode (CTL) appears.)



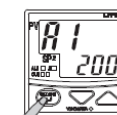
Press for at least 3 seconds.

Step 3:
Press the Δ or ∇ key to change the current A1 value to a required value. In this example, A1 is changed to 200°C.



The period flashes while the value is being changed.

Step 4:
Press the ENT key once to register the setting. A1 is now changed. Another press of the ENT key calls up the Alarm 2 setpoint (A2) display. To return to the operating display ①, press the ENT key for at least 3 seconds.



The period goes out.

Setup parameters

If you set LoC (key lock) to -1, you can access the setup parameters. Press and hold SET/ENT to escape the menu.

Symbol	Name/meaning	Setting 2019-06-20	Unit
Ln	Measured input type	5	J-type thermocouple
SPH	Maximum value of target set point range	250.0	°C
SPL	Minimum value of target set point range	21.0	°C
UPr	Set point ramp-up rate	0	OFF
Dnr	Set point ramp-down rate	0	OFF
t-U	Set point ramp rate unit	0	°C per minute
AL1	Alarm 1 type	9	(see alarm function list in the UT150 user manual)
AL2	Alarm 2 type	0	OFF/disabled
HY1	Alarm 1 hysteresis	2.2	Percent of input range ; corresponds to ~5°C
HY2	Alarm 2 hysteresis	0	Percent of input range
SC	SUPER function	1	enabled
Dr	Direct/reverse action	0	Reverse action

Setup parameter notes

- Alarm 1 type = 9

Alarm setting 9 will OPEN the contact during alarm, and illuminate the AL1 lamp RED on the controller. The wiring of this controller requires that the contact is CLOSED for normal operation, and OPEN during alarm. The output light will be lit orange when the control voltage is being outputted. The output light may flash while the oven is heating up. This is a part of the normal operation. If the AL1 light is lit, the measured temperature (PV) has exceeded the alarm 1 (A1) set point. The alarm is non-latching so the relay will close and the AL1 lamp will turn off once the measured temperature value goes below the alarm set point.

- Direct/reverse action

Reverse action is for heating applications. Direct action is for cooling applications. This oven does not have a cooling feature, so this setting must be set for "reverse."

- Alarm hysteresis

The alarms are output as relay outputs. Since a relay has a limited life, excessive on/off actions will shorten the life of the alarm. To prevent this, you can set a hysteresis to prevent excessive on/off actions for the alarm.

- SUPER function

The SUPER function is effective in the following cases: an overshoot must be suppressed, the rise-up time needs to be shortened, the load often varies, or the set point is changed frequently. Please note that the SUPER function will not work when on/off control is selected, or if the I or D constants are set at OFF in PID control.

- Auto-tune feature

The controller will cycle three times through a heating and cooling pattern, measuring the characteristics of the load and chamber temperature controls. During the auto tuning, "At" will alternately flash with the measured temperature (PV) to indicate that the auto tuning is in progress. The length of time for the auto tune varies with the load, chamber size, and temperature selected. The auto tune is completed when the regular display of the measured temperature is shown. The chamber should now operate to the process temperature with the given product load, with the quickest response and minimal temperature overshoot. If the process temperature or load changes significantly, another auto tune session may be necessary to optimize the chamber performance.