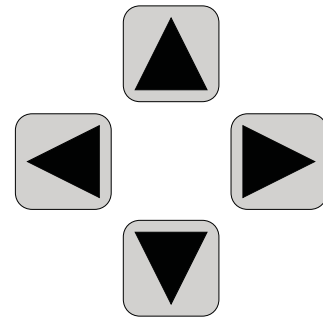
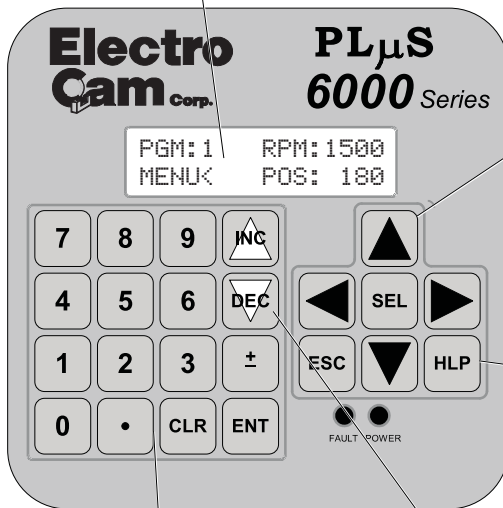


Keypad Overview

Figure 19—Keypad Keys and Corresponding Functions

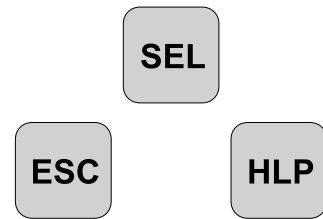
Main Screen

- Shows Active Program, RPM, and Position and Group # if applicable.
- Flashing cursor points to menu.
- Press **SEL** key to enter Menu Tree (Fig. 20) and initiate programming.



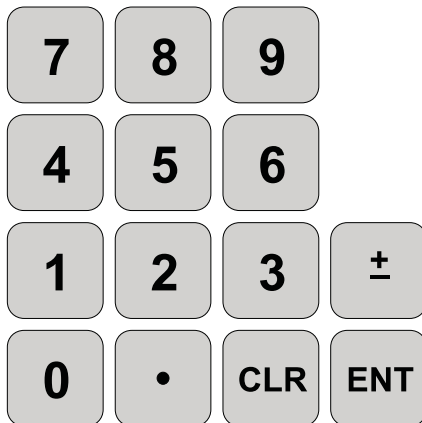
Cursor Keys

- Scroll through Menu Tree (Fig. 20).
- Move around **within a screen**.
- Scroll through setpoints.



ESC, SEL, HLP Keys

- **ESC** exits from current menu level to previous menu, or aborts numeric entry.
- **SEL** enters a new menu level or toggles a value.
- **HLP** shows help regarding menu selection and what keys to press. **Use this key if unsure what to do.**



INC, DEC Keys

- Increment or decrement a value **within a field**.
- Hold for rapid scrolling of value.

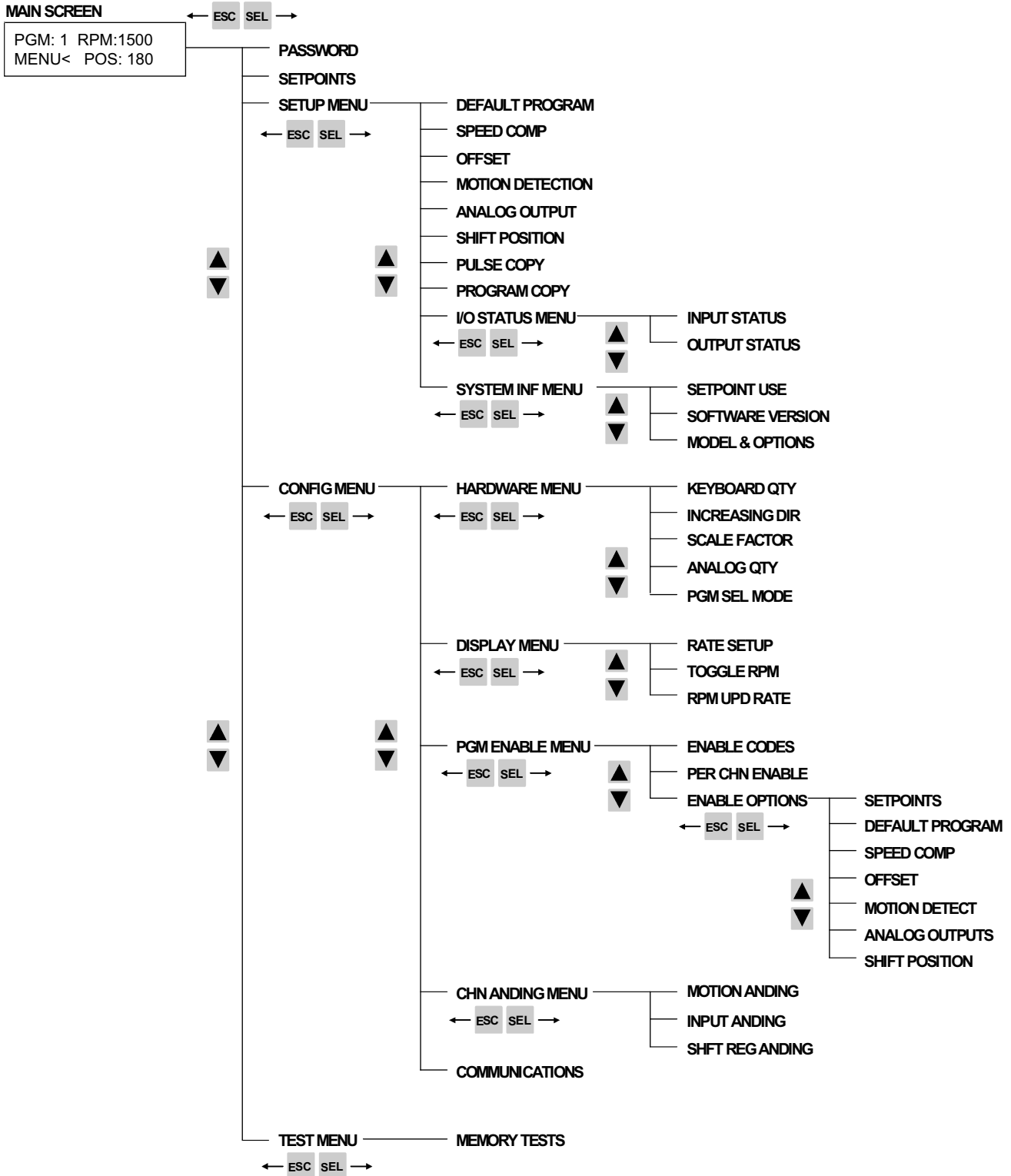
Numeric Keys

- Input numeric values within a field.
- **ENT must be pressed to enter the value**; entry will flash until ENT is pressed.
- **CLR** will backspace within an entry prior to pressing ENT.
- **±** will convert a positive number to a negative number, or vice versa.

Menu Tree

Figure 20—PS-6244 Menu Tree

- Press SEL to move from Main Screen into Menu Tree.
- Functions are listed alphabetically in Section 3 of this manual starting on page 3-4.



Initial Programming

Bench Test

To test the PS-6244 prior to installing it, do the following:

1. Plug output modules into the controller beginning with Position 1 on the 6244-24-M17, or Position 17 on the 6244-24-X16M09. See Figure 9.
2. Connect an encoder. See Figure 16.
3. Connect the keypad/display to the controller. See Figure 12.
5. Set the **keypad** DIP switch to address "0" and termination "on," as shown in Figure 13. Set switches 6 and 7 on the **controller** DIP switch to "on," also shown in Figure 13.
5. Use two jumper wires to enable Master Level programming as shown in Figure 12. Connect one jumper from "+" of the keypad terminal block to "C." Connect the other jumper from "-" to "E1." These jumpers will permit access to the entire menu tree shown in Figure 20.
6. Connect DC input power.

When experimenting with the controller, note that the LED on an output module will light when that output channel is turned on. By hand-turning the encoder shaft and watching the module LED's, you can observe the effects of programming setpoint values. Remember that on a PS-6244-24-X16M09, outputs 1-16 are transistor outputs. To activate the LED on a module installed in Position 17, enter the setpoint values into Output Channel 17.

Machine Setup

After installing the PS-6244 on a machine, program the following set-up information into the controller before attempting any other programming:

<u>Information</u>	<u>Menu Selection</u>	<u>Page</u>
Direction of Rotation	INCREASING DIR	3-10
No. of Keypads	KEYBOARD QTY	3-12
No. of Analog Outputs	ANALOG QTY	3-5
Offset	OFFSET	3-15

Once this information is entered, setpoints can be established and modified as described on page 3-22.

Analog Output

Menu Path MAIN SCREEN **SEL** ▼ to SETUP MENU **SEL** ▼ to ANALOG OUTPUT **SEL**

Purpose Analog output signals are linearly proportional to the encoder RPM. Two types of analog output modules are available: 0-10 VDC and 4-20 mA. This function assigns Offset and High RPM values to output positions for analog modules.

Screen

```

ANALOG MODULE: 1<
OF: 20 HI: 1500
  
```

— Analog Module Number
— Analog High RPM
) Analog Offset

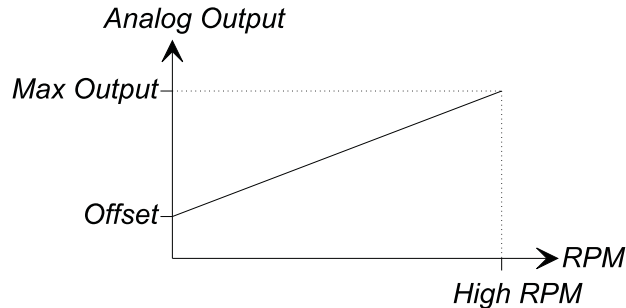
Module Number The following table shows the relationship between the analog module number on the screen and the module position on the controller back. See Figure 9 for an illustration of analog module positions.

Model	Module #1 On Screen	Module #2 On Screen
PS-6244-17	Output #17 ¹	Output #16 ²
PS-6244-25	Output #25 ¹	Output #24 ²

¹ Dedicated to analog control.
² Will accept either an analog or an AC/DC module.

- Analog characteristics can be programmed for Modules #1 and #2 even if no analog modules are physically mounted on the controller. Programming can be done first, and modules mounted later.
- To program Offset and High RPM for Module #2, be sure ANALOG QTY is set to “2.” If ANALOG QTY is set to “1,” programming for Module #2 will not be available.
- When two analog outputs are used, the two outputs can have different values for Offset and High RPM.

High RPM Analog High RPM is the encoder speed at which full scale analog output will occur. It is programmed in whole RPM. When this speed is reached, the analog output signal level will be at full scale (10 VDC or 20 mA). Increasing speed beyond the High RPM will **not** increase the analog output beyond full scale.



(continued)

Analog Output (cont'd)

Offset

Analog Offset is the analog signal level that will be output when the encoder is at zero RPM. This allows the minimum analog signal to be greater than zero volts or 4 mA. Because the analog output module has 4096 increments (12 bits) of signal level available, the offset is specified as the number of increments of signal that should be output at zero RPM. Calculate Analog Offset values as follows:

For 0-10 VDC: $(\text{Minimum Signal}/10) \times 4096$

Example: For a 2 VDC minimum signal; Offset = $(2/10) \times 4096 = 819$

For 4-20 mA: $((\text{Minimum Signal} - 4)/16) \times 4096$

Example: For a 5 mA minimum signal; Offset = $((5-4)/16) \times 4096 = 256$

See Also

OUTPUT STATUS

Analog Quantity

Menu Path

MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL** HARDWARE MENU **SEL**
▼ to ANALOG QTY **SEL**

Screen



ANALOG
QTY: 1< ————— *Number of Analog Outputs*

Purpose

This screen displays the number of analog outputs that will be programmed into the controller.

The controller can have one or two analog outputs, and each can be offset and scaled by different values. See ANALOG OUTPUT for details.

Programming

Use the numeric keys to enter “1” or “2” analog channels. An analog output module is required to generate an analog output signal.

See Also

ANALOG OUTPUT
OUTPUT STATUS

Communications

Menu Path

MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL**
▼ to COMMUNICATIONS **SEL**

Purpose

The Communications function sets the communications type, **controller** address, and baud rate for communicating with a host computer.

Communications Type: RS-232 or RS-485

TYPE: 485	ADR: 1<	Address: 0-255
BAUD: 9600		Baud Rate: 4800, 9600, 19.2Kb, 38.4Kb

Type

Use SEL to toggle between RS-232 and RS-485 communications.

Address

The address must be unique for each controller installed on a network. This address is used by a host computer running PLSNet software to identify and send information to a particular controller. A PLS controller will ignore incoming information if the address field of the communication packet does not match the address of the controller.

The address set through COMMUNICATIONS takes affect only when the DIP switch shown in Figure 13 is set to an address value of zero. Whereas the DIP switches can set a maximum address of "7," the COMMUNICATIONS function can establish addresses ranging from 0-255.

Use the numeric keys and ENT to program the address.

Baud Rate

Use SEL to toggle between the available baud rates. The baud rate must match that of the host computer. Available baud rates are:

4,800, 9,600, 19,200, 38,400

Effective with Software Versions 1.97 and higher, the communications screen has been revised as shown below:

TYPE: 232	ADR: 1<
TRM: ON	BR: 9600

Termination Setting

The termination setting should be ON if TYPE is set to RS-232, or if TYPE is set to RS-485 and only one PS-6244 controller is in the multi-drop network. **Setting the termination to OFF in these configurations may cause inaccurate RPM readings.**

If multiple PS-6244 controllers are connected in an RS-485 network, termination should be set to OFF on one and only one PS-6244 controller.

The termination setting in this screen is independent of all DIP switch settings. Use the SOFTWARE VERSION function to determine version number.

Default Program

Menu Path MAIN SCREEN **SEL** ▼ to SETUP MENU **SEL** DEFAULT PROGRAM **SEL**

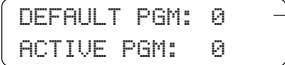
Background The PS-6244 controller can store up to 48 programs in its memory. The **Default Program** is the program that controls the output channels when there are no hardware input signals on terminals 9-13 of TB 1, Figure 7.

The **Active Program** is the program number that is currently controlling the output channels. If there are program select inputs on TB 1, those inputs will determine the Active Program, and the Default Program will be ignored. If no hardware inputs are active, the Default Program will become the Active Program.

For installations where the program select inputs on TB 1 are not used, the Default Program will always be the Active Program.

This function displays the current Default Program and allows you to select a different one.

Screen

 — *Enter new Default Program through Numeric Keypad, then press ENT.*

Programming Use the numeric keys and ENT to enter or modify the Default Program.

WARNING

If hardware input signals are used to select the Active Program, and those signals are lost due to a malfunction, the Default Program will activate. To prevent sudden changes in machinery operation that may damage equipment or injure personnel, program the Default Program with settings that will not cause harm in the event of sudden activation.

See Also PGM SEL MODE

Enable Codes

Menu Path

MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL**
▼ to PGM ENABLE MENU **SEL** ENABLE CODES **SEL**

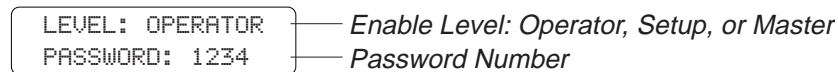
Background

The PS-6244 has three levels of programming access: Operator, Setup, and Master in order of increasing capabilities. Figure 21 lists the menu functions that can be programmed under the various levels of access.

Programming levels can be activated, or “enabled,” by entering a password on the keypad, or by activating Terminals E1 or E2 on the back of the keypad as shown in Figure 12. The first two rows of Figure 21 show which methods can be used to enable the various levels of programming access.

Screen

This screen is used to establish the numbers that will be used as passwords to enable the Operator, Setup, and Master levels.



Use the SEL key to toggle between enable levels.

Use the numeric keys, followed by ENT to assign codes.

Operation

- Each programming level can have only one code. That code is stored in the controller and applies to all keypads connected to that controller.
- If a code is entered into a keypad that has a programming enable terminal energized, the access level will be the highest of the two.
- If one keypad in a two-keypad system is enabled, the other keypad will continue to operate in the “Normal Display” mode.
- If both keypads in a two-keypad system are enabled, each keypad will operate at the programming level enabled on it. For example, if Operator Level is enabled on Keypad 1, and Setup Level is enabled on Keypad 2, Keypad 1 will operate at the Operator Level and Keypad 2 will operate at the Setup Level.

See Also

PER CHN ENABLE
ENABLE OPTIONS
PASSWORD

Enable Codes (cont'd)

Figure 21—Programming Access Levels for Various Menu Items

	Programming Level			
	Normal Display	Operator	Setup	Master
Can Be Enabled By...				
Keypad Terminal	---	Yes, E2	No	Yes, E1
Password	---	Yes	Yes	Yes
Menu Item Access				
Password	Enter	Enter	Enter	Program
Setpoints	View	Program ¹	Program	Program
Setup Menu				
Default Program	View	Program ¹	Program	Program
Speed Comp	View	Program ¹	Program	Program
Offset	View	Program ¹	Change	Program
Motion Detect	View	Program ¹	Program	Program
Analog Output	View	Program ¹	Program	Program
Shift Position	View	Program ¹	Program	Program
Pulse Copy	View	View	Program	Program
PGM Copy	View	View	Program	Program
I/O Status Menu				
Input Status	View	View	View	View
Output Status	View	View	View	View
System Info Menu				
Setpoint Use	View	View	View	View
Software Version	View	View	View	View
Model & Options	View	View	View	View
Config Menu				
Hardware Menu				
Keyboard Qty	---	---	---	Program ²
Increasing Dir	---	---	---	Program
Scale Factor	---	---	---	Fixed
Analog Qty	---	---	---	Program
Pgm Sel Mode	---	---	---	Program
Display Menu				
Rate Setup	---	---	---	Program
Toggle RPM	---	---	---	Program
RPM Upd Rate	---	---	---	Program
Pgm Enable Menu				
Enable Codes	---	---	---	Program
Per Chn Enable	---	---	---	Program
Enable Options				
Setpoints	---	---	---	Program
Default Program	---	---	---	Program
Speed Comp	---	---	---	Program
Offsets	---	---	---	Program
Motion Detect	---	---	---	Program
Analog Output	---	---	---	Program
Shift Position	---	---	---	Program
Chn ANDing Menu				
Motion ANDing	---	---	---	Program
Input ANDing	---	---	---	Program
Shft Reg ANDing	---	---	---	Program
Communications	---	---	---	Program
Test Menu				
Memory Tests	---	---	---	Run

¹ Can be programmed only if specified through PER CHN ENABLE and ENABLE OPTIONS.

² KEYBOARD QTY can be programmed only through the keypad whose address is "0." See Figure 14.

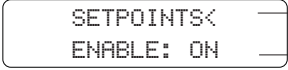
Enable Options

Menu Path

MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL**
▼ to PGM ENABLE MENU **SEL** ▼ to ENABLE OPTIONS **SEL**

Purpose

The Enable Options screen controls Operator Level access to SETUP MENU programming as indicated in Figure 21, note 1.



```
SETPOINTS<
ENABLE: ON
```

SETPOINTS or SETUP MENU screen.

Scroll through choices with UP and Down cursor keys.

*OPERATOR ENABLE: ON/OFF
(Toggle with SEL key)*

This screen lists the various items in the SETUP MENU, and allows you to turn Operator access to those items on or off.

IMPORTANT

Access to the “on” items will be available only for those output channels that have been turned ON in PER CHN ENABLE.

Programming

Press the Up Cursor and Down Cursor keys to select the function you wish to change. Press the SEL key to turn Operator access ON or OFF.

Setup Menu Items

Access can be turned on or off for the following SETUP MENU items:

SETPOINTS
DEFAULT PROGRAM
SPEED COMP
OFFSET
MOTION DETECT
ANALOG OUTPUTS
SHIFT POSITION

See Also

PER CHN ENABLE

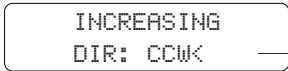
Increasing Direction

Menu Path

MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL** HARDWARE **SEL**
▼ to INCREASING DIR **SEL**

Purpose

The Increasing Direction screen displays the direction of encoder rotation (CW or CCW as viewed from the shaft end) that will cause the position display to increase in value.



```
INCREASING
DIR: CCW<
```

Direction of resolver shaft rotation (viewed from shaft end) that will cause the position display to increase in value.

This is normally set so the position value increases as the machine turns in its forward direction.

Changing Direction

Press SEL to toggle the value of increasing direction. The new value will begin flashing. Press the ENT key to confirm your selection.

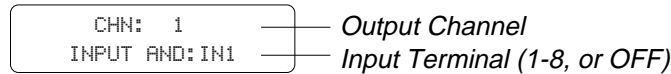
Input ANDing

Menu Path

MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL**
▼ to CHN ANDING MENU **SEL** ▼ to INPUT ANDING **SEL**

Background

Terminals 1 through 8 of TB 3, Figure 7, can accept hardware input signals from sensors or PLC's. By ANDing an output channel with one of these terminals, the output channel will be "on" only when a signal is present on that terminal AND the setpoints programmed for that output channel are "on."



Programming

Use the INC and DEC keys, or the numeric keypad and ENT to select an output channel.

Use the SEL key to select input terminals 1 through 8, or to turn Channel ANDing "off" for that output channel. IN1 = Input Terminal 1, IN2 = Input Terminal 2, and so on.

Operation

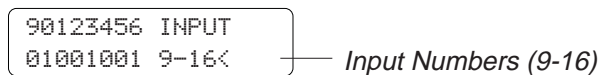
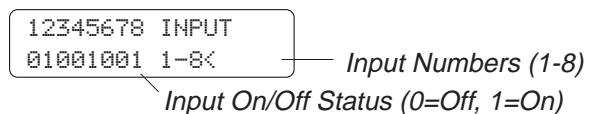
- Any number of output channels can be ANDed to a single input terminal.
- Input ANDing, Shift Register ANDing, and Motion ANDing can be combined for any given output channel.
- When Input ANDing is activated for a channel, it will apply to that channel in all programs.

Input Status

Menu Path

MAIN SCREEN **SEL** ▼ to SETUP MENU **SEL** ▼ to I/O STATUS **SEL**
▼ to INPUT STATUS **SEL**

The input status screen displays the On/Off status of the DC inputs on Terminal Blocks TB 9 and TB 11, Figure 7.



Inputs are numbered 1 through 16, but only 8 inputs are shown at one time. The On/Off status is shown under the input number; 0=Off, 1=On.

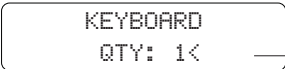
Selecting Inputs

You may view inputs 1-8 or 9-16. Press the SEL key to toggle between the two groups of inputs.

Keyboard Quantity

Menu Path MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL** HARDWARE MENU **SEL**
KEYBOARD QTY **SEL**

Purpose The Keyboard Quantity screen shows the number of keypads the controller will communicate with.

 *Number of keyboard/display units attached to controller*

The controller will attempt to establish communication with as many keypads as are programmed through this screen. Keypads are assumed to be addressed sequentially, starting at address “0” as shown in Figure 14.

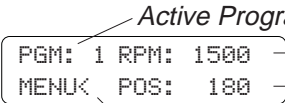
Keypad “0” Only You can change the number of keypads shown in KEYBOARD QTY only from the keypad whose address is “0.”

IMPORTANT

If KEYBOARD QTY is set to “2,” but only one keypad is physically connected, Menu Tree operation will be very slow. Change KEYBOARD QTY to “1” to restore normal Menu Tree speed.

Main Screen

On power-up, or after five minutes of keypad inactivity, the controller will display the main screen.

 *Active Program*
Machine Speed
Machine Position = Shaft Position + Offset
To enter Menu Tree, press SEL when cursor is here

Active Program The PS-6244 can store up to 48 programs of setpoints. The “Active Program” is the program currently controlling the output channels.

If hardware inputs are being used to select the Active Program, the display will indicate the program selected by the inputs.

If hardware inputs are not used, or if all hardware inputs are off, the Active Program will be the Default Program specified through the DEFAULT PROGRAM function.

For information on using hardware inputs to select the Active Program, see “Controller Input Wiring” in Section 2.

Machine Speed When the machine is moving, the Machine Speed is displayed in user selectable units of RPM (revolutions per minute), BPM (bags per minute), or CPM (cartons per minute). Machine Speed is displayed as a value which is 1X, 2X, or 3X the encoder RPM. See RATE SETUP for details.

Machine Position Machine Position indicates encoder position. The number of increments depends on the encoder model.

Machine Position is displayed only when the encoder speed is below the TOGGLE RPM speed. At higher speeds, Machine Position will be blank. See TOGGLE RPM for programming details.

 *Machine position not shown above toggle RPM*

Entering the Menu Tree To enter the Menu Tree from the Main Screen, move the cursor to “MENU” and press the SEL key.

Memory Tests

Menu Path

MAIN SCREEN **SEL** ▼ to TEST MENU **SEL** ▼ to MEMORY TESTS **SEL**

Purpose

This menu selection provides three functions that allow you to clear programmed values from the controller. An additional function tests the controller's watchdog timer.

Screen



Programming

To perform one of the memory test functions, enter the function number using the numeric keys and press SEL.

Function 7000

Clears all setpoints and configuration settings from the controller's EEPROM. After clearing the setpoints, the controller will reload the factory default settings listed in the Appendix.

Function 7001

Clears all configuration settings from the controller's EEPROM. These include all of the programming performed through the Setup Menu and Config Menu on the menu tree, Figure 20. When finished, the controller will reload the factory default settings listed in the Appendix.

Function 7002

Clears all setpoints from the controller's EEPROM. These include any on/off setpoints programmed through SETPOINTS. All other settings will remain intact.

Function 7998

Watchdog Timer Test. The "Watchdog Timer" monitors the operation of the controller's microprocessor and shuts the controller down if any internal malfunction is detected. If the Watchdog Timer fails, the controller may continue to operate. However, any subsequent malfunctions or noise-induced irregularities may go undetected, and the controller may begin to operate erratically.

To test the Watchdog Timer, run Function 7998. If the controller's Watchdog Timer is working properly, the controller will reset. If Function 7998 does not reset the controller, the Watchdog Timer has failed. Replace the controller immediately and return the faulty unit to the factory.

! IMPORTANT

If a controller fails the Watchdog Timer test fails, do not continue to operate the controller. Although the controller may appear to be functioning normally, any internal malfunction may cause erratic operation, possibly activating outputs at the wrong point in the machine cycle. Such erratic operation may damage products and machinery, and injure machinery operators.

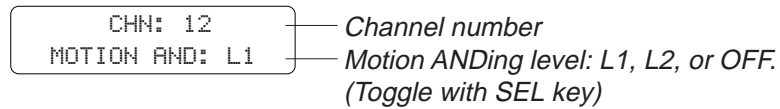
Motion ANDing

Menu Path MAIN SCREEN **SEL** ▼ to CONFIG MENU **SEL** ▼ to CHN ANDING MENU **SEL** MOTION ANDING **SEL**

Purpose This function is used to tie the operation of output channels to the Motion Detection levels programmed through MOTION DETECTION. Each output channel may be ANDed with either Motion Detection level. If an output is Motion ANDed, it will turn on only when the encoder RPM is in the range specified for that Motion Detection level, AND the setpoints programmed for that channel are “on.”

Outputs that must always operate, regardless of machine speed, should **not** be ANDed with a Motion Detection level.

Screen This screen displays the channel number and the Motion Detection level for Motion ANDing: L1, L2, or OFF. The channel will not be Motion ANDed if the enable is OFF.



Programming Select a new channel by pressing the INC/DEC keys, or through direct numeric entry followed by ENT.

Press the SEL key to toggle the ANDing to L1, L2, or OFF.

- Operation**
- Any number of output channels can be ANDed to a single Motion Detection level.
 - Motion ANDing, Input ANDing, and Shift Register ANDing can be combined for any given output channel.
 - When Motion ANDing is activated for a channel, it will apply to that channel in all programs.

Motion Detector An output channel can be used as a motion detector by programming it to be on at “1” and off at “1,” and then ANDing it with the desired Motion Level. This will turn the output on constantly as long as the machine speed is within the specified Motion Level range.

See Also MOTION DETECTION