

B

Appendix B

DL105/DL205/DL350/DL405

Application Examples

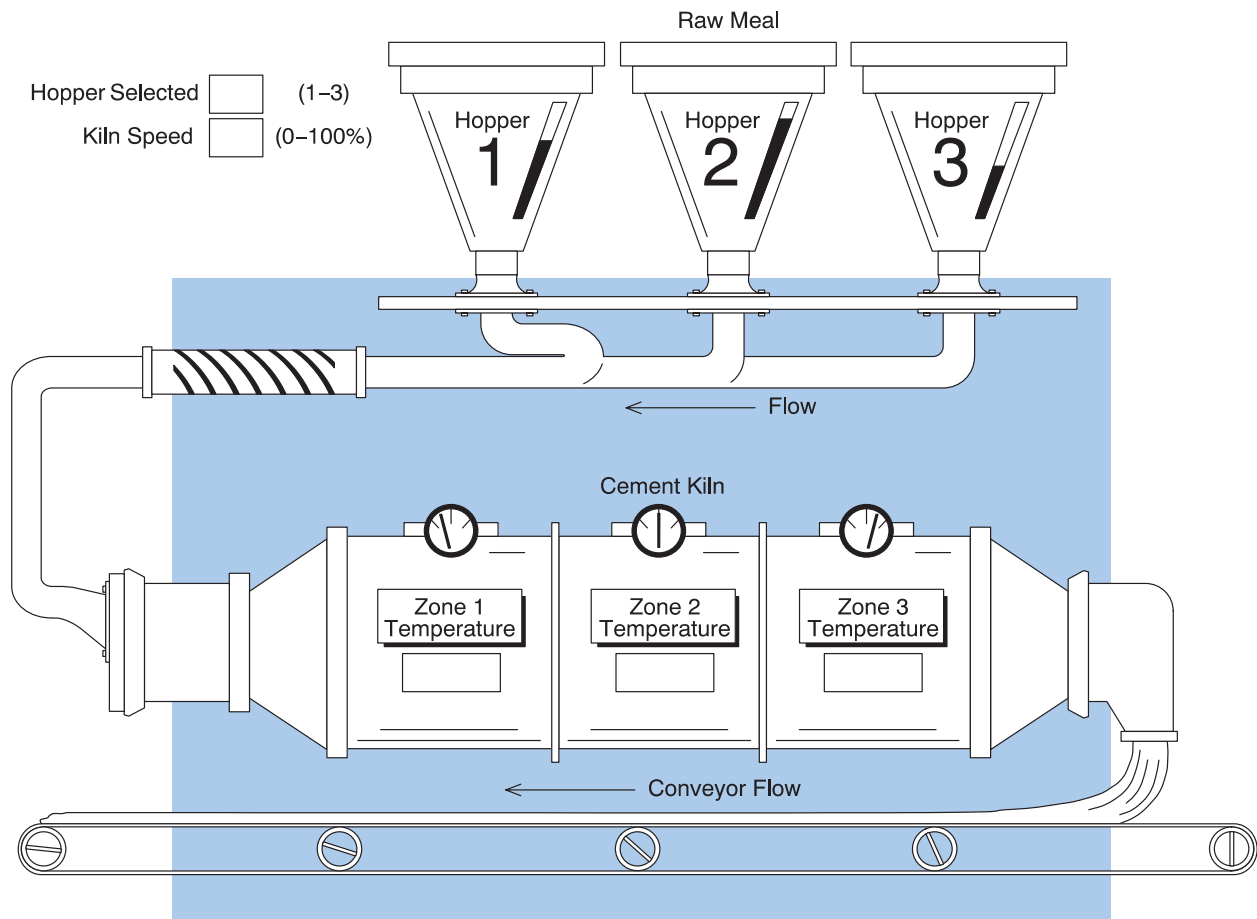
In This Appendix. . . .

— DL105/DL205/DL350/DL405 Application Example

Understanding the Example Programs

In this manual a Cement Kiln System is the model for demonstrating the ladder logic required to support the various OP-panel features. The programs provide ladder logic which demonstrates controlling pushbuttons, lamps, messages and menu operations.

Items listed in the figure below such as Hopper Selection, Kiln Speed, Start/Stop/Run controls, and Kiln Zone Temperatures are monitored and controlled by the OP-panel example programs.



These example programs and additional technical support information may be accessed on PLC*Direct*'s **worldwide web** site:

<http://www.plcdirect.com> (website for general info/file transfers)

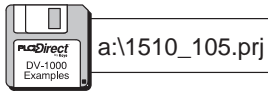
You may also find these programs on our 24-hour per day **BBS** system at:

770-844-4209

If you find a problem with any of our products, services, or manuals, please fill out and return the 'Suggestions' card that was shipped with this manual.

DirectLOGIC and Compatible Example Program

The example program listed on the following pages is designed for **DirectLOGIC** DL105, DL205, DL350, and DL405 PLC systems. The program supports the OP-1510 Kiln Demo program. This program is included on the 3 1/2 disk labeled "OP-1500/OP-1510 Example Disk" which is provided with this manual.



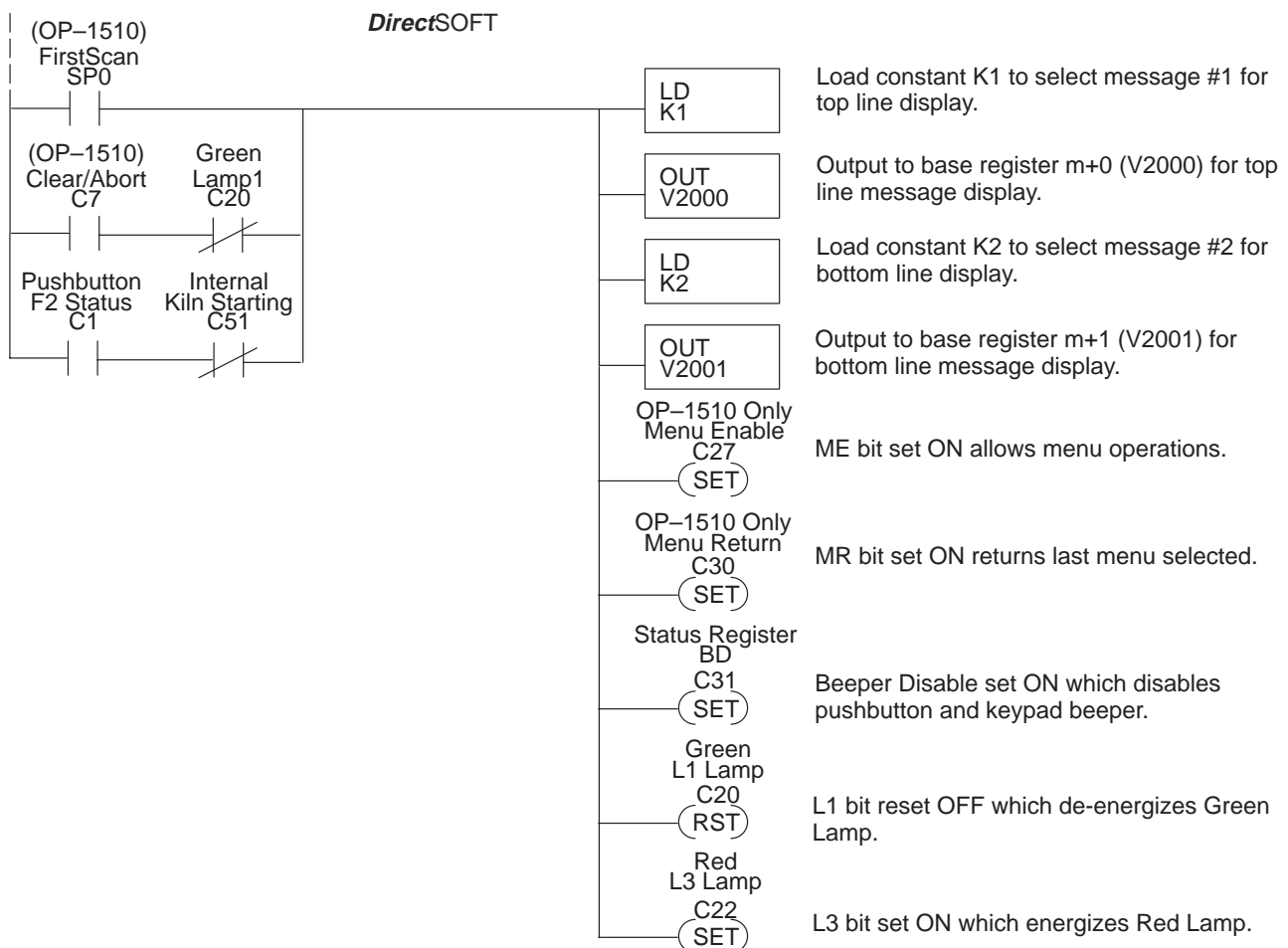
This example program (1510_105.PRJ) must be used with the OP-1510 configuration file 1510_105.OCF. Load these program files to the PLC and OP-panel for connection and operation of the Kiln Demo application. You may also refer to the Appendix A "Example Worksheets" to help understand how the OP-panel is configured.

OP-1510 Kiln Demo

This program is designed to be used with the **DirectLogic** DL105, DL205, DL350, and DL405 PLC and compatible systems. The following program is intended for training purposes and *may not* resolve all possible OP-panel applications. Some PLC programming knowledge is required to fully understand and implement the following program examples.

If the CPU power cycles or machine and operator conditions are idle, this rung will initialize OP-panel and display message #1 and message #2.

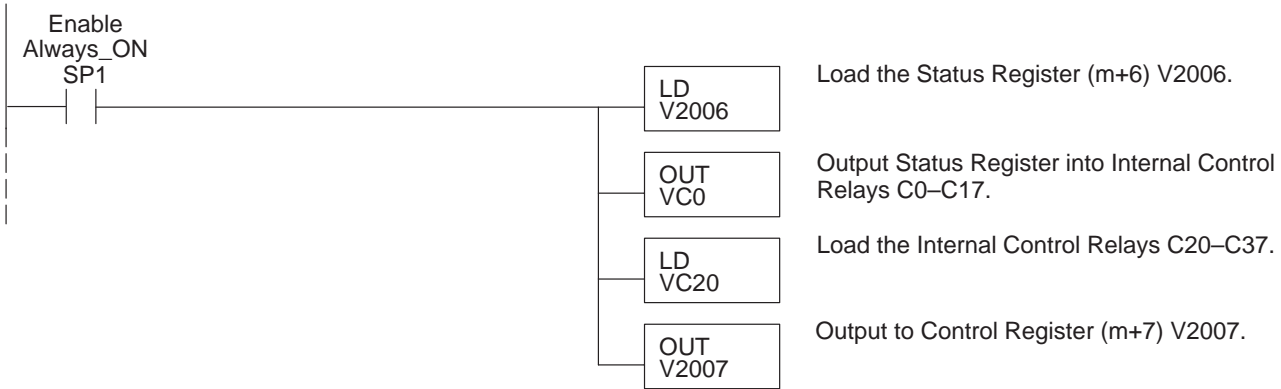
RUNG 1



RUNG 2

Memory Mapping

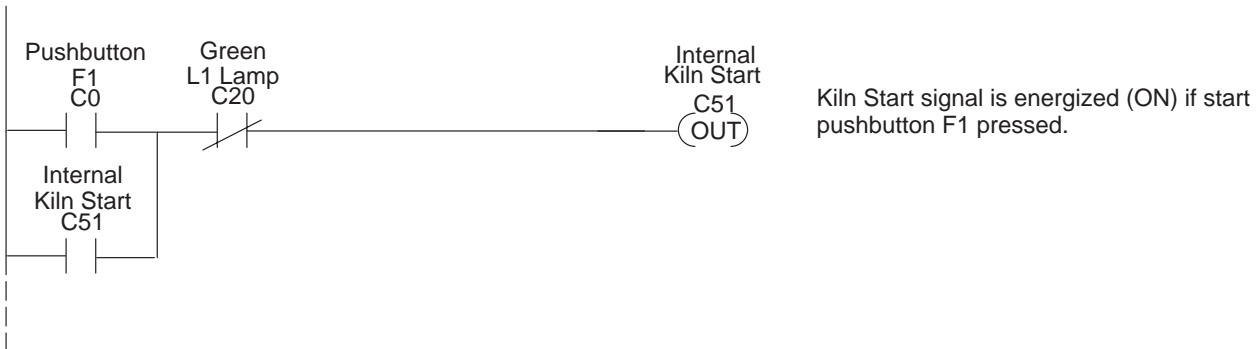
This rung is necessary for all **Direct**LOGIC CPUs which *do not* support bit-of-word instructions. Mapping the Status and Control registers into Internal Control Relays is necessary to have bit level access to this data. The Status and Control register bits are used to monitor pushbuttons, control lamps, and perform asynchronous data exchange between the OP-panel and PLC.



RUNG 3

Kiln Start Control

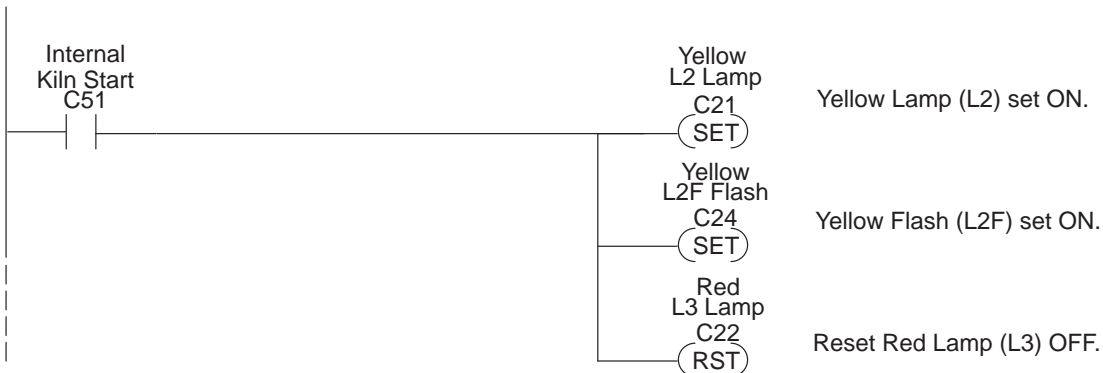
This rung starts the machine process. The internal control relay Kiln Start (C51) is used to start the Startup Delay Timer, and will remain ON until the C20 (Lamp1) control bit is energized.



RUNG 4

Kiln Starting Lamp Control

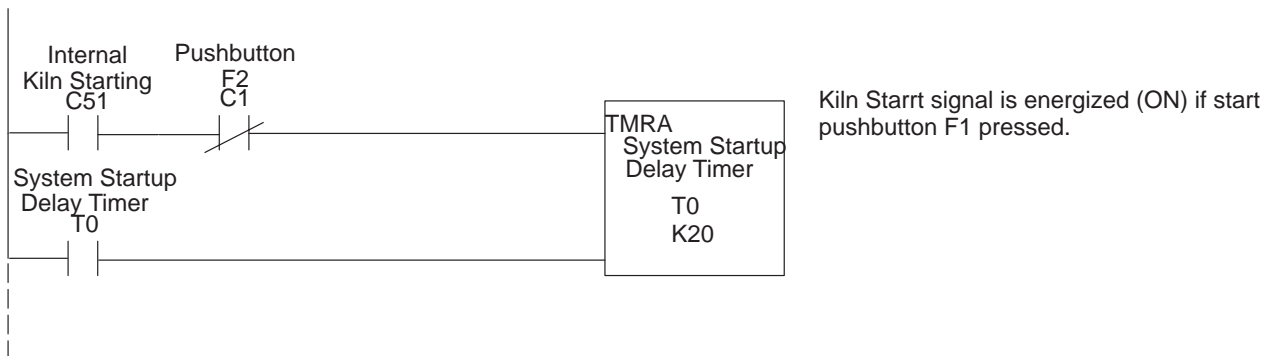
This rung controls the annunciator lamps during startup mode.



RUNG 5

Startup Delay Timer

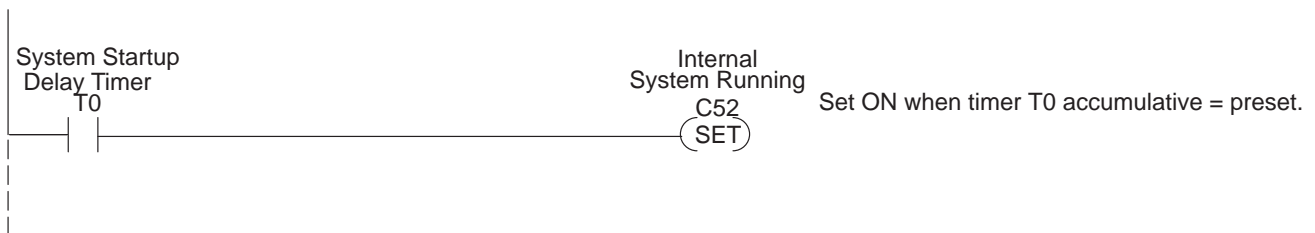
This delay timer signals the System Start (C52) control relay.



RUNG 6

System Running

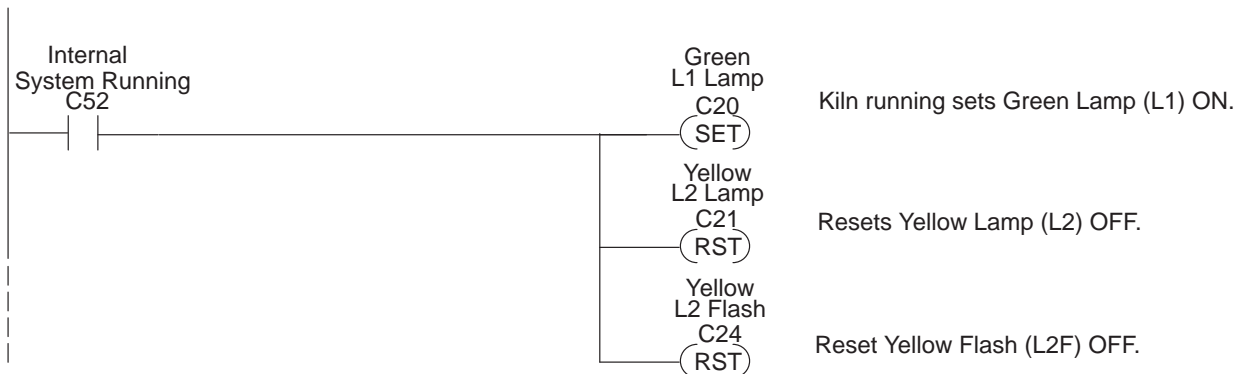
This rung controls sets internal control relay System Running (C52) ON.



RUNG 7

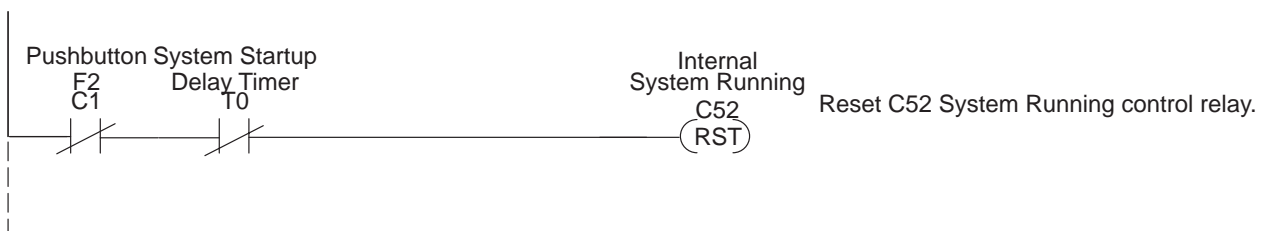
System Running Lamp Control

This rung controls the annunciator lamps when System Running (C52) is ON.



RUNG 8

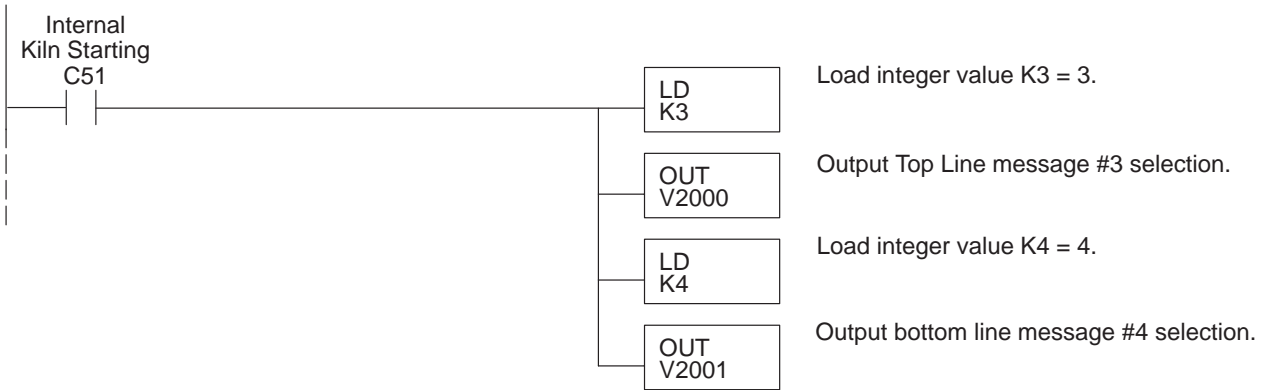
This rung resets internal control relay (C52) System Running when alternating pushbutton 2 (F2) is OFF.



RUNG 9

Kiln Starting Message

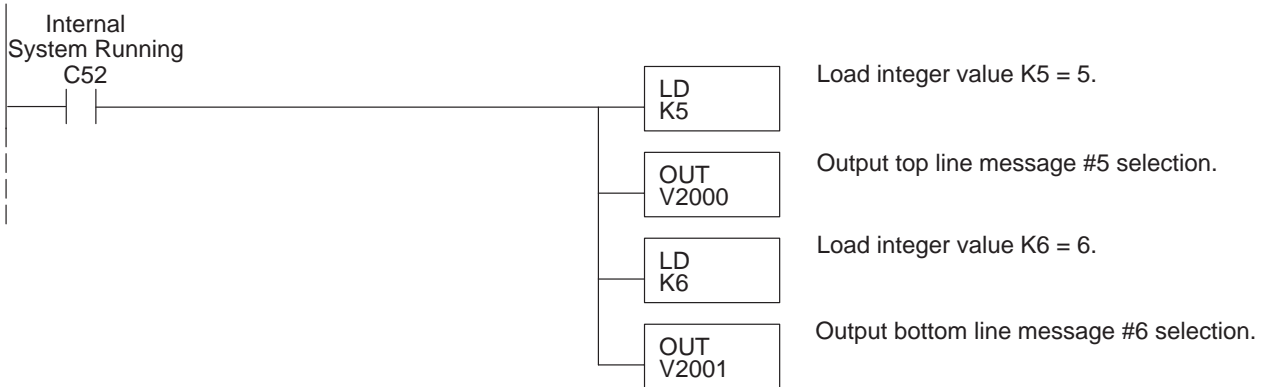
This rung displays "Kiln Starting" message when internal input (C51) is ON.



RUNG 10

System Running Message

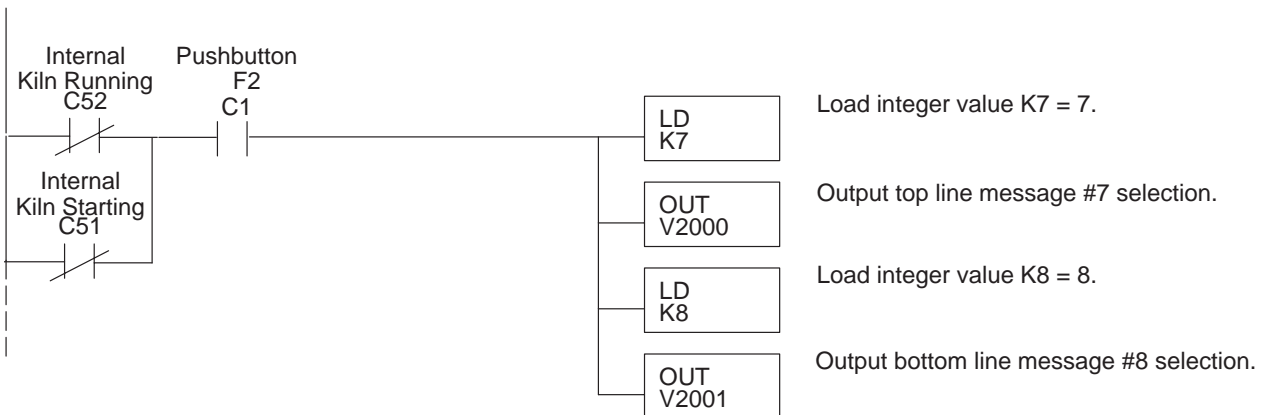
This rung displays "System Running" message when internal input C52 is ON.



RUNG 11

Kiln System Stopped Message

This rung displays "Kiln System Stopped" when the system is *not* running or *not* starting and F2 (pushbutton No.2) is pressed.

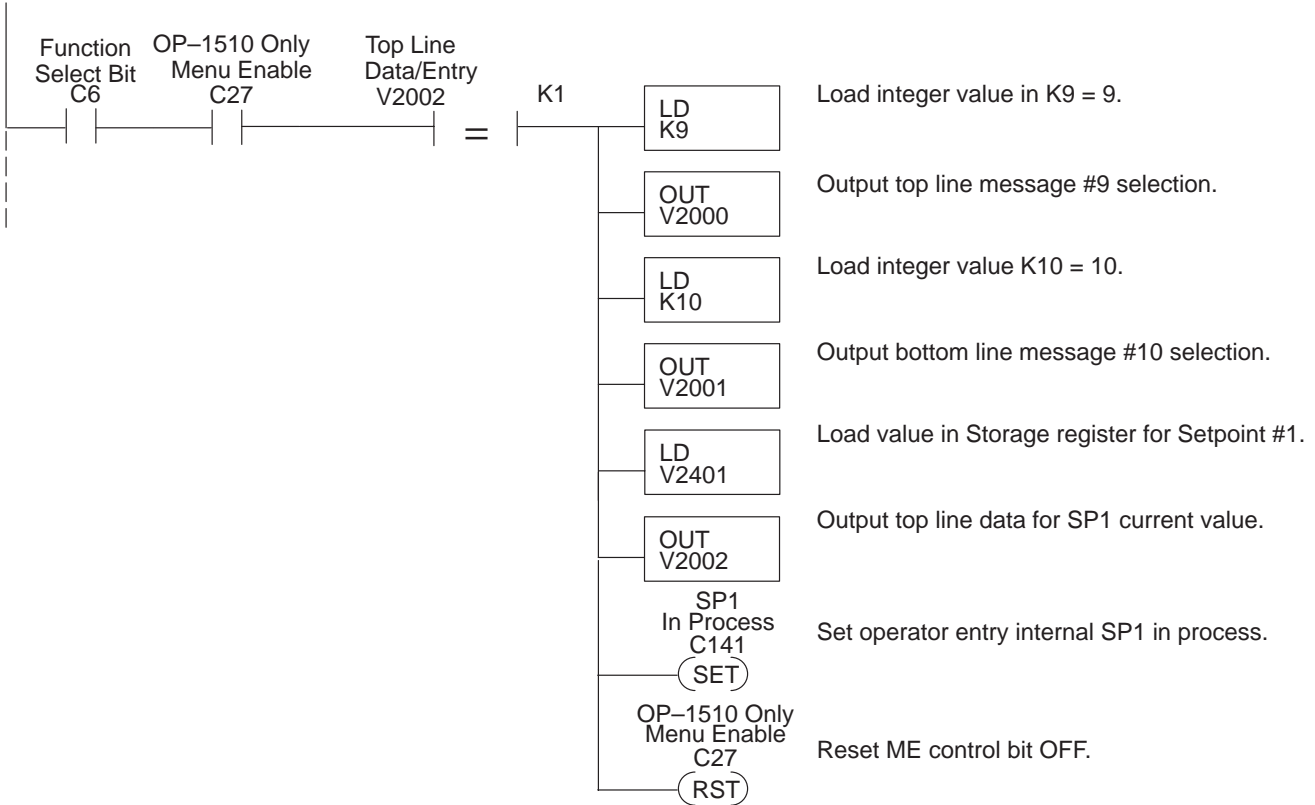


RUNG 12

Setpoint #1 Message Controls

This rung is executed when the function select bit and Menu Enabled are ON and compare statement is equal such as menu function 1 has been selected.

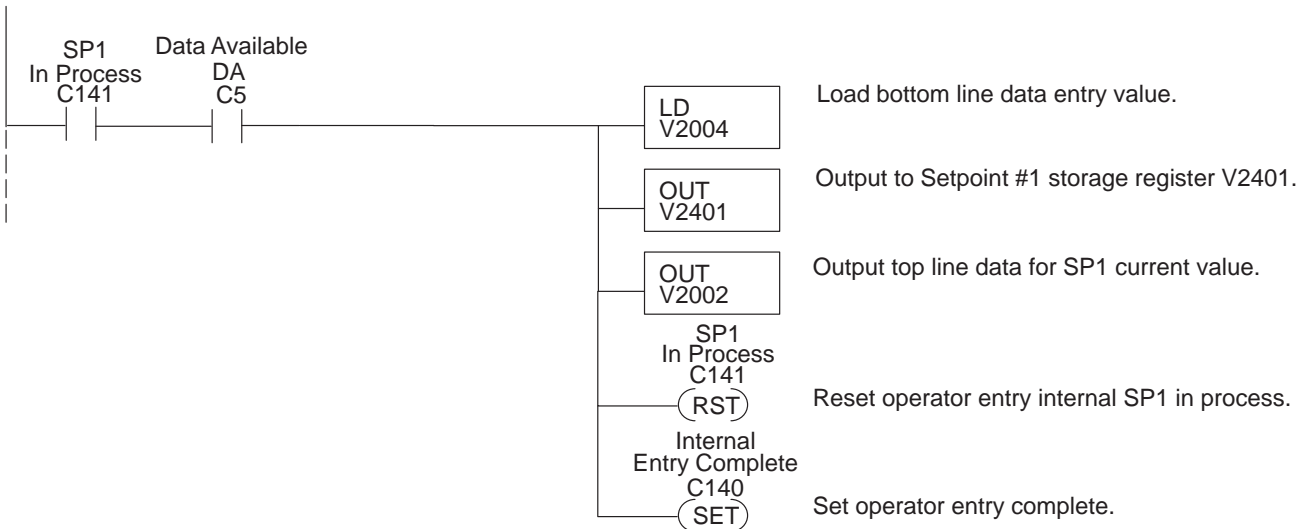
The output displays the message "Meal Hopper (1-3): "
"Arrow UP/DOWN = "



RUNG 13

Setpoint #1 Data Storage

This rung stores the up/down arrow value selected for Setpoint #1 after the ENTER key is pressed and Data Available status bit is ON.



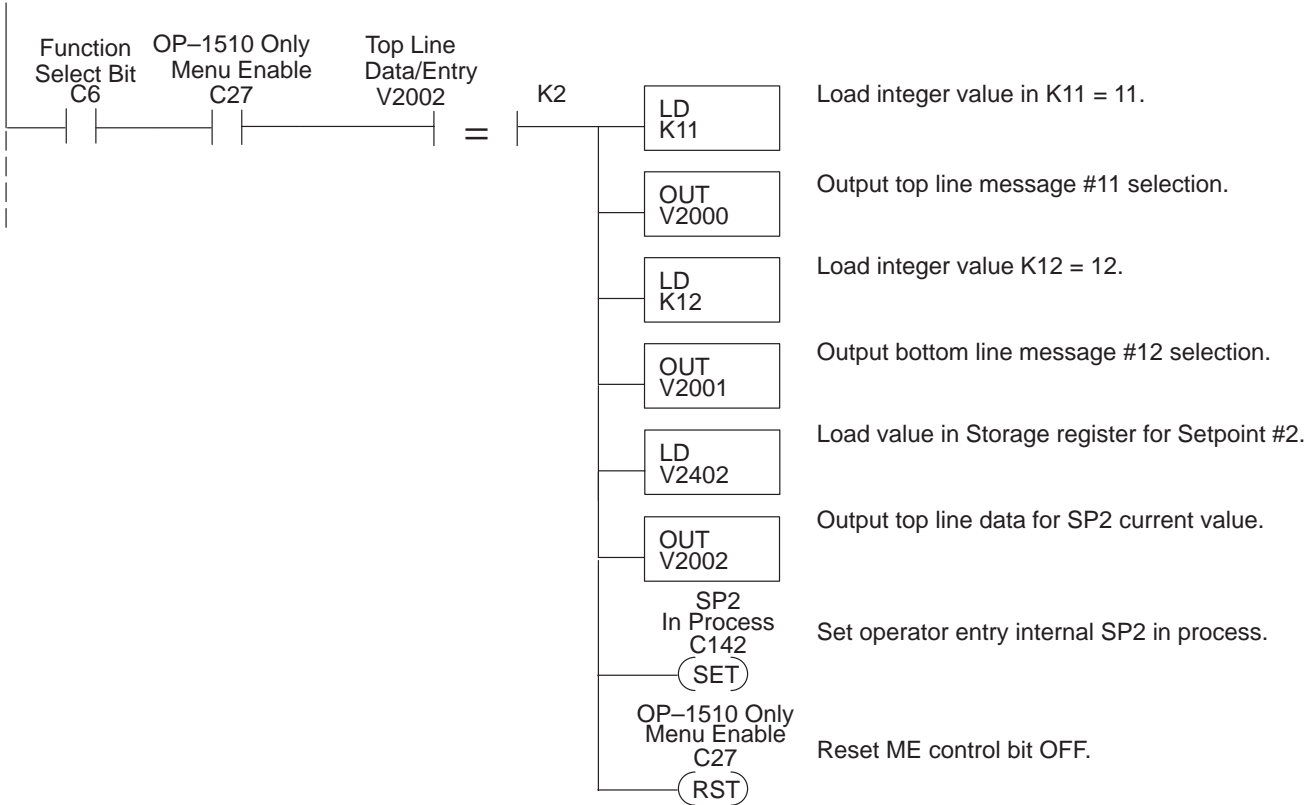
RUNG 14

Setpoint #2 Message Controls

This rung is executed when the function select bit and Menu Enabled are ON and compare statement is equal such as menu function 2 has been selected.

The output displays the message.

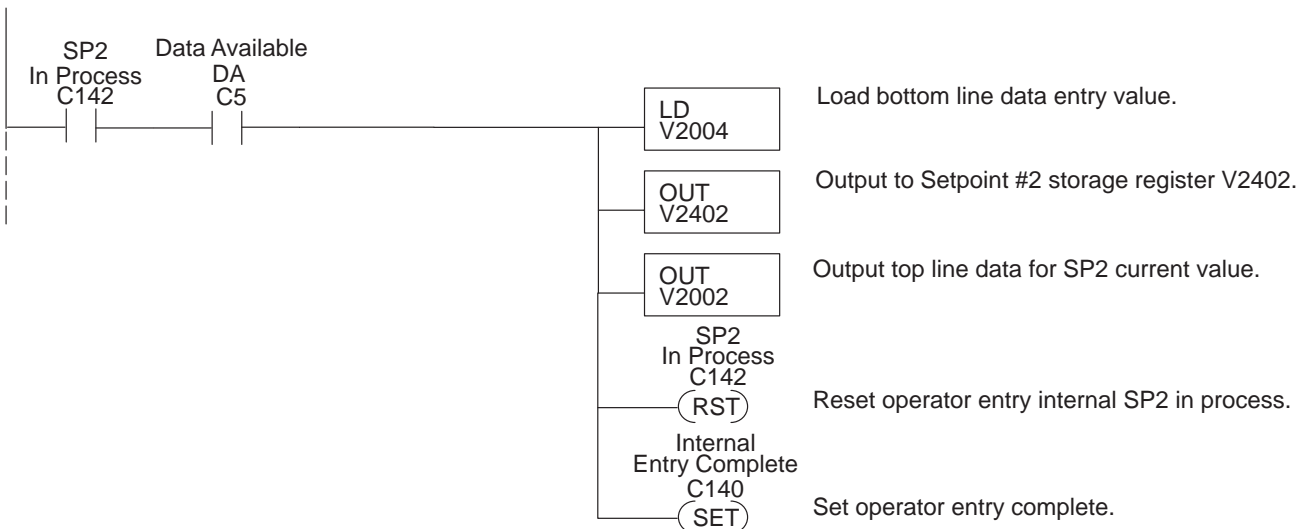
“Kiln Speed (%) : ”
 “New Kiln Speed = ”



RUNG 15

Setpoint #2 Data Storage

This rung stores the keypad entry value selected for Setpoint #2 after the ENTER key is pressed and Data Available status bit is ON.



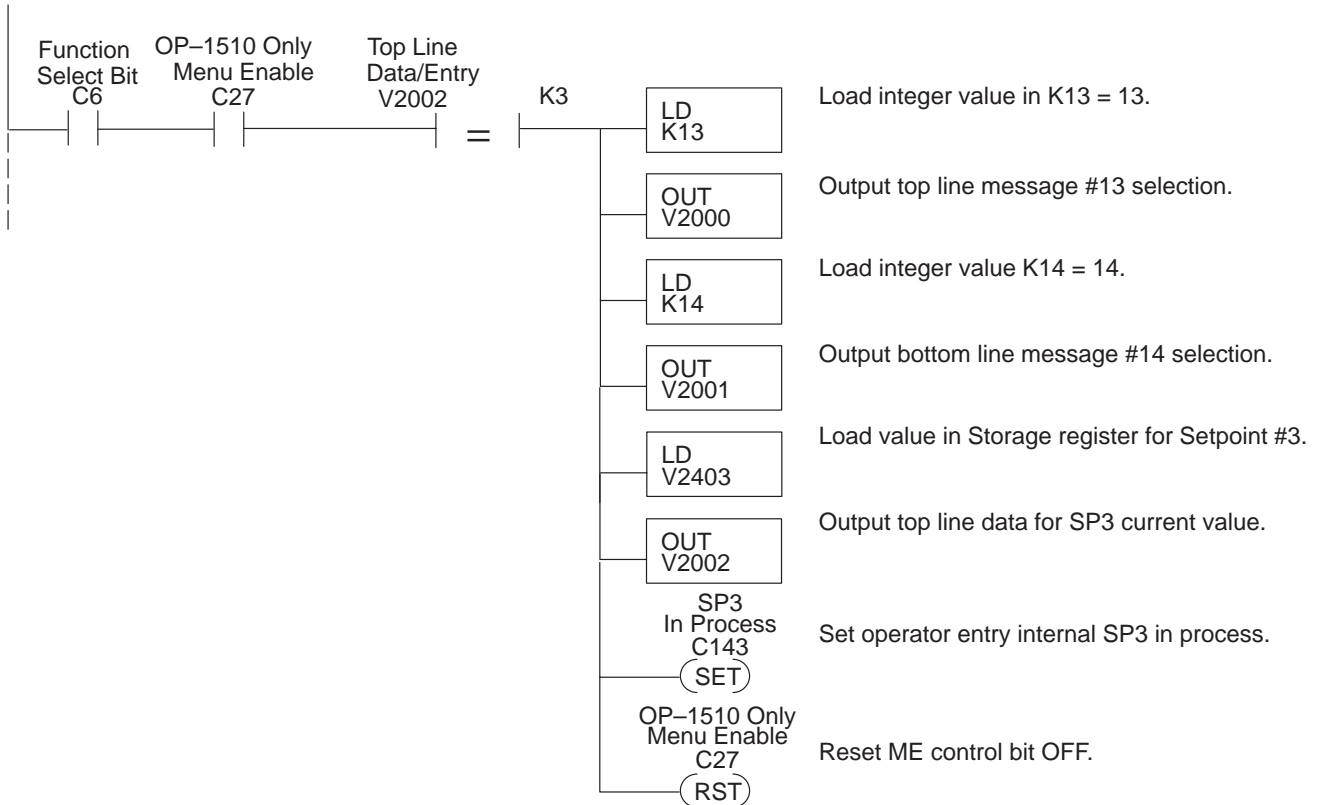
RUNG 16

Setpoint #3 Message Controls

This rung is executed when Select key and Menu Enabled are ON and compare statement is equal such as menu function 3 has been selected.

The output displays the message

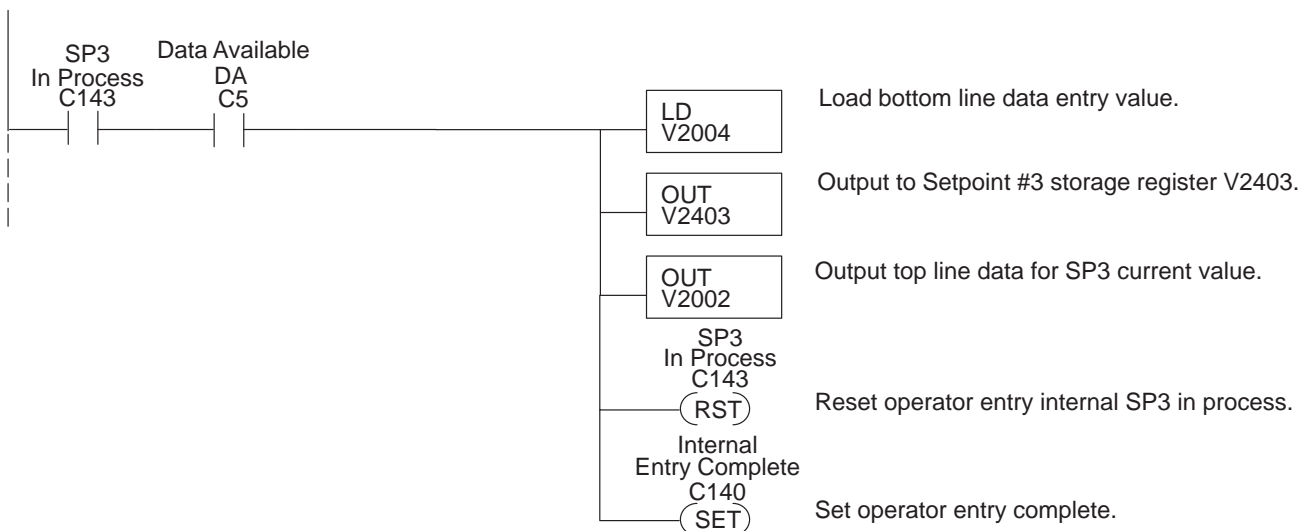
“Zone1 Temp SP : ”
 “Enter New Temp.= ”



RUNG 17

Setpoint #3 Data Storage

This rung stores the keypad entry value selected for Setpoint #3 after the ENTER key is pressed and Data Available status bit is ON.



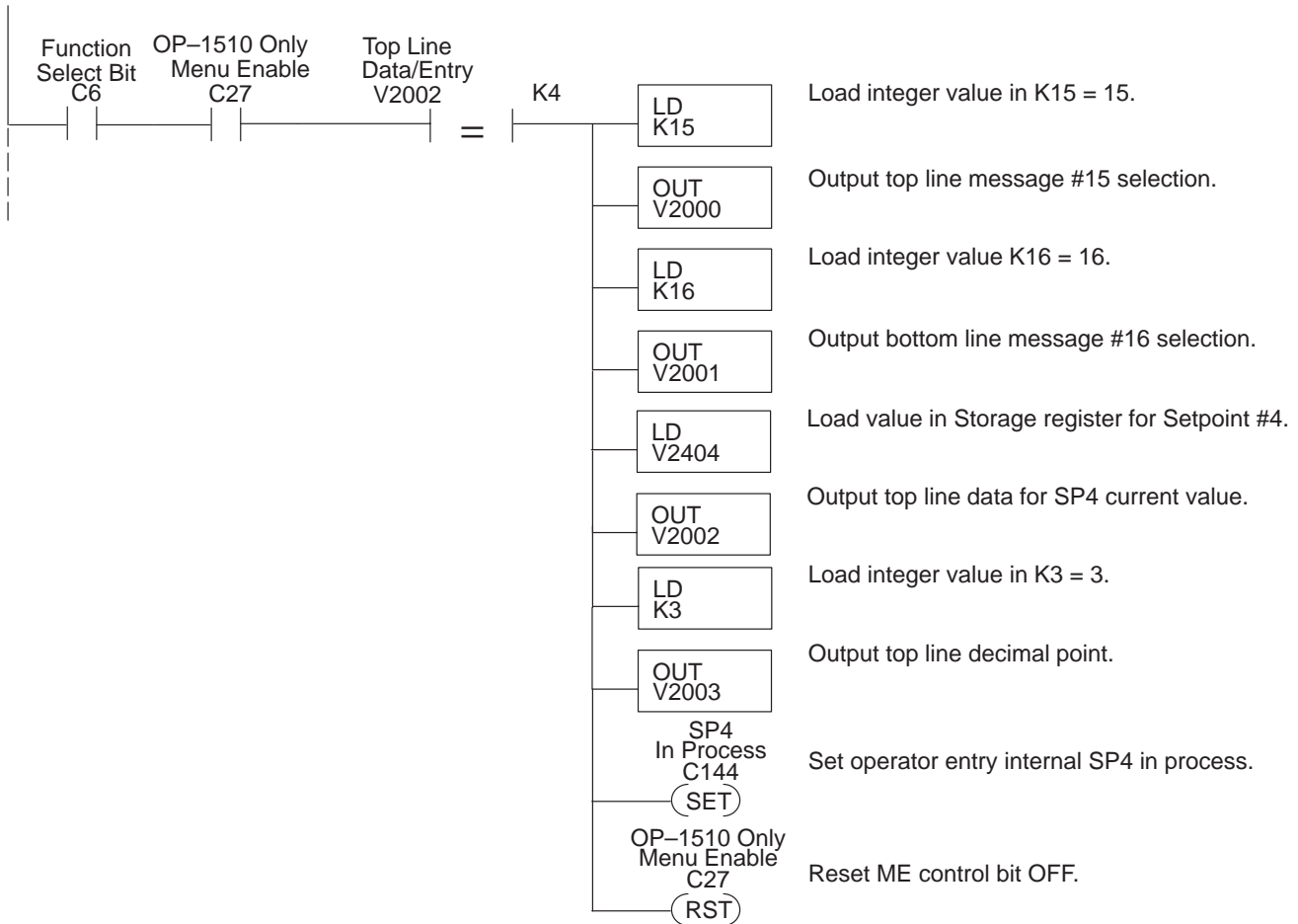
RUNG 18

Setpoint #4 Message Controls

This rung is executed when Select key and Menu Enabled are ON and compare statement is equal such as menu function 4 has been selected.

The output displays the message

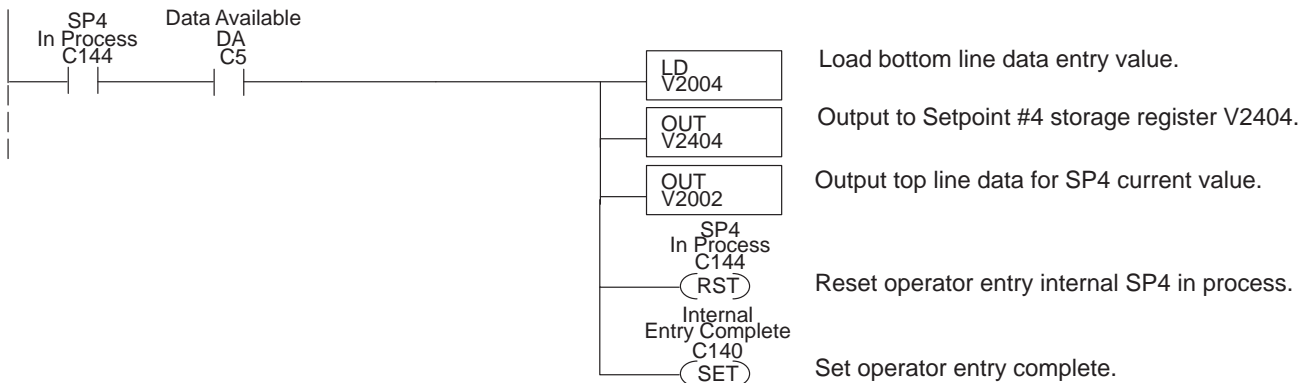
“Zone2 Temp SP : ”
 “Enter New Temp.= ”



RUNG 19

Setpoint #4 Data Storage

This rung stores the keypad entry value selected for Setpoint #4 after the ENTER key is pressed and Data Available status bit is ON.

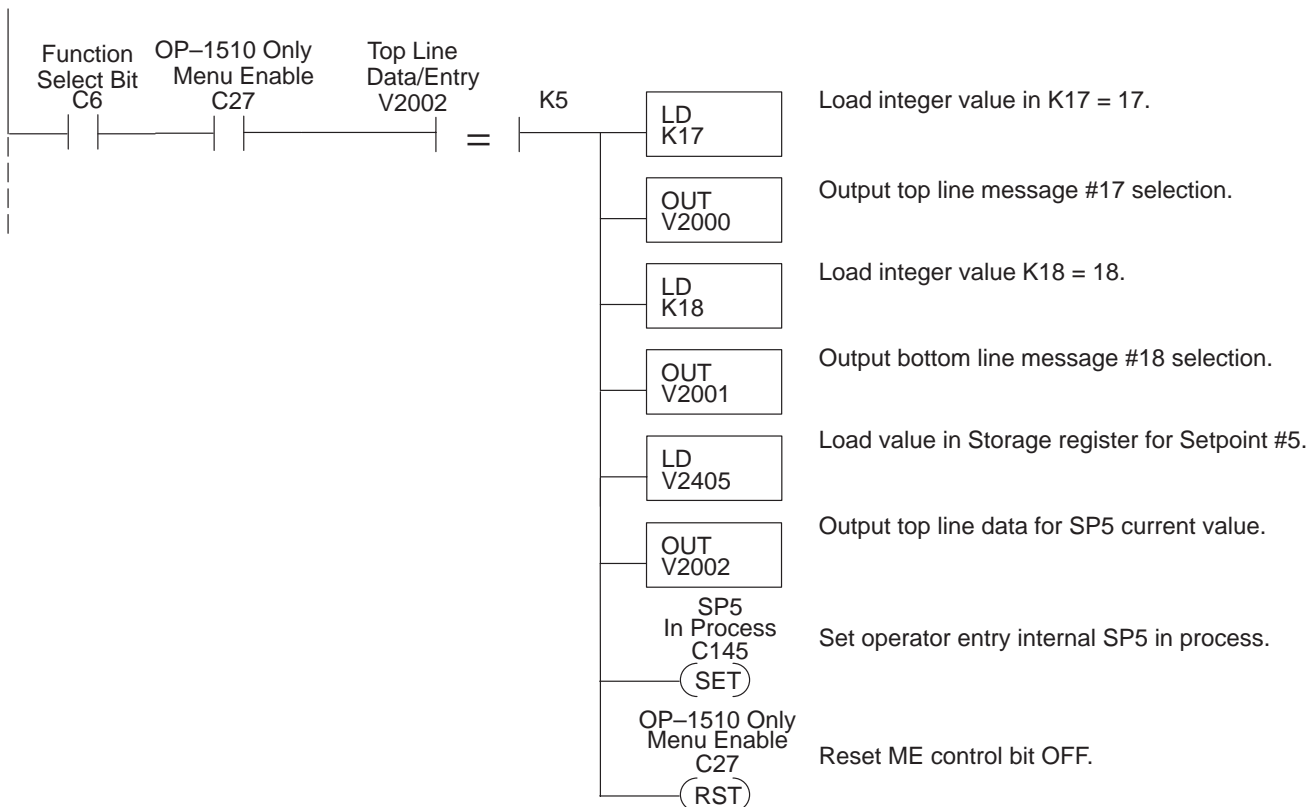


RUNG 20

Setpoint #5 Message Controls

This rung is executed when the function select bit and Menu Enabled are ON and the compare statement is equal.
The output displays the message.

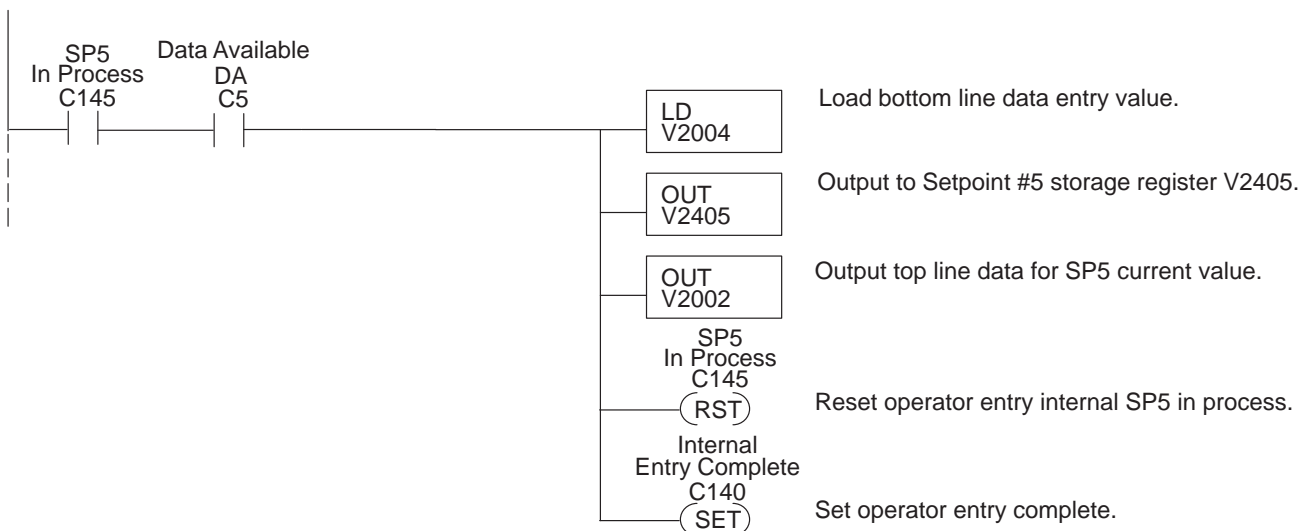
“Zone3 Temp SP : ”
“Enter New Temp.= ”



RUNG 21

Setpoint #5 Data Storage

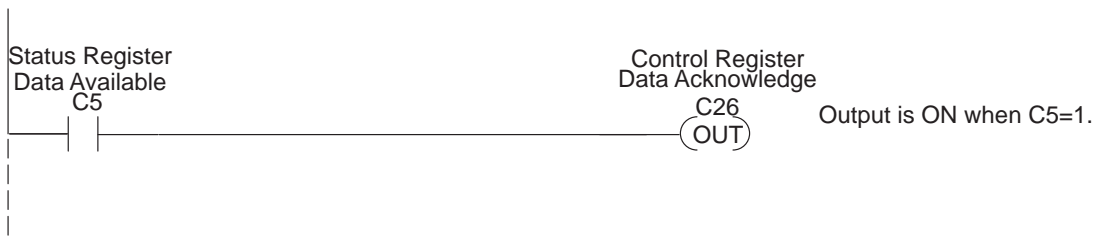
This rung stores the up/down arrow value selected for Setpoint #5 after the ENTER key is pressed and Data Available status bit is ON.



RUNG 22

Data Entry Acknowledge

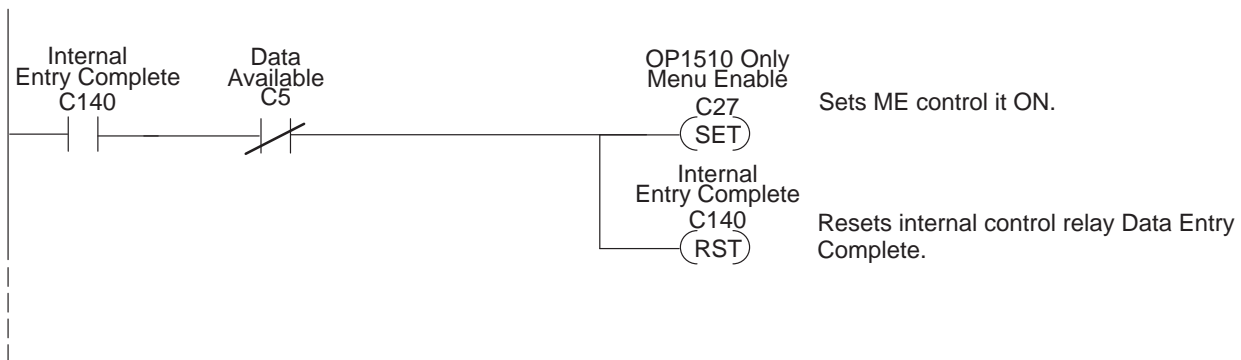
This rung controls confirmation to OP-panel that data entry and storage is complete.



RUNG 23

Post Entry Control

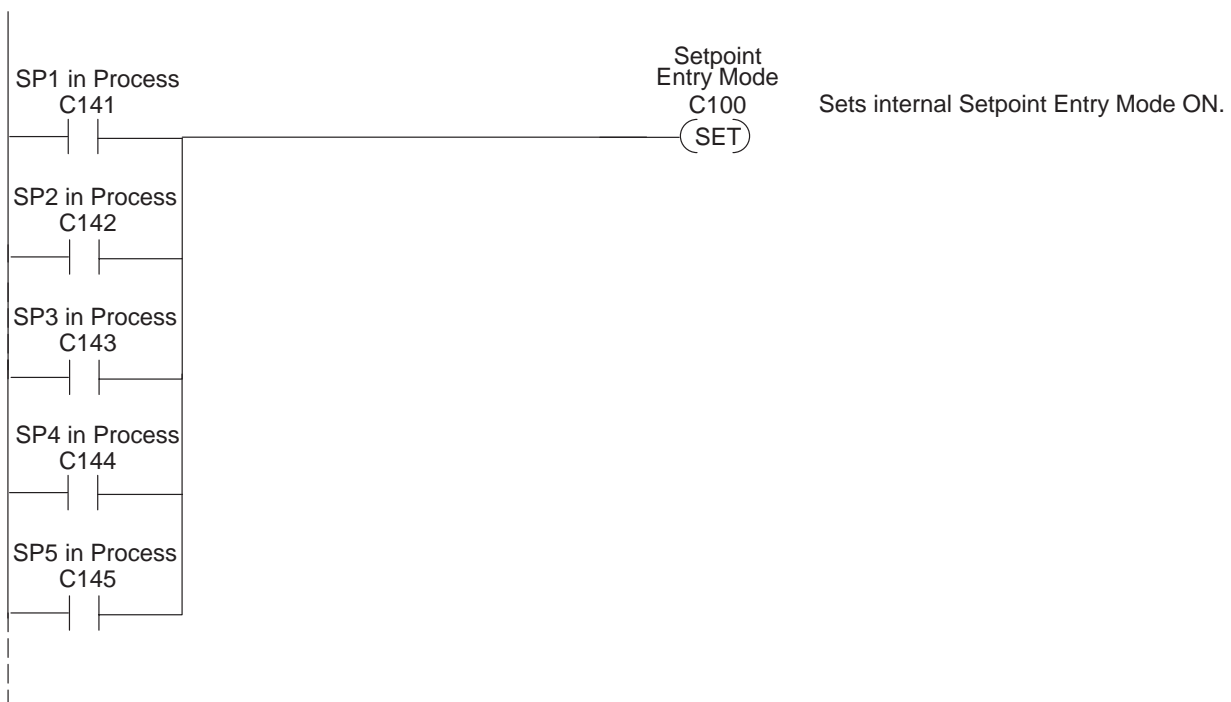
This rung prepares the program for the next OP-panel operation.



RUNG 24

Entry Mode

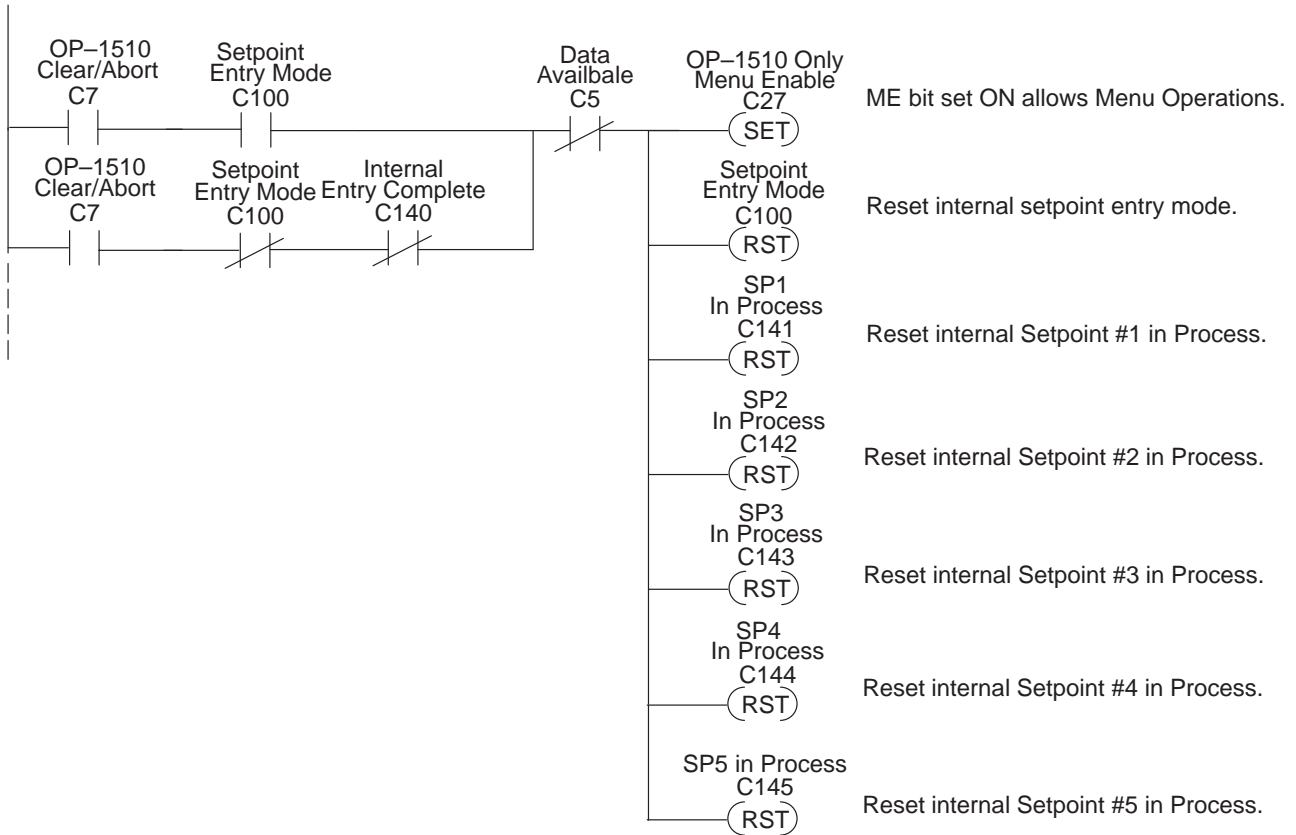
This rung sets internal relay C100 for Setpoint Entry Mode.



RUNG 25

Entry Mode

This rung enables menu operations and resets the setpoint in process for Setpoint Entry Mode interlocking.



RUNG 26

End of program

This rung marks the END of program.

