

C H A P T E R ⑤

6000 Series Command Summary and Application Design

Chapter Objectives

The information in this chapter will enable you to:

- Program the 6200 or 6250 to control the RP240
- Customize the system to meet your requirements

PROGRAMMING NOTE

This chapter provides the 6000 Series programming information that is required to communicate with the RP240. If you are using an Extended X product (SX, ZX, or 500), refer to *Chapter ④ Extended X Command Summary and Application Design*.

6000 Series Command Summary

Command	Description
DCLEAR	Clear the display
DJOG	Enable/Disable RP240 Jog Mode
DLED	Turn RP240 LEDs On/Off
DPASS	Change RP240 Password
DPCUR	Position Cursor
DREAD	Read RP240 Data from Numeric Keypad
DREADF	Read RP240 Function Keys
DVAR	Display Variable on RP240 LCD
DWRITE	Write Text to RP240 LCD

Description 6000 Series Command Format

The following is a definition of the format fields for the 6000 Series commands.

① DCLEAR	② Clear Display	③ Product	Rev
		6200	1.0
④ Type	Display (RP240) Interface	6250	1.0
⑤ Syntax	<!>DCLEARin/a		
⑥ Units	n/a		
⑦ Range	i = 0 (clear all lines), 1 (clear line 1), or 2 (clear line 2)		
⑧ Default	n/a		
⑨ Response	n/a		
⑩ See Also	DLED, DPASS, DPCUR, DVAR, DWRITE		

Field Number	Field Description
①	Mnemonic Code: This field contains the command's mnemonic code.
②	Full Name: This field contains the command's full name.
③	Valid Product & Revision: This field lists the 6000 Series products and the revision of each product when this command was incorporated. If the command does not apply to that particular product, the Rev is specified as n/a.
④	Type: This field contains the command's type. Since we are working with the RP240, this field will always display <i>Display (RP240) Interface</i> .
⑤	Syntax: The proper syntax for the command is shown here. The specific parameters associated with the command are also shown.
⑥	Units: This field describes what unit of measurement the parameter (b, d, i, r, or t) in the command syntax represents.
⑦	Range: This is the range of valid values that you can specify for an argument (or any other parameter specified).
⑧	Default: The default setting for the command is shown in this field. A command will perform its function with the default setting if you do not provide a value.
⑨	Response: Some commands allow you to check the status of the command. In the example above, entering the DCLEAR command by itself will result in an error message. The example responses provided are based on the default error level, Error Level 4, established with the ERRLVL command in the <i>6000 Series Software Reference Guide</i> .
⑩	See Also: Commands related or similar to the command described are listed here. Refer to the 6000 Series Software Reference Guide for additional information.

RP240 X Language Command Listing

DCLEAR	Clear Display	Product	Rev
Type	Display (RP240) Interface	6200	1.0
Syntax	<!>DCLEARi	6250	1.0
Units	n/a		
Range	i = 0 (clear all lines), 1 (clear line 1), or 2 (clear line 2)		
Default	n/a		
Response	n/a		
See Also	DLED, DPASS, DPCUR, DVAR, DWRITE		

The Clear Display (DCLEAR) command clears lines (as specified with *i*) of the RP240 display:

After clearing a line, the cursor will be reset to the beginning of that line (or to the beginning of line 1 if all lines are cleared).

DJOG	Enable RP240 Jog Mode	Product	Rev
Type	Display (RP240) Interface	6200	1.0
Syntax	<!>DJOG	6250	1.0
Units	n/a		
Range	b = 0 (disable) or 1 (enable)		
Default	n/a		
Response	0408 DJOG: *DJOG1		
See Also	JOG, JOGA, JOGAD, JOGVH, JOGVL		

The DJOG command allows you to branch into the RP240 front panel jog mode from within your user-defined program, adjust the position of the axes, and then return to program execution.

The DJOG1 command enables the RP240 jog mode on all axes. Once the RP240 jog mode is enabled, you can use the RP240 arrow keys to jog individual axes. Unlike the JOG command, command processing is suspended after the DJOG1 command is issued. Jogging is performed with the parameters set with the Jog Acceleration (JOGA) and Jog Deceleration (JOGAD) commands.

To disable the RP240 jog mode, press the MENU RECALL key or issue the immediate !DJOG0 command. Upon exiting the RP240 jog mode, the RP240's display is cleared.

To have the jog mode continually enabled during program execution, you must use jog inputs and the JOG command.

DLED	Turn RP240 Display LEDs On/Off	Product	Rev
Type	Display (RP240) Interface	6200	1.0
Syntax	<!>DLED	6250	1.0
Units	n/a		
Range	b = 0 (off) or 1 (on)		
Default	n/a		
Response	DLED: *DLED1101_0001		
See Also	DCLEAR, DPASS, DPCUR, DVAR, DWRITE		

The DLED command controls the state of the 8 programmable LEDs on the RP240. *It is legal to substitute a binary variable (VARB) for the DLED command*

Example	Description
> DLED11XXXX01	Turn on LEDs 1, 2, and 8; turn off LED 7; leave LEDs 3,4,5, and 6 unchanged
> VARB1=b10101010	Set bits 1, 3, 5 & 7 low, and bits 2, 4, 6, & 8 high
> DLED(VARB1)	Turn on LEDs 1, 3, 5 & 7; turn off LEDs 2, 4, 6, & 8

DPASS	Change RP240 Password	Product	Rev
Type	Display (RP240) Interface	6200	1.0
Syntax	<!>DPASS<i>	6250	1.0
Units	i = integer of up to 4 characters		
Range	1 - 9999		
Default	6200 or 6250 (depending on if you have a 6200 or 6250)		
Response	DPASS: *DPASS6200		
See Also	DCLEAR, DLED, DPCUR, DVAR, DWRITE		

The DPASS command changes the RP240 password. If the default password is not changed by the user, there will be no password protection.

Example	Description
> DPASS1234	New password = 1234

DPCUR	Position Cursor	Product	Rev
Type	Display (RP240) Interface	6200	1.0
Syntax	<!>DPCURi,i	6250	1.0
Units	1st i = line number, 2nd i = column		
Range	line number = 1 or 2, column = 0 - 39		
Default	n/a		
Response	n/a		
See Also	DCLEAR, DLED, DPASS, DVAR, DWRITE		

The DPCUR command changes the location of the cursor on the RP240 display. The RP240 lines are numbered from top to bottom, 1 to 2. The columns are numbered left to right, 0 to 39.

Example	Description
> DPCUR2,15	Position cursor on line 2, column 15

[DREAD]	Read RP240 Data	Product	Rev
Type	Display (RP240) Interface	6200	1.0
Syntax	See below	6250	1.0
Units	n/a		
Range	n/a		
Default	n/a		
Response	n/a		
See Also	DREADF, DVAR, DWRITE, VAR		

The Read RP240 Data (DREAD) command allows you to store numeric data entered in from the RP240's keypad into a variable. As the user presses RP240 numeric keys, the data will be displayed on the RP240 starting at the location equal to the current cursor location + 1 (for a sign bit):

VAR1=DREAD Wait for RP240 numeric entry (terminated with the ENTER key), then set VAR1 equal to that value.

Additionally the DREAD command can be used as a variable assignment within another command that is expecting numeric data:

A(DREAD),5.0 Wait for RP240 numeric entry (terminated with the ENTER key), then set axis #1 acceleration to that value and set axis #2 acceleration to 5.0.

The DREAD command cannot be used in an expression such as VAR5=4+DREAD or IF(DREAD=1).

[DREADF] Read RP240 Function Key

Product **Rev**

6200 1.0
6250 1.0

Type Display (RP240) Interface
Syntax See below
Units n/a
Range n/a
Default n/a
Response n/a
See Also DREAD, DVAR, DWRITE, VAR

The Read RP240 Function Key (DREADF) command allows you to store numeric data entered in from a RP240 function key into a variable. Function key 1 (F1) = 1, F2 = 2, etc., and MENU RECALL (F0) = 0.

Example

```
> VAR1=DREADF  
  
> IF(VAR1=5)  
GOx1  
NIF
```

Description

Wait for RP240 function key entry, then set VAR1 equal to that value
If function key 5 was hit then ...
Start motion on axis #2
End if statement

DVAR Display Variable on RP240

Product **Rev**

6200 1.0
6250 1.0

Type Display (RP240) Interface
Syntax <!>DVARi,<i>,<i>,<i>
Units See below
Range n/a
Default See below
Response n/a
See Also DREAD, DREADF, DWRITE, VAR

The Display Variable on RP240 (DVAR) command is used to display a numeric variable on the RP240's LCD at the current cursor location:

1st i = Variable number [Range 1 - 150]
2nd i = Number of whole digits displayed (left of decimal point) [Range 0 - 9]
3rd i = Number of fractional digits displayed (right of decimal point) [Range 0 - 8]
4th i = Sign bit: 0 = no sign displayed, 1 = display + or -

Example

```
> VAR2=542.14  
> DVAR2,6,3,1  
> DVAR2,3,1,0  
> DVAR2,3,,1
```

Description

Assign the value 542.14 to variable #2
Display variable #2 as +000542.140
Display variable #2 as 542.1
Display variable #2 as +542

DWRITE Write Text on RP240

Product **Rev**

6200 1.0
6250 1.0

Type Display (RP240) Interface
Syntax <!>DWRITE"message"
Units n/a
Range Message can be ≤ 70 characters (may not use characters ", \ or :)
Default See below
Response n/a
See Also DCLEAR, DLED, DPASS, DPCUR, DVAR

The Write Text on RP240 (DWRITE) command displays a message on the RP240's LCD starting at the current cursor location. A message is a character string of up to 70 characters in length. The characters within the string may be any characters except quote ("), backslash (\), and colon (:). Strings that have lower-case letters will be converted to upper case prior to display (see example).

Example

```
> DCLEAR0  
> DPCUR1,12  
> DWRITE"Enter Number of Parts"  
> VAR1=DREAD
```

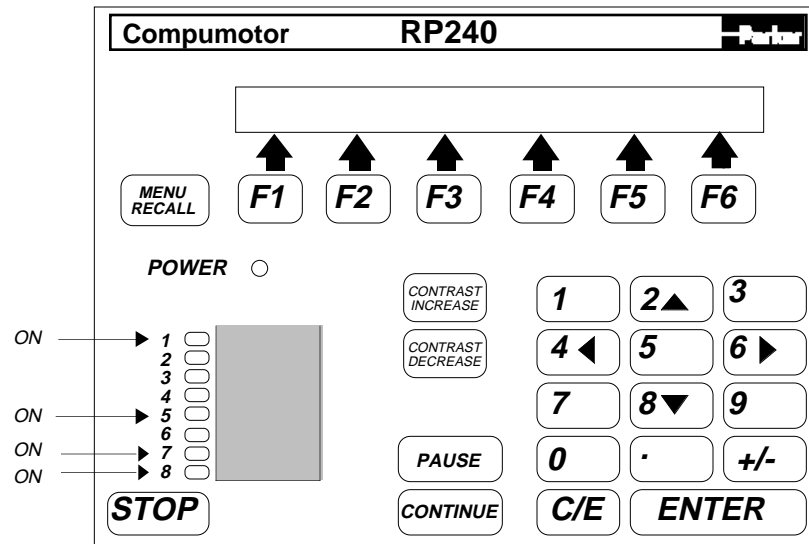
Description

Clear RP240 display
Move cursor to line 1, column 12
RP240 will display: ENTER NUMBER OF PARTS
RP240 waiting for data entry

Prompting an Operator or Displaying Information

In many motion control applications, the most important requirement is the operator interface. Presenting information to an operator in a desired format is often difficult at best. The RP240 has two visual indicators to help present information to the operator. The simplest indicator is the 8 LEDs on the panel. These LEDs can be turned on or off with the **DLED** command. The LEDs can be used in conjunction with the outputs to show the state of an output, or they can be used to show status, such as motor moving, specific sequence in progress, etc.

IF a **DLED10001011** command is issued, the LEDs shown below would be illuminated. These eight LEDs can be labeled, using the slide-in card provided, to represent cycle status, output status, etc.



The other indicator is the two line, 40-character LCD display. The Position Cursor (**DPCUR**) command allows the user to program the location of the cursor on the LCD display. The Write Text Data on RP240 Display (**DWRITE**) command allows the user to place text, beginning at the current cursor location, on the LCD display.

6000 Series Command Programming Example

A user wants his operator to see the message `ENTER THE CYCLE COUNT`. He wants this message placed on line two, starting after two spaces in from the left. He also wants the user to be able to enter the cycle count three spaces after the message. Below are the steps required to accomplish this.

The cursor does not appear on the display. The cursor is displayed when the `VARn=DREAD` command is used.

Step 1

Issue the `DPCUR2,2` command



Cursor Location

Step 2

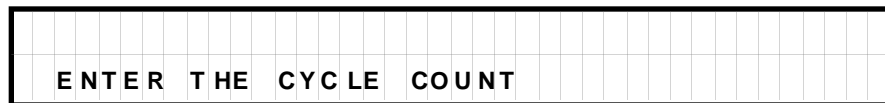
Issue the `DWRITE"ENTER THE CYCLE COUNT"` command



Cursor Location

Step 3

Issue the `DPCUR2,25` command

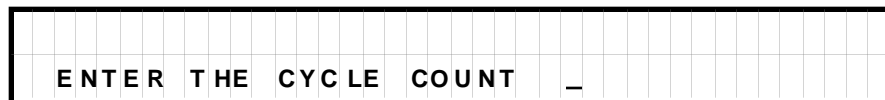


Cursor Location

Now that we have provided the operator with the prompting message, how do we obtain the information? The Read RP240 Data (`VARn=DREAD`) or Read RP240 Function Keys (`VARn=DREADF`) commands provide the answer. The `VARn=DREAD` command will allow the operator to enter information. The numbers, as entered, will be displayed at the current cursor location.

Step 4

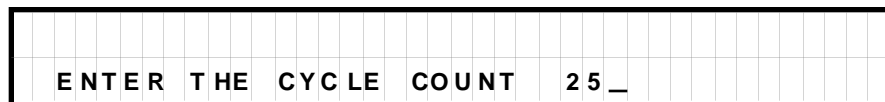
Issue the `VAR1=DREAD` command



Cursor Location

Step 5

Press a 2, followed by a 5

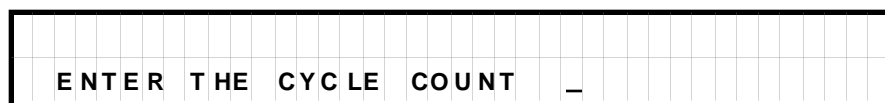


Cursor Location

If the wrong value is entered press the `C/E` key and re-enter the value.

Step 6

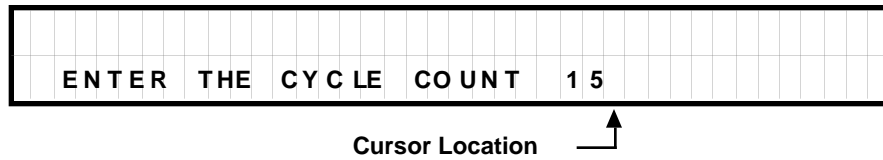
Press the `C/E` key



Cursor Location

Step 7

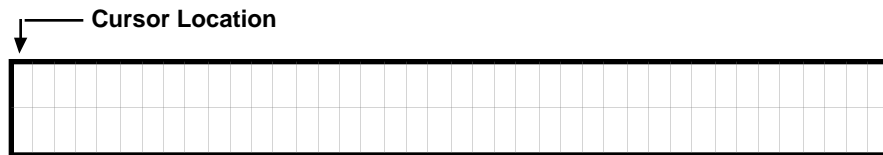
Press a 1, followed by a 5, followed by an ENTER



After the ENTER key is pressed, the value 15 will be stored in variable 1. Use the VARn=DREADF command to enter information based on function key input. Steps 8 through 14 illustrate this capability.

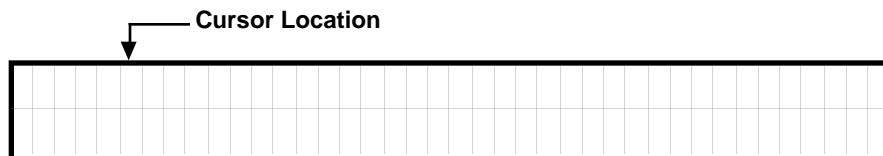
Step 8

DCLEARØ command is issued.



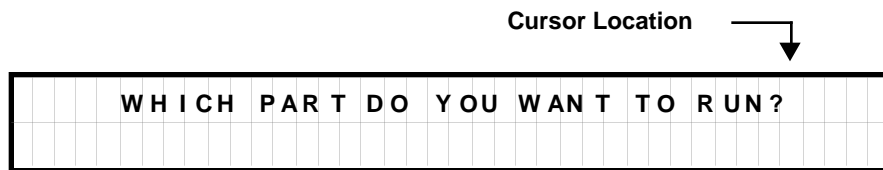
Step 9

Issue the DPCUR1,5 command



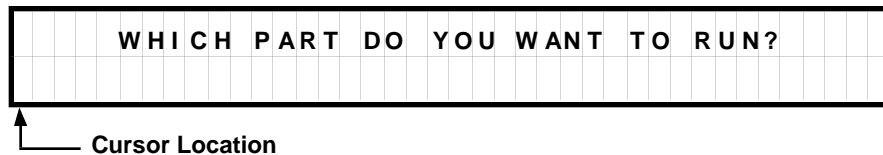
Step 10

Issue the DWRITE"WHICH PART DO YOU WANT TO RUN?" command



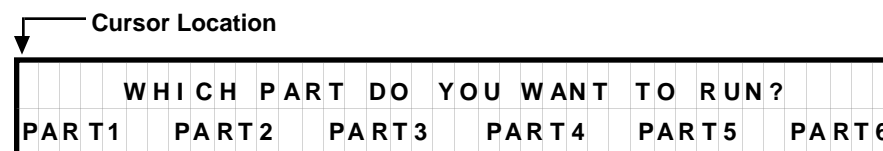
Step 11

Issue the DPCUR2,Ø command



Step 12

Issue the DWRITE"PART1 PART2 PART3 PART4 PART5 PART5 PART6" command. This text serves as an operator menu for the function keys.



Step 13

Issue the VAR2=DREADF command

The VARn=DREADF command waits for a function (F1 - F6) key or the MENU RECALL key to be pressed. When one of these keys is pressed, the number corresponding to the function key will be transmitted from the RP240 to the 6000 Series product. Function keys 1—6 will return the values 1—6. The MENU RECALL key will return a zero.

Step 14

Press F1

After the F1 key is pressed, the RP240 will transmit the value 1 to the 6000 Series product. This value will be stored in variable 2.

