Bit Control Mode

7

In This Chapter. . . .

Overview

Bit Control Mode permits you to use keys on the DV-1000 keypad for individual control of eight I/O bits. The types of I/O bits that may be controlled are X, Y, and C. The GX type is also available on DL405 CPUs only. For most applications, C type (control relays) are the best choice.

The following figure shows an expanded view of the PLC's V-memory space. A DV-1000 setup parameter in V-memory points to a system I/O data word. It may point to an X, Y, C, or GX word location (we use control relays (C) as an example). The DV-1000 keypad will control the lower 8 bits of the word. At powerup the DV-1000 reads this Bit Control setup parameter. Then, whenever you select Bit Control Mode the DV-1000 keypad controls (writes) the state of the eight I/O bits.
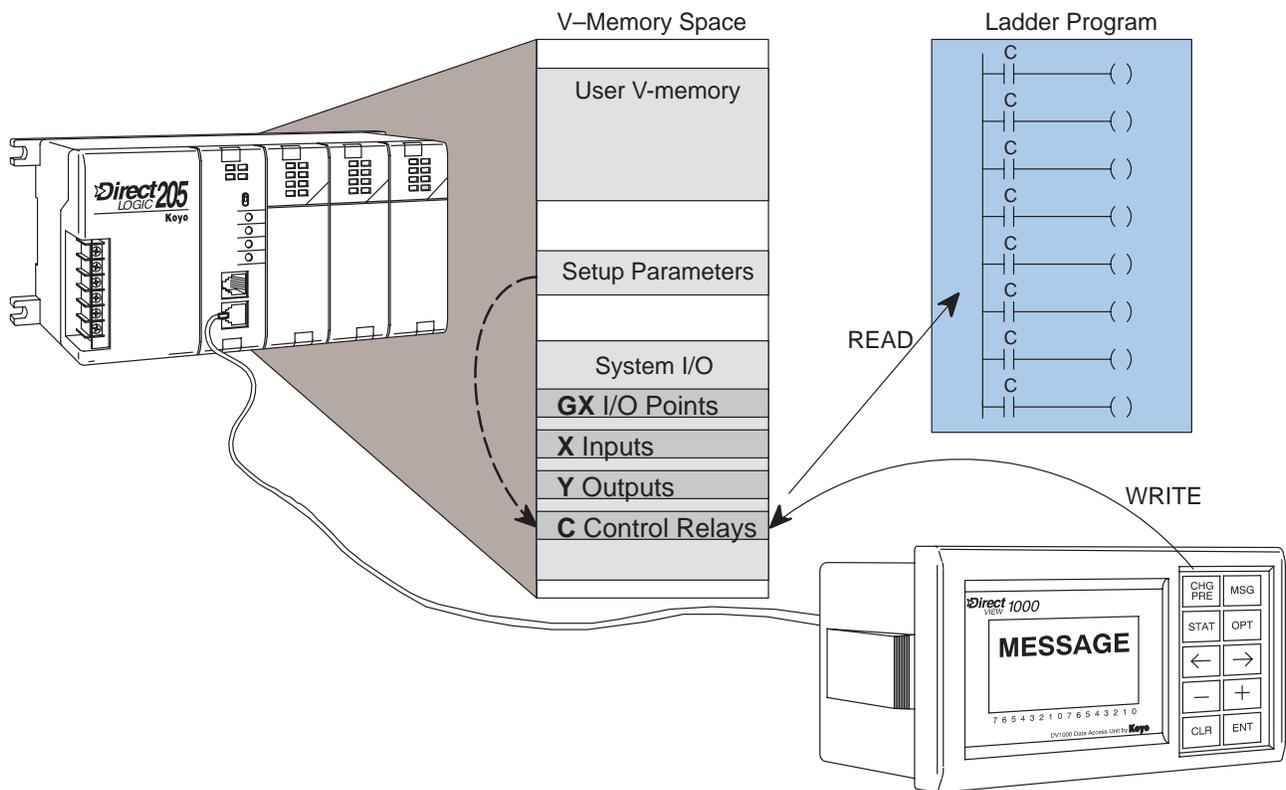
The drawing above shows how the DV-1000 keypad can control eight bits in V-memory. However, for anything meaningful to happen something else has to read the bits and act on their status. This may occur in two ways:

- For X, C, and GX input types, ladder logic must reference the bit addresses as an input contact.

- For Y and GX output types, an output module point must exist at the addresses. In this case the ladder program must **not** reference the same output bits, in order to avoid a conflict.

WARNING: Bit Control is designed for debug purposes only. Major machine functions such as Start, Stop, Run, Jog, etc. need dedicated electrical controls with labels. The DV-1000's Bit Control Mode does not give a constant indication that the normal keypad functions have changed! Misuse of this tool can lead to damage of equipment or risk of serious injury to personnel.

Keypad Function in Bit Control

In Bit Control Mode, the keys marked with index numbers in the figure below assume new functionality. They operate as **momentary** push-buttons, normally off. When pressed, each of the eight keys will turn on its associated I/O bit. They map to either X, Y, C, or GX types. *When the key is released, the I/O bit automatically turns off.* Press the **Clear** Key to exit Bit Control Mode. The **Enter** key is not used.

Accessing Bit Control

To select Bit Control Mode, go to the options menu by pressing the **Options** Key. Bit Control is the first of three items you may select, so the cursor will already be positioned over item one.

PRESS [OPT]

```
        O P T I O N
1   B I T   C O N T R O L
2   P A S S W O R D
3   S H O W   E R R / M S G
```

Press **Enter** to select Bit Control. The display message will then ask for a confirmation of your choice by asking "Do you want Bit Control Mode?" At this point, when you press **Enter** the setup error message will be displayed as shown below. In the next section we show how easy it is to choose proper setup parameters.

PRESS [ENT]

```
D O   Y O U   W A N T   B I T
C O N T R O L   M O D E ?
Y E S : P U S H   E N T   K E Y
N O   : P U S H   C L R   K E Y
```

PRESS [ENT]
(without setup program)

```
* S E T   U P   E R R O R *
C H E C K   V A L U E   I N
V   7 6 2 5
```

Setup Parameters for Bit Control

The following table lists the subset of the DV-1000 setup parameters which pertain to Change Preset Mode. The parameter at V7625 selects the address of the bit-controlled word in system I/O space. The parameter at V7626 selects the powerup default mode.

V-Memory Location	Setup Parameter Description
V7625	Bit Control I/O Pointer
V7626	Powerup Default Mode

Now we have to choose the I/O address of the bits we want to control. Refer to the columns in the following tables which correspond to the type of CPU in your system. Since our PLCs map their discrete I/O bits into V-memory, we have to choose the corresponding address.

I/O Type	DL130, DL230		DL240		DL250, DL350	
	Discrete Address (octal)	Word Address (octal)	Discrete Address (octal)	Word Address (octal)	Discrete Address (octal)	Word Address (octal)
Input Points	X0 – X177	V40400 – V40407	X0 – X477	V40400 – V40423	X0 – X777	V40400 – V40437
Output Points	Y0 – Y177	V40500 – V40507	Y0 – Y477	V40500 – V40523	Y0 – Y777	V40500 – V40537
Control Relays	C0 – C377	V40600 – V40617	C0 –C377	V40600 – V40617	C0 -C1777	V40600 – V40677
Global Inputs	N/A	N/A	N/A	N/A	N/A	N/A

I/O Type	DL430		DL440		DL450	
	Discrete Address (octal)	Word Address (octal)	Discrete Address (octal)	Word Address (octal)	Discrete Address (octal)	Word Address (octal)
Input Points	X0 – X477	V40400 – V40423	X0 – X477	V40400 – V40423	X0 – X1777	V40400 – V40477
Output Points	Y0 – Y477	V40500 – V40523	Y0 – Y477	V40500 – V40523	Y0 – Y1777	V40500 – V40577
Control Relays	C0 –C737	V40600 – V40635	C0 – C1777	V40600 – V40677	C0 – C3777	V40600 – V40777
Global Inputs	GX0 – GX777	V40000 – V40037	GX0 – GX1777	V40000 – V40077	GX0 – GX2777	V40000 – V40137
					GY0 – GY2777	V40200 – V40377

For example, suppose we assign Bit Control to the eight control relays C0 to C7. The table above gives the address of these as V40600, which we enter at V7625. Finally, we select Message Mode with Bit Control by entering "0012" in V7626. The following program does the parameter setup for these choices.

Parameter Setup: Bit Control

a:\bitctrl1.prj

DV-1000 Examples

SP0

First Scan Only

| LDA |
| O40600 |

Load octal address 40600 into the accumulator. V40600 is the location of C0 to C17.

| OUT |
| V7625 |

Output this address to V7625, the location of the setup parameter for Bit Control.

| LD |
| K12 |

Load the BCD constant K12 into the accumulator. It is the code to select Bit Control and Message Mode. This is optional, as you may select a different powerup mode.

| OUT |
| V7626 |

Output this constant to V7626, the location of setup parameter for the default powerup mode.

Bit Control
Mode

Bit Control
Mode

Using the Keypad To Do Bit Control

**Selecting
Bit Control and
Status Modes**

This section requires the parameter setup program of the previous section to be loaded in your CPU. If you have done so, we're ready to see first-hand how bit control works from the keypad. The setup parameter you have loaded for V7625 points to control relays C0 to C7, located at V40600. Now, enter Status Display Mode to see bit control work. Then select variable type "C".

PRESS STAT ⇨

		X		0	0									
X		1	0									
X		2	0									
X		3	0									

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0

PRESS + + + ⇨

		C		0	0									
C		1	0									
C		2	0									
C		3	0									

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0
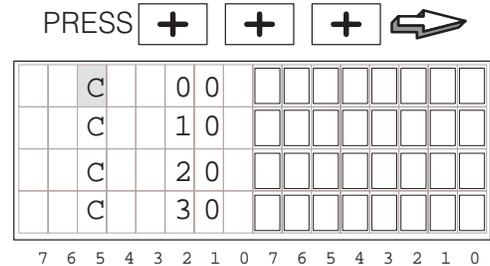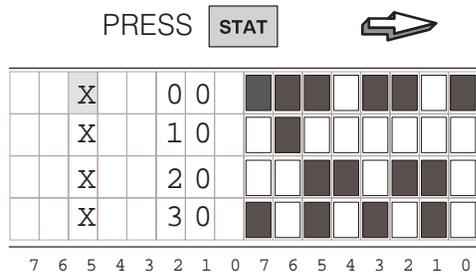
NOTE: when using some CPUs, the plus (+) only needs to be pressed once.

With Status Mode set up, now use the Options Menu to select Bit Control Mode.

PRESS OPT ⇨

			O	P	T	I	O	N				
1		B	I	T		C	O	N	T	R	O	L
2		P	A	S	S	W	O	R	D			
3		S	H	O	W		E	R	R	/	M	S	G

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0
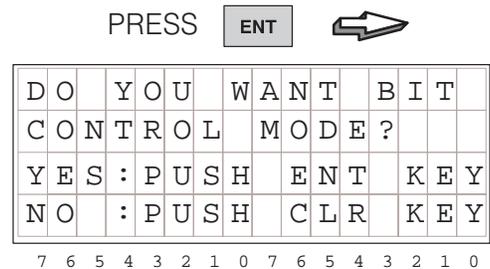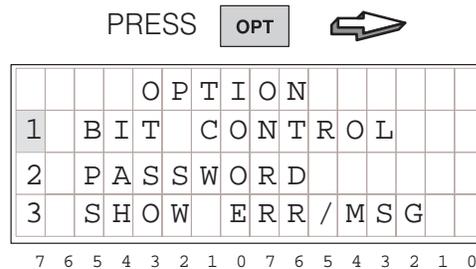
NOTE: Line 3 (SHOW ERR/MESG) does not apply to some CPUs.

PRESS ENT ⇨

D	O		Y	O	U		W	A	N	T		B	I	T
C	O	N	T	R	O	L		M	O	D	E	?		
Y	E	S	:	P	U	S	H		E	N	T		K	E	Y
N	O		:	P	U	S	H		C	L	R		K	E	Y

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0

(with setup program)
PRESS ENT ⇨

Y	O	U		A	R	E		I	N					
B	I	T		C	O	N	T	R	O	L		M	O	D	E

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0

(Automatic...) ⇨

		C		0	0									
C		1	0									
C		2	0									
C		3	0									

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0
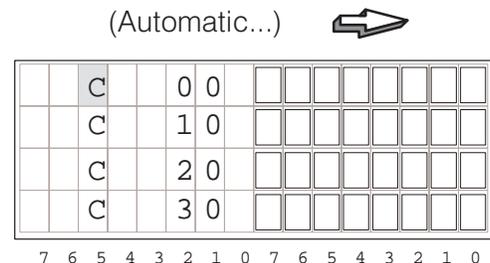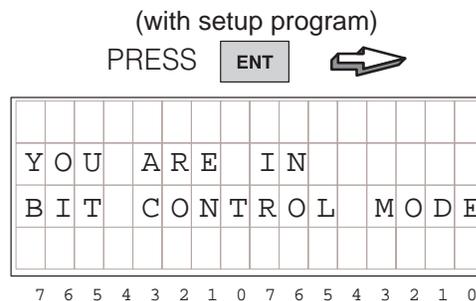
After selecting Bit Control, the Status Mode display automatically returns. *The keypad is now in Bit Control Mode, and the display is in Status Mode!* This permits us to observe changes in C0 to C7 in real time for Bit Control key actions. Note that the display cursor is absent now, because the keypad function has changed.

Keypad Bit Mapping

Now we can have a closer look at the status of the bits in V40600 during bit control. In the figure below, the keypad maps to bits 0 through 7 as shown.

V40600
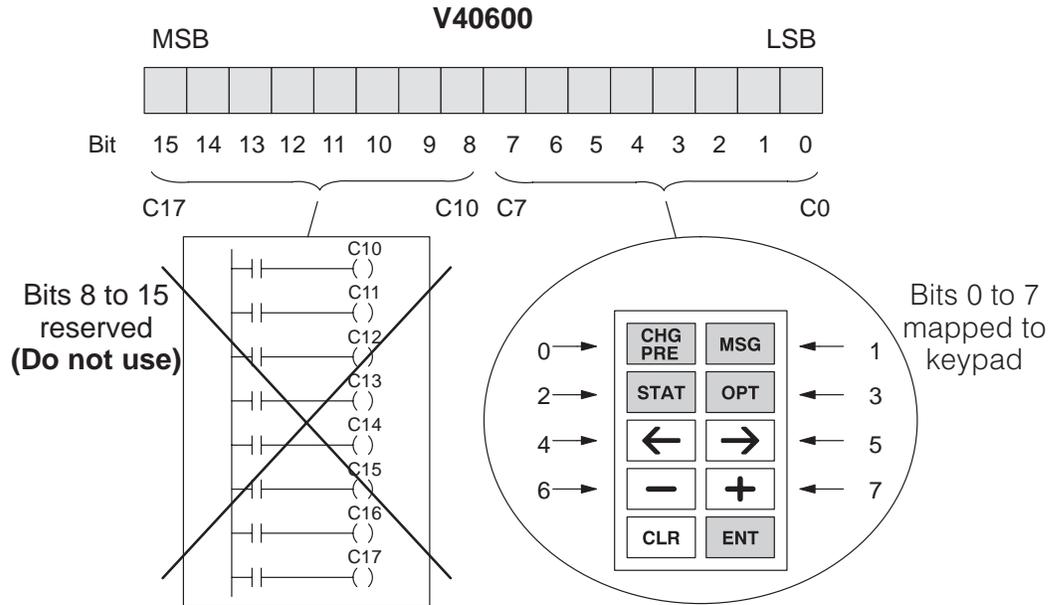
NOTE: Since the DV-1000 does word write operations, it writes zeros to bits 8 through 15 (C10 to C17). Therefore, avoid using these eight I/O points in your ladder program in order to avoid a conflict. **This holds true for any X, Y C, and GX I/O point word address pointed to by V7625.**

To observe Bit Control in action, follow the keystrokes in the following diagram. Notice the relative binary weighting of each key, and the normally-off momentary nature of each key switch.
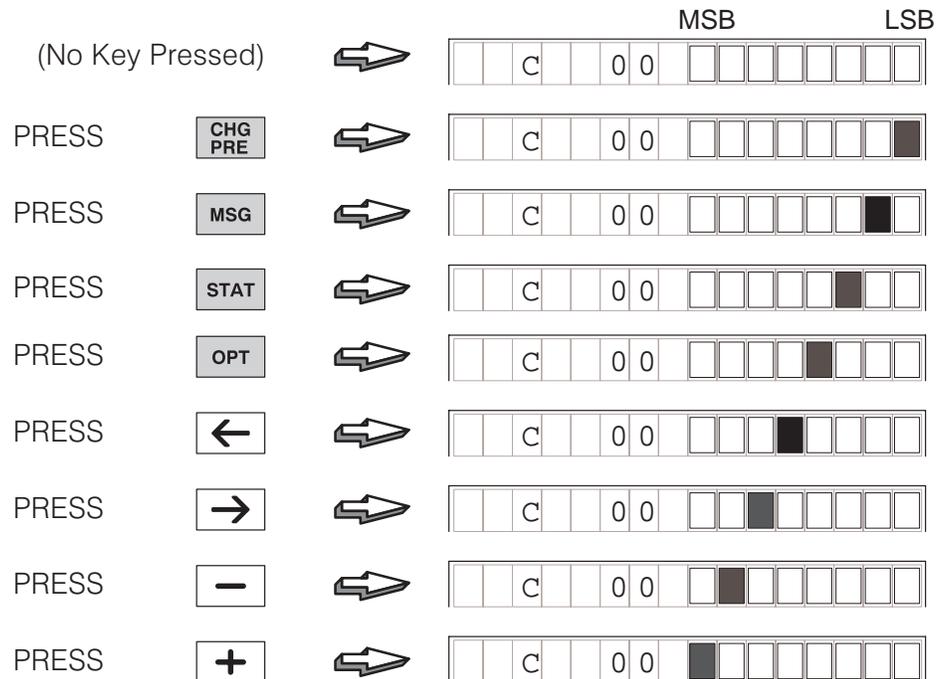
Exiting Bit Control Mode

While the keypad is in Bit Control Mode, the display may be in either Status Display, Message Display, or Change Preset Modes. When you want the keypad to resume normal function, press the **Clear** Key to exit Bit Control Mode.

PRESS [CLR]

D	O		Y	O	U		W	A	N	T		B	I	T
C	O	N	T	R	O	L		M	O	D	E	?		
Y	E	S	:	P	U	S	H		E	N	T		K	E	Y
N	O		:	P	U	S	H		C	L	R		K	E	Y

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0

Next, press the **Clear** Key a second time to confirm the exit. An exit message appears briefly. Then the display returns to the previous mode, and the keypad resumes its normal function associated with the display mode. In the previous section we were monitoring the status of C0 to C7 at address V40600. Notice that the cursor returns to indicate normal keypad functionality.

PRESS [CLR]

E	X	I	T		B	I	T								
C	O	N	T	R	O	L		M	O	D	E				

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0

(Automatic...)

	C			0	0										
	C			1	0										
	C			2	0										
	C			3	0										

7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0

Bit Control Applications

I/O Debug

Bit Control Mode is most often used for debugging machines or processes. Using the setup parameter at V7625 we can configure Bit Control for X, Y, C, and GX types of I/O points. It's a good idea to plan the I/O points you want to use in Bit Control, and integrate it into the main ladder program. The main reason is that **Bit Control requests I/O points on. It is not a forced I/O feature!**

For example, consider the system shown below. Suppose we want to test output Y0 using Bit Control.

		8pt Input	8pt Input	16pt Input	16pt Output	16pt Output	16pt Output
○		X0 – X7	X10 – X17	X20 – X37	Y0 – Y17	Y20 – Y37	Y40 – Y57
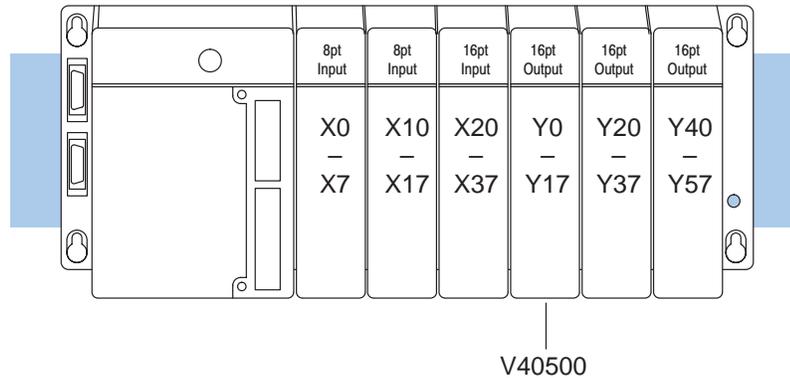
V40500

The I/O address of Y0 to Y17 is at V40500. The following program example sets up Bit Control Mode for Y0 to Y7. It shows Y0 being normally controlled by X0. However, **ladder logic will overwrite the DV-1000's requested on state of Y0 at the end of every scan, because Y0 is also referenced as an output coil in the program!** See the next example for the proper method to do this.

WRONG!

Parameter Setup: Bit Control
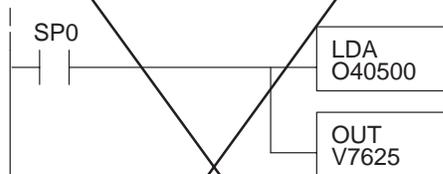
```
SP0
 | |                              LDA
                                  O40500          Load octal address 40500 into the accumulator. V40500 is
                                                   the location of Y0 to Y17.

                                  OUT
                                  V7625           Output this address to V7625, the location of the setup
                                                   parameter for bit control.
```

Main Program
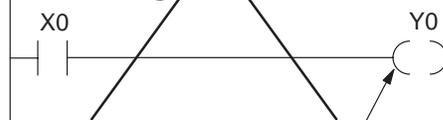
```
X0                          Y0
 | |                        ( )      Y0 is normally controlled by X0 in the application. It is also
                                     requested on during Bit Control, when the Change Preset
                                     Key is pressed.
```

0 →	CHG PRE	MSG	← 1
2 →	STAT	OPT	← 3
4 →	←	→	← 5
6 →	—	+	← 7
	CLR	ENT	
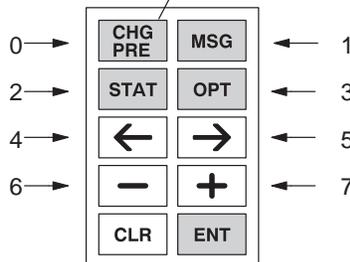
Instead of trying to bit control Y0 directly, we use a control relay and do a logical OR with the normal control logic for Y0. Then we set up Bit Control Mode for C0 to C7. Now the conflict is eliminated, because C0 is only referenced as an input in the program.

CORRECT!

Parameter Setup: Bit Control

SP0
LDA O40600

OUT V7625
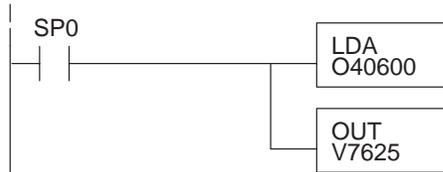
Load octal address 40600 into the accumulator. V40600 is the location of C0 to C17.

Output this address to V7625, the location of the setup parameter for bit control.

Main Program

X0   Y0

C0

Y0 is normally controlled by X0 in the application. It is also controlled by C0 which is requested on during Bit Control, when the Change Preset Key is pressed.

0 →	CHG PRE	MSG	← 1
2 →	STAT	OPT	← 3
4 →	←	→	← 5
6 →	−	+	← 7
	CLR	ENT	
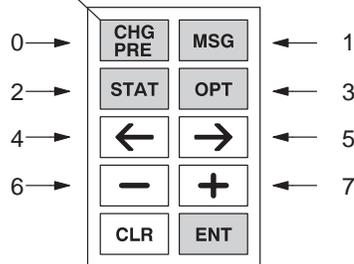
Bit Control With Message Display Mode

The ladder program in this example coordinates Bit Control keypad entries with Message Display output. The display announces the two modes as shown, and prompts you to press any bit control key. When any key is pressed, the message on the bottom line changes to name the key pressed.

```
B I T   C O N T R O L   M O D E
&   M E S S A G E   M O D E
P r e s s   K e y s   – – – – >
( n o   k e y   p r e s s e d )
7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0
```

PRESS [CHG PRE] ⇨

```
B I T   C O N T R O L   M O D E
&   M E S S A G E   M O D E
P r e s s   K e y s   – – – – >
C H G   P R E   K e y
7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0
```

PRESS [MSG] ⇨

```
B I T   C O N T R O L   M O D E
&   M E S S A G E   M O D E
P r e s s   K e y s   – – – – >
M S G   K e y
7 6 5 4 3 2 1 0 7 6 5 4 3 2 1 0
```

The ladder program has no means of forcing the display into Message Display Mode, nor the keypad into Bit Control Mode. However, these modes may be selected from the keypad, as well as programmed as the powerup default. The program creates the display output with ACON and MOVMC instructions. Load the program below, and place the CPU in run mode. Then power cycle the CPU, and it should enter Bit Control and Message Display Modes. Watch the bottom line of the display respond as you press each Bit Control key.

NOTE: This example contains certain instructions including LDLBL, DLBL, ACON, and MOVMC which are discussed in detail in Chapter 4. Refer to the the section "Using the ASCII Constant (ACON) Instruction" for more information.

a:\bitctrl2.prj

Setup Parameters for Bit Control and Message Mode

SP0

First scan only

LDA O40600	Load the octal address for V40600 into the accumulator. C0 through C17 maps to V40600.
OUT V7625	Output the address into V7625, the location of the bit control register. The bit control keys control C0 to C7.
LD K12	Load the constant K12 into the accumulator. K12 is the code for the powerup default modes Message Display with Bit Control.
OUT V7626	Output our powerup default code to V7626, the location of the Powerup Default setup parameter.
LDA O2100	Load the octal address for V2100 into the accumulator.
OUT V7624	Output the address into V7624, the location of the text data block pointer for Message Display Mode.

Bit Control Mode

(continued)

PLC*Direct*
DV-1000
Examples

a:\bitctrl2.prj

Top 2 Display Lines

| LD
K10 | Load the number of data locations, which is 16 (10 hex) words (two lines, for a total of 32 characters). |

| LD
K0 | Load the address offset. For nearly every MOVMC used for ACON data, there will be zero offset (use K0). |

| LDLBL
K1 | Read from the ACON following Data Label K1. |

| MOVMC
V2100 | Move data into V-memory starting at V2100. |

Third Display Line

| LD
K8 | Load the number of data locations, which is 8 words (one line, for a total of 16 characters). |

| LD
K0 | Load the address offset. For nearly every MOVMC used for ACON data, there will be zero offset (use K0). |

| LDLBL
K2 | Read from the ACON following Data Label K2. |

| MOVMC
V2120 | Move data into V-memory starting at V2120. |

V40600   V2000   C20
──┤≠├──────────────────────────(PD)
  SP0
  ──┤ ├──

Activate control relay C20 for 1 scan when the keypad's bit pattern at V40600 changes from the saved pattern at V2000.

| LD
VC0 | Load the current keypad bit pattern into the accumulator. |

| OUT
V2000 | Overwrite the saved bit pattern at V2000, which is one scan old. This prepares for the comparison again on the next scan. |

C20
──┤ ├──

| LD
K8 | The next several rungs with C20 contact execute for 1 scan when the keypad bit pattern changes. Load the constant K8 into the accmulator. |

| LD
K0 | Load the address offset. For nearly every MOVMC used for ACON data, there will be zero offset (use K0). |

C20   C0
──┤ ├──┤ ├──

| LDLBL
K3 | Read from the ACON following Data Label K3 if the CHG PRE Key is pressed. |

C20   C1
──┤ ├──┤ ├──

| LDLBL
K4 | Read from the ACON following Data Label K4 if the MSG Key is pressed. |

C20   C2
──┤ ├──┤ ├──

| LDLBL
K5 | Read from the ACON following Data Label K5 if the STAT Key is pressed. |

C20   C3
──┤ ├──┤ ├──

| LDLBL
K6 | Read from the ACON following Data Label K6 if the OPT Key is pressed. |

C20   C4
──┤ ├──┤ ├──

| LDLBL
K7 | Read from the ACON following Data Label K7 if the Arrow <– Key is pressed. |

(continued)

a:\bitctrl2.prj

DV-1000 Examples

| C20 | C5 | LDLBL K8 | Read from the ACON following Data Label K8 if the Arrow –> Key is pressed. |

| C20 | C6 | LDLBL K9 | Read from the ACON following Data Label K9 if the Minus (–) Key is pressed. |

| C20 | C7 | LDLBL K10 | Read from the ACON following Data Label K10 if the Plus (+) Key is pressed. |

| C20 | VC0 | K0 | = | LDLBL K11 | Read from the ACON following Data Label K11 if no key is pressed. |

| C20 | MOVMC V2130 | Move data into V-memory starting at V21300. |

(END) — Mark the end of the main program with an End Coil.

DLBL K1 — **Data for Top 2 Display Lines**

The Data Label boxes mark the beginning of a data area containing ACON boxes. The constant in each box is the reference number for the text data which follows.

ACON
BIT CONTROL MODE& MESSAGE MODE

Use ASCII Constant (ACON) boxes to enter text characters directly from the keyboard.

spaces: 1   1   1   1   2

DLBL K2 — **Data for 3rd Display Line**

ACON
Press Keys ——>

Use ASCII Constant (ACON) boxes to enter text characters directly from the keyboard.

spaces: 1   1

DLBL K3 — **Data for Bottom Display (for each key)**

ACON
CHG PRE Key

spaces: 1   1   5

DLBL K4

ACON
MSG Key

spaces: 1   9

same

DLBL K5

ACON
STAT Key

spaces: 1   8

Bit Control Mode

(continued)

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DLBL
K6

Data for Bottom Display (for each key), cont'd

ACON
OPT Key

Use ASCII Constant (ACON) boxes to enter text characters directly from the keyboard.

spaces: 1   9

DLBL
K7

ACON
Arrow <– Key

spaces: 1   1   4

same

DLBL
K8

ACON
Arrow –> Key

spaces: 1   1   4

DLBL
K9

ACON
Minus (–) Key

spaces: 1   1   3

DLBL
K10

ACON
Plus (+) Key

spaces: 1   1   4

DLBL
K11

ACON
(no key pressed)

spaces:1   1

Multiplexed Bit Control

In some applications you may need bit control of more than 8 bits from the keypad. Using ladder logic, you can share (multiplex) the bit control keys among multiple outputs. Refer to the drawing below. For example, when the machine is in "Mode 0" the keypad's bit control maps to outputs Y0 through Y7. During "Mode 1" the keypad controls Y10 through Y17. In this way, eight keys are multiplexed among sixteen output points.
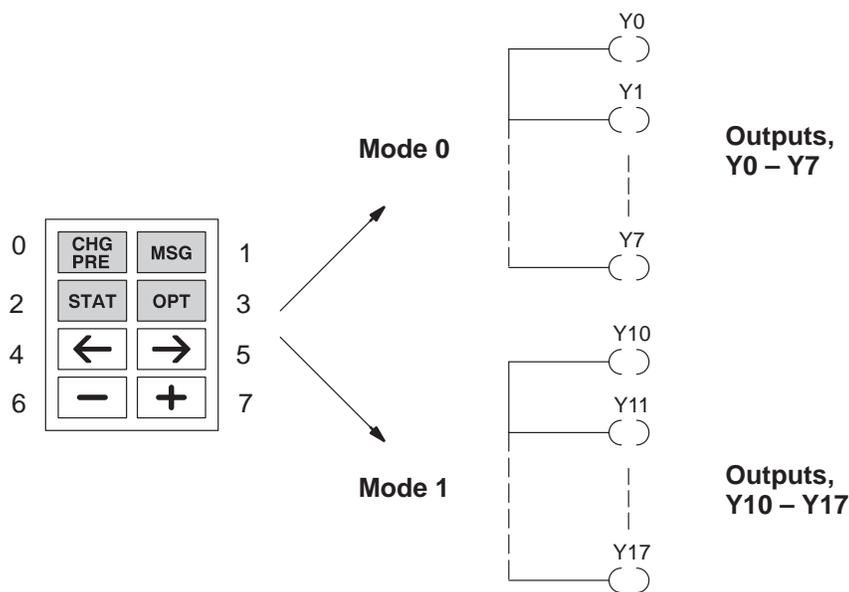
NOTE: The operator must be informed as to which mode is active before and during keypad use for bit control. One method is to use ladder logic to send a message to the DV–1000 display indicating which outputs are under bit control.

In this example, we will use the state of discrete input X0 to indicate the mode of the machine. X0 = OFF is Mode 0, and X0 = ON is Mode 1. The ladder logic program on the following page maps the bit control keys to control relay contacts C0 through C7 (see setup rung). The main program then uses X0 in conjunction with the control relays to control either the first or second bank of Y output points.

Load the example program in the CPU and place the CPU in Run Mode. You can use Status Display Mode to see the program work. Press the **Status** Key followed by the **Plus (+)** Key to view the status of Y output points. Then place the keypad in Bit Control Mode by pressing the **Options** Key and selecting Bit Control from the menu. When the status display returns, you can change between Mode 0 and Mode 1 using a discrete input at X0. Then observe the corresponding group of Y outputs.

Bit Control Mode

a:\bitctrl3.prj

DV-1000 Examples

Setup Parameters for Bit Control

SP0

| LDA |
| O40600 |

Load the octal address for V40600 into the accumulator. C0 through C17 maps to V40600.

First scan only

| OUT |
| V7625 |

Output the address into V7625, the location of the bit control register. The bit control keys control C0 to C7.

| LD |
| K3 |

Load the constant K3 into the accumulator. K3 is the code for the powerup default mode Status Display Mode.

| OUT |
| V7626 |

Output our powerup default code to V7626, the location of the powerup default setup parameter.

Main Program

```
 X0      C0                    Y0
─┤/├─────┤ ├─────────────────( OUT )

 X0      C1                    Y1
─┤/├─────┤ ├─────────────────( OUT )

 X0      C2                    Y2
─┤/├─────┤ ├─────────────────( OUT )

 X0      C3                    Y3
─┤/├─────┤ ├─────────────────( OUT )

 X0      C4                    Y4
─┤/├─────┤ ├─────────────────( OUT )

 X0      C5                    Y5
─┤/├─────┤ ├─────────────────( OUT )

 X0      C6                    Y6
─┤/├─────┤ ├─────────────────( OUT )

 X0      C7                    Y7
─┤/├─────┤ ├─────────────────( OUT )

 X0      C0                    Y10
─┤ ├─────┤ ├─────────────────( OUT )

 X0      C1                    Y11
─┤ ├─────┤ ├─────────────────( OUT )

 X0      C2                    Y12
─┤ ├─────┤ ├─────────────────( OUT )

 X0      C3                    Y13
─┤ ├─────┤ ├─────────────────( OUT )

 X0      C4                    Y14
─┤ ├─────┤ ├─────────────────( OUT )

 X0      C5                    Y15
─┤ ├─────┤ ├─────────────────( OUT )

 X0      C6                    Y16
─┤ ├─────┤ ├─────────────────( OUT )

 X0      C7                    Y17
─┤ ├─────┤ ├─────────────────( OUT )
```

When X0 is OFF, the machine is in Mode 0. In this mode we map the bit control keys to control outputs Y0 through Y7. **Note:** If using DL105 be sure CPU is initialized to make X0 operational.

SAME

When X0 is ON, the machine is in Mode 1. In this mode we map the bit control keys to outputs Y10 through Y17.

SAME

**Bit Control
Toggle Function**

The keypad in Bit Control Mode operates as momentary switches, as you may recall. A bit is on only when its corresponding key is pressed. This example features a small program which changes the momentary nature into a latching, or toggling function. *You can press a key once to turn on a bit, then press it again to turn off the bit!*

Key	PRESSED				
	RELEASED				

Toggle Function	ON			
	OFF			
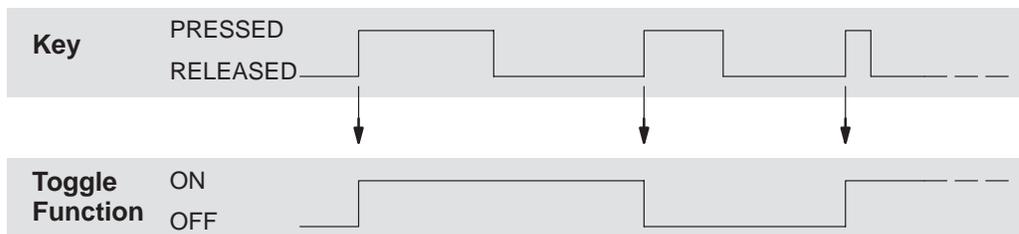
After loading the program below, place the DV-1000 in Status Display Mode. Then monitor the status of control relays C00 through C39 as shown below. The keypad is mapped to C0 through C7, and the corresponding toggled bits are from C20 to C27.

PRESS [STAT] [+] [+] [+] ⇦

Keypad bits

Toggled bits

1. Press "0" (CHG PRE). Notice that C0 and corresponding bit C20 both turn on.

2. Release "0" and notice that C0 turns off but C20 stays on.

3. Press "0" again to turn C20 off.
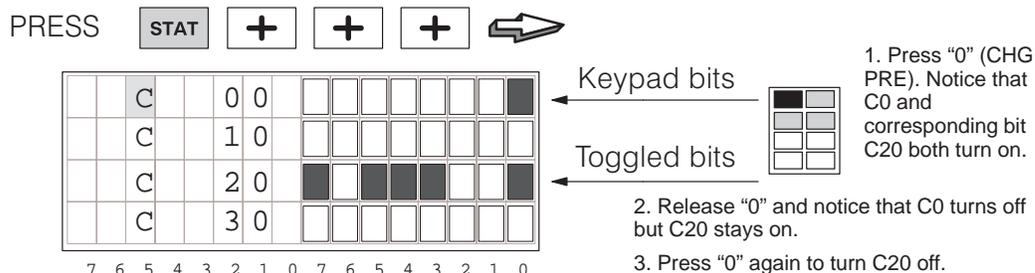
The keypad must be in Bit Control Mode to toggle the bits as shown above. Press the **Options** Key, select Bit Control, and the status display will return automatically.
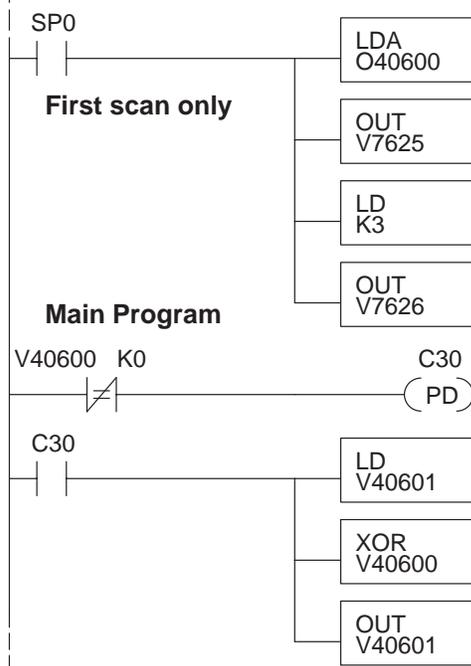
a:\bitctrl4.prj

Setup Parameters for Bit Control

SP0 — LDA O40600

Load the octal address for V40600 into the accumulator. C0 through C17 maps to V40600.

First scan only — OUT V7625

Output the address into V7625, the location of the bit control register. The bit control keys control C0 to C7.

LD K3

Load the constant K3 into the accumulator. K3 is the code for the powerup default mode Status Display Mode.

OUT V7626

Output our powerup default code to V7626, the location of the powerup default setup parameter.

Main Program

V40600 K0 C30 (PD)

Activate control relay C30 for 1 scan when any key is pressed on the keypad.

C30 — LD V40601

Load the contents of V40601 into the accumulator(C20 to C37). This is used as the toggle image register in this program.

XOR V40600

Do an exclusive OR function on the accumulator contents and the keypad image at V40600. This effectively does the toggle inversion for each bit.

OUT V40601

The XOR results are in the accumulator, and it is the new toggle bit image. Output this to V40601, replacing the old toggle image.

Chapter Summary

Now we have covered Bit Control Mode and demonstrated how to turn on specific I/O bits using the keypad.

**Summary of
Key Points**

We may summarize some of the key points we have learned about Bit Control Mode in this chapter:

- Bit Control Mode only applies to the keypad. The display can be in any one of the other three modes during Bit Control.

- The keypad operates as normally open, momentary switches during bit control.

- Only the lower eight bits of V-memory locations may be directly addressed by bit control.

- After selecting a V-memory location for bit control, do not use its upper eight bits (the DV-1000 overwrites these while updating the whole V-memory word).

- If ladder logic contains an output point that references the same address as the bit controlled register, a conflict exists. The PLC scan will overwrite the keypad request.

Now you have the necessary information to install and use your DV-1000!