Manual Setting of Power Level for **Vanessa** Furnace Controllers

Digitry Company, Inc.[†]

The furnace version of Digitry's **Vanessa** controller has the ability to manually set the power output level. This feature's main use is to avoid thermal shock when starting up a cold furnace. It helps to prolong the life of silicon carbide heating elements and crucibles, *etc.* One can start the furnace at a low power setting until it warms up a bit and then gradually increase the power until it is safe to set the controller to an automatic mode. In the manual mode, the temperature can be displayed but does not directly influence the control function.

Program 1 is dedicated to the manual power level function. When ready to switch to automatic control, you should return the **Vanessa** to the idle state using the STOP key, then switch to either set point control or program 2 or 3 for ramping, and use the START key to set the **Vanessa** to run. Note that in this latter case, the current temperature is always the starting point of the ramp.

If manual control is selected, only the temperature is displayed when the unit is idle. The DISPLAY key does nothing in this case. When it is running, the DISPLAY key switches between showing the temperature — with the TEMP indicator led on — and the power level, with neither the TIME nor the TEMP indicator led on. When displaying the power level, the numeric display shows `PLxx`, where the `xx` is the output power, as a percent of full power.

To program the output level:

- Select Program 1. The red indicator light above 1 in the Program area will be on. If it is not, select it as described in chapter 3 of the **Vanessa** manual. When you have selected this, the STEP will display `P` (for "power").
- When the **Vanessa** is idle, set the starting power level: first press the VIEW key. This will cause the numeric display to show the programmed power level. You can now use the SLIDER to modify the programmed power level. Finally, push the SET key to record the new power level or push the END key instead of SET to cancel your changes. If neither a key nor the slider is pushed for approximately

ten seconds, the result is the same as if the END key were pushed, so any modifications will be ignored.

- To change the power level while the **Vanessa** is running, use the same procedure. The only difference is how the display behaves when running.
  - When VIEW is pushed, the `P` in the STEP display will flash to remind you that you are not viewing the actual power but a possibly changed, programmed power. The modified power level does not take effect until it saved by pushing the SET key. As when idle, pushing the END key or doing nothing for about ten seconds cancels any changes you may have made — the original power level has been used without interruption.
  - When the new level is saved or cancelled, the numeric display will revert to show either the new power level or the temperature, whichever was showing before you pressed the VIEW key. The `P` in the STEP display will become steady indicating that the power displayed is the actual power.

Configuring Power Level Range

Generally, a gas fired furnace should never be shut down: its power must remain above a minimum level even when the **Vanessa** sets the furnace to IDLE. Also, it may be desirable to keep the furnace from ramping to a full 100%. Accordingly, the **Vanessa** permits you to set lower and upper limits for the power level. Usually, you will set these limits once, shortly after installing your **Vanessa**, but this can be done at any time.

To program the power level range:

- Select Program 1. The red indicator light above 1 in the Program area will be on. If it is not, select it as described in chapter 3 of the **Vanessa** manual. When you have selected this, the STEP will display `P` (for "power").
- When the **Vanessa** is idle, press and hold the DISPLAY key. After about four seconds, the display will read `LoNN`, where `NN` is the lower limit for the power level.
- You can now use the slider to change `NN` to a new value. There are two considerations:
  - If the value you want to enter as the low power limit is above the current programmed power level, the current programmed power level will be raised to the new low power limit.
  - The value you select as the low power limit cannot exceed the maximum

power limit. If it does, when you press the SET key (see next step), you will see `ErPL` for "Error: Power Level". At this point, your only choice is to press and hold the END key for about four seconds to clear the error. This returns the low power limit to its previous value.

- When the display shows the low power limit you want, press the SET key.
- The display switches to read `HiNN`, where `NN` is the upper limit for the power level.
- Use the slider to change the high power limit just as you did with the low power limit. Again, two considerations apply:
  - If the value you want to enter as the high power limit is below the current programmed power level, the current programmed power level will be lowered to the new high power limit.
  - The value you select as the high power limit cannot be below the low power limit. If it is, when you press the SET key (see next step), you will see `ErPL` for "Error: Power Level". At this point, your only choice is to press and hold the END key for about four seconds to clear the error. This returns the high power limit to its previous value.
- When the display shows the high power limit you want, press the SET key.
- The display switches to read `LoNN`, where `NN` is the lower limit for the power level. You may alter it as above, or
- Press the END key to exit the configuration state.