

# Novus N1050 Programming Guide



## ADJUSTING DIGITAL CONTROLLER UPON START-UP

Upon start-up, all Quincy Lab Ovens will display the current chamber temperature (white LEDs) and begin the heating process to the factory default temperature **set-point** (green LEDs). *The initial temperature set-point varies depending on your oven's model. (FIG. 5)*

The controller will also display the current **temperature unit** on the upper right-hand corner of the controller and the **RUN** and **OUT** lights will be lit.

*The default temperature unit has been set to read degrees Fahrenheit (°F), to change the operating temperature unit see page 6.*

**⚠** If the controller does NOT show the **RUN** light upon startup, press the **P** button (5 times) to see **RUN** and press **▲** once to enable parameter to **YES**. To return, press **P** once or give the controller 10 sec. to return on its own. see **THE RUN FUNCTION** on page 6 for more information.

## SET-POINT TEMPERATURE CHANGE

As the controller begins to heat to the set-point (green LEDs), you can quickly change the temperature by pressing the UP or DOWN arrow key on the controller.

TO INCREASE TEMPERATURE SET-POINT



Press and/or hold the UP arrow key.

TO DECREASE TEMPERATURE SET-POINT



Press and/or hold the DOWN arrow key.

DIGITAL MICROPROCESSOR Temperature Controller



Temperature Setpoint

Chamber Temperature

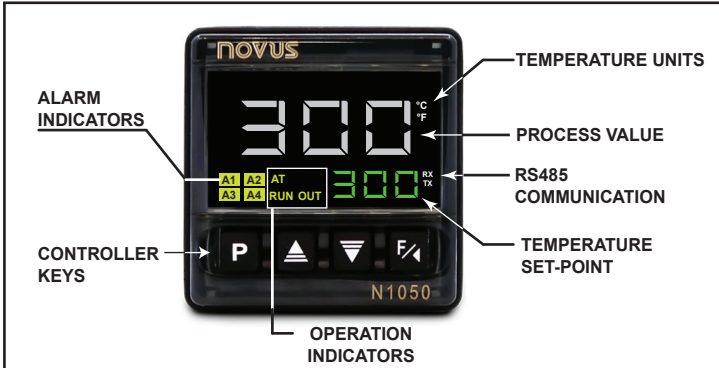
FIG. 5

**⚠** **RUN** and **OUT** lights ON indicates normal heating process.

**⚠** The **OUT** light will flash intermittently after achieving set-point.

# Controller Functions

Your oven's controller parameter values have been set at the factory to work with your model accordingly and is ready for immediate use. Once the oven's power switch and fan switch are turned to ON, your oven will begin to heat to the pre-set temperature setpoint shown on the controller's lower right hand corner.



## CONTROLLER KEY DESCRIPTION

- P** Menu/Advance - Use to advance to successive parameter or menu
- ▲** Increase - Use key to increase the parameters value.
- ▼** Decrease - Use key to decrease the parameters value.
- F** Special Function - Use key to advance and return.

## MENU OVERVIEW

As illustrated below, there are a total of 7 menus called cycles. The first 3 **MENUs** (*Operation Cycle, Program Cycle and Timer Cycle*) contain the basic parameters for general operation of the oven. The remaining 4 menus are operational parameters that are **only** accessible with the factory passcode of 1111.

## NAVIGATING THE MENUS

To access each menu, **press and hold** the **P** on your controller. This will allow you to advance from one menu to another.

Once you have reached the desired menu, simply let go of the **P** button and the controller will stop and display the first parameter of the menu you're in.

## INDICATORS AND ALARMS

### OPERATION INDICATORS

#### AT Indicator

ON- Indicates that an auto-tuning is in process. (See Auto Tuning the oven for more information).

#### RUN

ON - Control is enable to run. (RUN = 运行) or, FLASHING - Indicates a program has stopped.

#### OUT

ON- Indicates normal activation of outputs. FLASHING - Indicates normal operation

### TEMPERATURE SET-POINT

**Number** - Indicates temperature 'set' on the controller.

### PROCESS VALUE

**Number** - Indicates chamber temperature on the controller.

### ALARM INDICATORS

#### A1 and A2

ON - Indicates the occurrence of an alarm condition.

#### A3 and A4

ON- It signals the condition of timer T1 and T2.

### TEMPERATURE UNIT

°C or °F

ON- Identifies the set temperature unit the oven is using.

### COMMUNICATION INDICATORS

#### Tx / RX Indicator

FLASHING - When the controller exchanges data with the RS-485 communication network.

**⚠** *Grayed-out parameters should NOT be changed. Any changes made to these parameter may affect the ovens's performance.*

MENU 1  
Default menu on the controller.

Press and hold **P** to access and advance in menu's

Press **P** to advance in menu's parameters

(MENU 1) OPERATION CYCLE	(MENU 2) PROGRAM CYCLE	(MENU 3) TIMER CYCLE	(MENU 4) TUNING CYCLE	(MENU 5) ALARMS CYCLE	(MENU 6) INPUT CYCLE	(MENU 7) CALIBRATION CYCLE
PVI SP	Pr.tb	t.Stt	PASS (*)	PASS (*)	PASS (*)	PASS (*)
unIt	Pr.R	t.dIr	Atun	Fu.R1	tYPE	CRlb
Atun	Pr.n	t.tb	Pb	Fu.R2	FLtP	in.LC
OFFS	P.tol	t1	HYSb	SP.R1	dP.Po	in.HC
PCr	P.SPQ	t1.E	IR	SP.R2	SP.LL	RESt
RUN	P.SP4	t.End	dt	bL.R1	SP.HL	PASc
	P.t1	t2	Ct	bL.R2	Lbdt	Pr.tb
	P.t4	t.RUN	RCt	HY.R1	IE.oU	PCr.E
	P.E1		SF.St	HY.R2	bAud	RUN.E
	P.E4		out1	FLSH	Pr.tY	SnH
	LP		out2		Addr	SnL

GENERAL OPERATION MENU

PASSWORD PROTECTED MENUS

RS-485 parameters on oven's with communication package

## OPERATION CYCLE (MENU 1)

### SET-POINT CHANGE

To change the temperature set-point of your oven, use the indicated arrow keys to increase or decrease temperature.



Press to Increase



Press to Decrease

Set-point is indicated by the green colored numbers.

### TEMPERATURE UNITS

To change the oven's operational units to read either degree Celsius or degrees Fahrenheit you will need to:



Press once to see UNIT



Press Up or Down to select



Press 5 time to return to main menu

### AUTO-TUNING THE OVEN

Your oven's controller has been tuned from our factory to achieve set-point temperatures at a faster rate. However, you can auto-tune your oven's controller to work best with your application and set-points. The two auto-tuning available options are:

#### FAST Tuning

This option prioritizes speed over accuracy, allowing you to reach set-point temperatures faster.

#### FULL Tuning

This tuning option gives priority to accuracy over speed.

To execute an auto-tuning you will need to:

- 1 Select the desired set-point temperature to tune the unit.
- 2 Enable auto-tuning at the parameter **Atun**, and select one of the tuning options, **FAST** or **FULL**




Press 2 times to see Atun



Press down to select option



Press 4 times to return.

 The TUNE light will remain lit throughout the entire tuning phase.

 The auto-tuning process must be fully completed before using the controller.

### TEMPERATURE OFFSET / CALIBRATION

Your oven has been calibrated at our factory using a NIST-certified temperature instrument.

Over time a temperature adjustment (offset) may be necessary to maintain the oven's controller temperature reading consistent with the oven's interior temperature.

To execute an OFFSET you will need to:

- 1 Place a trusted, preferably certified digital temperature probe at the center of the oven's chamber.
- 2 Record the temperature reading at controller and at the center of your oven's chamber.
- 3 Access the **OFFS** parameter and input the temperature difference from your controller to your digital probe.



Press 3 times to see OFFS



Press up or down to input difference



Press 3 times to return.

### RUNNING A PROGRAM

This parameter allows you to select a Ramp and Soak program 1-5. (See *Ramp and Soak Programming pg 7 for more information*). To start a preset program, you need do the following:



Press 4 times to see PRG



Press up or down to select program



Press 2 times to return

### RUN FUNCTION

The RUN function allows the the user to enable and disable the device heat operation.

 **This function acts as general key for the oven.**

#### When RUN = YES

The controller is enabled to operate and start the heating process.

#### When RUN = NO

The controller is disabled and will NOT start the oven's heating process.

To enable or disable the RUN function do the following:



Press 5 times



Press up or down to select



Press 1 time to return.

## RAMP AND SOAK PROGRAMMING (MENU 2)

The Ramp and Soak Controller provides the opportunity to control applications needing set-point changes overtime. Examples of this are RAMP changes where a gradual rate of temperature change can be set. These can be separated by SOAK periods during which the process is held at a constant value. Each individual time interval in the program or SEGMENT, together with its associated moving setpoint value can be stored as a unique PROGRAM, as represented by the diagram below (FIG. 9).

### HOW TO CREATE A RAMP AND SOAK PROGRAM

1. Press and Hold **P** to see **P . . .** (Program time base, FIG. 8)

Select between **HH:MM (hours:minutes)** or **MM:SS (Minutes:Seconds)**

2. Press **P** once to advance to **P . . .** (Function Resume Program)

Select one of the options which defines the behavior of the controller when it resumes from power interruption.

**PROG** - Returns at the beginning of the program  
**P.SEG** - Returns at the beginning of the segment  
**T.SEG** - Returns at the exact point where it stopped  
**OFF** - Returns with the controller disabled (RUN = No)

3. Press **P** once to advance to **P . . . N** (Number of program to edit)

Select the program number (1 thru 5) to be edited/viewed.

Once you select a program number to edit, the parameters that follow refer to the selected program.

4. Press **P** once to advance to **P . . .** (Maximum deviation from SP)

Input the maximum allowable deviation from PV with respect to SP (set-point). If exceeded, the program is suspended (the internal timer freezes) until PV (process value) is within the allowable deviation value.

#### Programming Set-points and time segments

5. Press **P** once to advance to **P . . .** (Program SP 0 to 4)  
 Set the SP temperature of the program. P.SP0 is the

6. Press **P** once to advance to **P . . .** (Program Segment Time)  
 Set the duration time of the segment in the program being edited.

7. Press **P** once to advance to **P . . .** (Program Event)  
 Set this parameter to OFF. The alarm settings cannot be modified

Repeat Steps 5-7 for each additional segment on the same program.

8. Press **P** once to advance to **└ P** (Link Programs)  
 Select a program number to be linked to another after the initial program ends.

It is possible to create large, more complex program with up to 20 segments. Thus, at the end of the execution of a linked program, the controller immediately starts executing the next selected program number (FIG. 10).

### HOW TO START A PROGRAM

- Press **P** (4 times) to see **P R . . .** (Program)
- Press **▲** or **▼** and select the program number to run.
- Press **P** to advance to **RUN** and using the **▲** select **YES**.
- Press **P** to return to main menu.

PRESS TO ADVANCE IN THE PROGRAMMING MENU.



USE KEYS TO MAKE A SELECTION.

PRESS TO RETURN TO PREVIOUS PROGRAMMING PARAMETER

FIG. 8

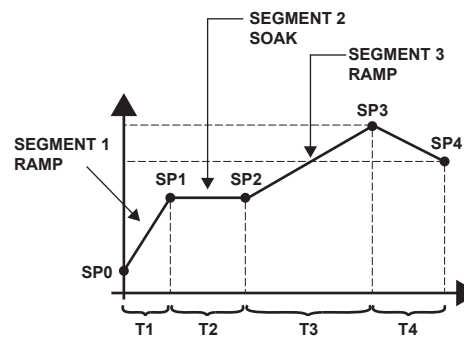
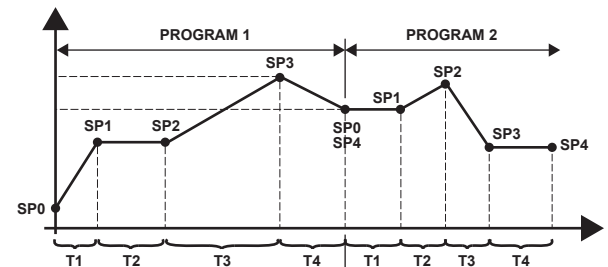


FIG. 9

Example of ramp and soak program



Example of linked programs

FIG. 10

**⚠** Once the program is defined and executed, the controller automatically generates set-points according to the program.



SCAN ME

## Basic Count Down Timer Function (Menu 3)

Your oven's controller is equipped with a timer feature that allows you to use a count down timer by manual activation.



For additional timer options see **Timer** on pg2 of the QR-code pdf.

### Setting the count down timer

#### Step 1

Press and hold **P** until you see **t.5t.r** and press **F** to select **F**

⚠ As you are pressing and holding **P** you may go pass **t.5t.r**, if this happens, simply continue to press and hold **P** until parameter **t.5t.r** is reached.



#### Time Start Mode (t.5t.r)

The (F) value allows the timer to be manually activated by pressing **F** once steps are completed.

⚠ There are other timer options available, but only **F** will work as a count down timer.

(Press **P** to advance to Step 2)

#### Step 2

Press **F** to select **d.r**



#### Time Count Direction (t.d.r)

This tells the controller to count in a down direction.

Press **P** to advance to Step 3 or **F** to return to previous

#### Step 3

Using the **▲** or **▼** keys and select a desired time base to apply to the timer.



#### Time Base Setting (t.t.t)

Access this parameter and choose the desired timer base setting.

HH:MM - Time intervals are displayed in hours and minutes.

MM:SS - Time intervals are displayed in minutes and seconds.

Press **P** to advance to Step 4 or **F** to return to previous

#### Step 4

Using the **▲** or **▼** keys and select a desired time.



#### Time Interval Adjustment (t.1)

Access this parameter and input the desired timer value using the UP or DOWN arrow keys.

Press **P** to advance to Step 5 or **F** to return to previous

#### Step 5

Set the following (3) parameters as follows and press **P** to advance:

t.tE

Set this parameter to NO. Continue to next timer parameter.

t.End

Set this parameter to **o.F.F.**. Continue with the next timer parameter.

t.z

Set this parameter to **o.o.o.o.**. Continue with the next timer parameter.

Press **P** to advance to Step 6 or **F** to return to previous

#### Step 6

Using the **▲** or **▼** key select what happens at the end of the timer.



#### t.RUN → Behavior at end of timer

This parameter allows the unit to continue or stop with the heating operation after the timer option is finished. Choose one of the following:

- o.r** - Temperature controller continues to operate.
- o.F.F** - End controller heating operation at the end of the timer.

⚠ If the **o.F.F** option is selected, at the end of the timer the RUN function will need to be enable to YES for oven to heat again. See **RUN FUNCTION** on page 6.

(Press **P** once more to complete set-up and return to temperature display)

### Starting the timer

Once timer is set, you can start, pause, and stop/cancel the timer count by doing the following:

**Start** - Press **F** once.

**Pause** - Press **F** once.

**Stop / Cancel** - Press **F** for 3 seconds.

⚠ When the timer has activated, the indicator (A3) will flash continuously.

⚠ When the timer is interrupted the indicator (A3 or A4) will flash quickly.

## Control Calibration to Match Independent Device

Your oven's controller offset value has been input at the factory to match your oven's true chamber temperature when measured at the center of the oven using an NIST (National Institute of Standard and Technology) traceable temperature box (FIG.11). Over time this offset value may need to be adjusted. If an offset needs to be performed in the field, place a temperature probe at the center of the oven and adjust as needed.



OFFSET VALUE

FIG. 11

#### ACCESS THE OFFSET PARAMETER BY:

**P** **▲** **▼** **F** Press 3 times to see **o.F.F.S**

**P** **▲** **▼** **F** Press up or down to input difference

**P** **▲** **▼** **F** Press 3 times to return.

#### ⚠ IMPORTANT

- Calibrating the actual chamber temperature to the temperature displayed on the controller should only be done if the chamber's temperature, as measured by a known accurate device, is off by more than the stated tolerance of your Oven.
- The most accurate calibration possible for any digital unit is at the center of the chamber (with the chamber empty). Therefore, calibrate the control to the center of the chamber using an accurate temperature measuring device.

#### CALIBRATION EXAMPLE:

In the example shown in (FIG.12), the digital controller process value reads 150°F (white LEDs) and the independent temperature probe placed at the center of the oven shows a reading of 155°F. *Note the difference of 5 degrees F between the temperatures.* On the controller's **o.F.F.S** parameter, for this example, we add the 5°F difference to the offset value already present. This value change will adjust the process value on the controller to match the chamber temperature of 155°F.

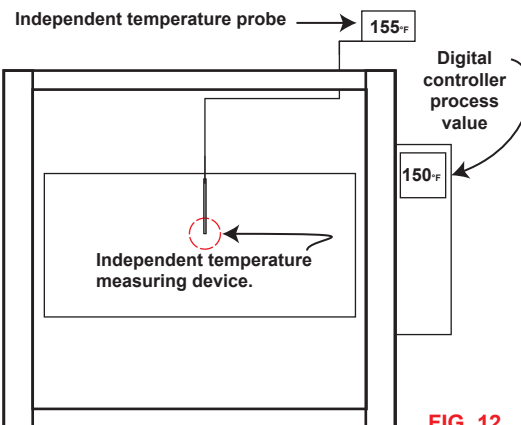


FIG. 12

⚠ Once a temperature adjustment has been made, allow the oven some time to stabilize before making any subsequent adjustments.

⚠ The temperature difference between the controller and your independent probe can be a positive or negative number.