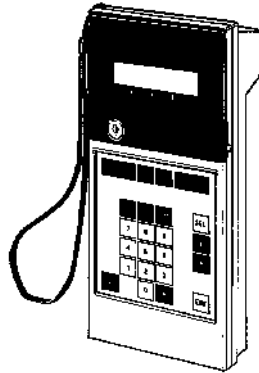


# Data Access Console

## Operation Guide

*Revised November 1992*



## **Notice:**

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify warnings in this manual. Always heed the information provided with them.

**DANGER!** Indicates information that, if not heeded, could result in loss of life or serious injury.

**Caution** Indicates information that, if not heeded, could result in minor injury or damage to the product.

## **OMRON Product References**

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation "Ch," which appears in some displays and on some OMRON products, means "word" and is abbreviated "Wd" in documentation.

## **Visual Aids**

The following headings appear in the left column of the manual to help you locate different types of information.

**Note** Indicates information of particular interest for efficient and convenient operation of the product.

**1, 2, 3...** Indicates lists of one sort or another, such as procedures, precautions, etc.

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## ***About this Manual:***

**Section 1** describes the main features of the Data Access Console (DAC) and provides an overview of the connection methods and PCs that the DAC can be used with.

**Section 2** provides basic information on the front-panel keys of the DAC, as well as information on DAC switches and switch settings.

**Section 3** lists and describes DAC operations in general and individually, providing key sequences, examples of displays for some likely key inputs, and limitations on usage of the operations.

**Section 4** tells how to install the DAC, including connections, dimensions, and panel-mounting procedures.

The **Appendices** provide a list of the standard models and complete model numbers, basic DAC specifications, and a table of the data area addresses for C-series PCs.

# SECTION 1

## Introduction

1-1	Features .....	2
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# 1-1 Features

## Versatility

The Data Access Console (DAC) can be used with all C-series PCs except the C20. It is easily connected to the C200H with a Connecting Cable or to other models via the C500-AP003 Programming Console Adapter.

## Online Access

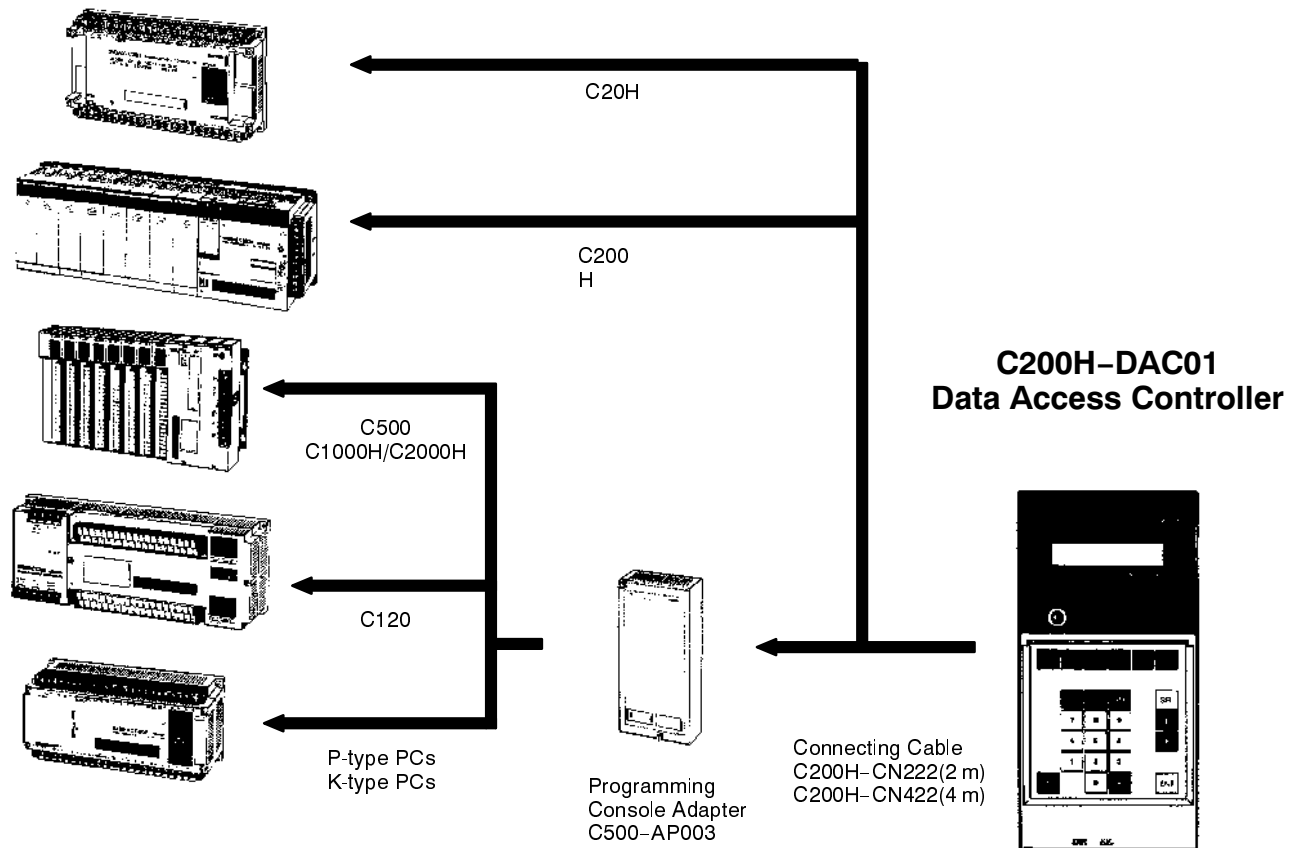
The DAC enables online monitoring or alteration of data in the TC, DM, IR, and SR areas, greatly simplifying the monitoring, debugging, or application of PC operation.

## Message Monitoring

When a Failure Alarm (FAL(06)), Severe Failure Alarm (FALS(07)), or Message (MSG(46) or LMSG(47)) instruction is used in programming, the message can be displayed on the DAC. Operations that have been initiated by ASCII codes used in the Message Instruction (MSG(46)) can be monitored or completed through the DAC. These operations include monitoring and alteration of timer and counter present and set values (PVs and SVs) as well as data in the DM, IR, and SR areas.

# 1-2 Configuration

All that is required to set up the DAC for operation is to connect it to the PC through a Connecting Cable or through a Connecting Cable and Programming Console Adapter.



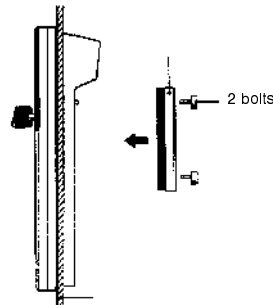
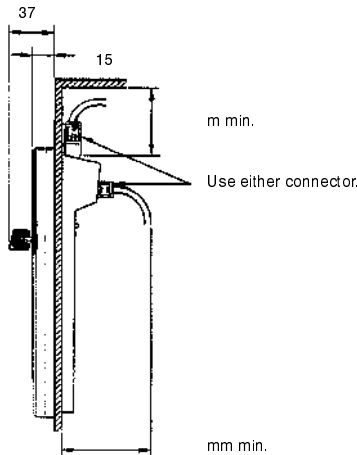
**Note** The C200H-DAC01 is incompatible with the C20K and with P-type PCs manufactured before October 1988 (bearing serial numbers before --X8).

### 1-3 Handling Precautions

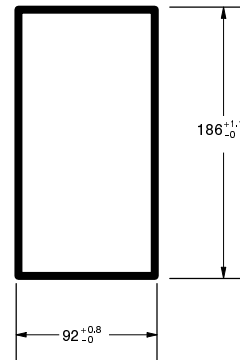
The Data Access Console is designed for an industrial environment, and it needs no special adjustment or care, but for proper performance, follow the guidelines below.

- Do not subject the DAC, particularly the keyboard and display, to extreme impact.
- Do not pull or twist the connecting cable excessively.
- While there are two connector terminals, use either one or the other. Both cannot be used simultaneously.
- When inserting the connector into the DAC terminal, be sure that there is an audible click indicating that the catch has engaged.
- When removing the connector, first release the catch by pinching the release levers on both sides of the connector housing, then remove the connector.
- Be sure that the ambient temperature is within the acceptable range, 0% to 45% C, especially when mounting the DAC within a panel.

Mounting Bracket  
C200H-ATT01



Installation hole dimensions  
(mm, conforms to DIN 43700)



**SECTION 2**  
**Installation**

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## 2-1 Connection to the PC

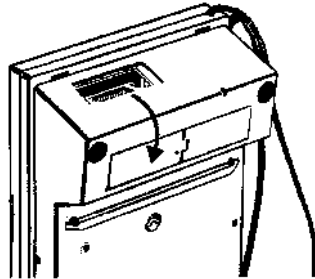
### Connecting Cables

Use the following cables when connecting to the C200H. When connecting to PCs other than the C200H, use the C500-AP003 Programming Console Adapter.

Model	Cable length
C200H-CN222	2 m
C200H-CN422	4 m

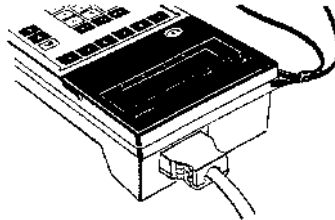
### DAC Connectors

There are two connectors available, one on the rear and one on the bottom of the DAC. Place the cover on the unused connector.



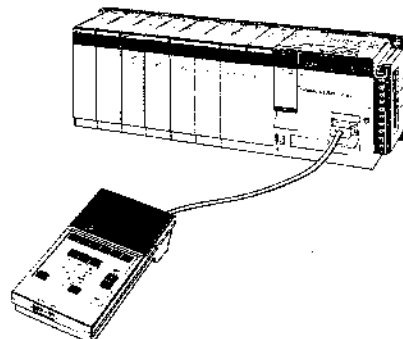
### Connector Catch

When inserting the cable, there should be an audible click, which is the sound of the catch locking in place. When disconnecting the cable, first release the catch by pinching the release levers on both sides of the connector housing, then remove the connector.



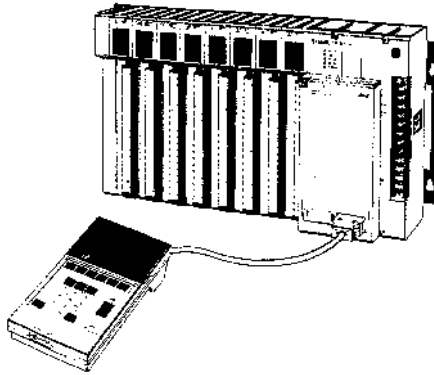
### Connection to the C200H

The DAC can be connected directly to the C200H with a cable.



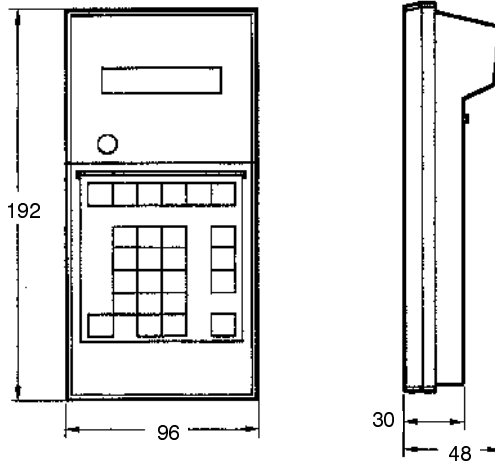
Connection to PCs other than the C200H

PCs other than the C200H are connected via the Programming Console Adapter.



2-2 Dimensions

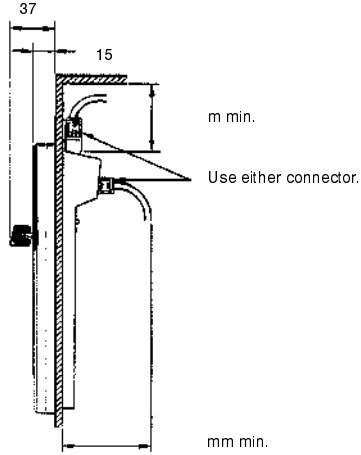
The following dimensions are in millimeters.



### 2-3 Panel Installation

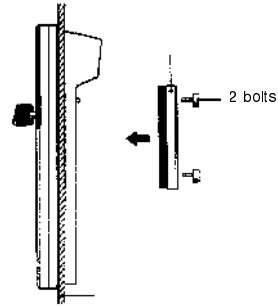
If the DAC is mounted in a switch box or other enclosure, be sure that there is ample space for the cable and connector, and that the temperature remains within the acceptable range, 0% to 45°C. Use the C200H-ATT01 Mounting Bracket.

Mounting Bracket  
C200H-ATT01

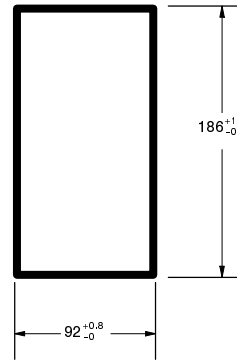


m min.  
Use either connector.

mm min.



Mounting hole dimensions  
(mm, conform to DIN 43700)



## SECTION 3

### Operations

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## 3-1 PC Modes

**Peripherals and PC Modes** When a PC is turned on and no Peripheral Device is connected to it, it will automatically enter the RUN mode. If a Peripheral Device is connected to a PC that is already on, then the PC will remain in the mode that it was in before the Peripheral Device was connected. If a PC is turned on and a Peripheral Device is already connected, then the Peripheral Device will determine the mode that the PC enters.

If the DAC is connected when the PC is turned on, then the PC will enter MONITOR mode when the DAC key switch is set to ON (Level 0) or OFF (Level 1).

If the Programming Console is connected when the PC is turned on, then the mode the PC will enter is determined by the mode switch on the Programming Console.

If a Peripheral Interface Unit, a PROM Writer, a Printer Interface Unit, or a Floppy Disk Interface is connected when the PC is turned on, then the PC will enter PROGRAM mode, unless the PC is a C200H.

The mode that the C200H will enter is determined by the initial mode switch on the Memory Unit. When the initial mode switch on the Memory Unit is set to NORMAL or RUN, then the PC will enter PROGRAM mode or RUN mode, respectively. Refer to the *C200H Installation Guide* for details.

**Switching to MONITOR Mode** The DAC can only operate when the PC is in MONITOR mode. When the DAC is connected to a running PC, the PC automatically enters MONITOR mode, except when the DAC level switch is in the OFF position.

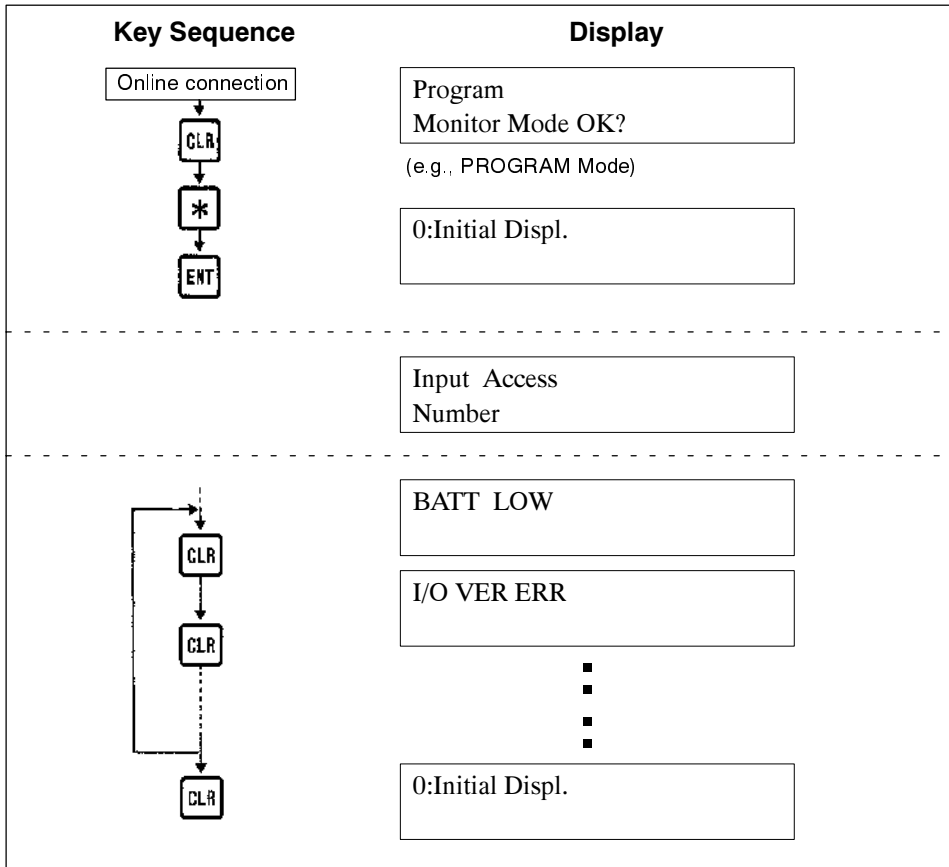
To put the PC into MONITOR Mode, first set the DAC level switch to LEVEL 1 or LEVEL 2. If the display reads RUN, PROGRAM, or DEBUG, press CLR, \*, and then ENT on the DAC keyboard. If INITIAL DISPL does not appear on the display, press CLR again. Unless there is an error, INITIAL DISPL will appear.

If there is an error, the error display will appear. For normal errors, the error messages will be displayed consecutively as CLR is pressed, ending with the INITIAL DISPL. However, if the error is a fatal error (i.e. one that stops the PC), then non-fatal error messages will appear only after the cause of the fatal error has been eliminated.

To clear errors from the PC, connect the Programming Console and carry out the Error Clear operation.

**Example**

The following example shows the displays that may appear for the operation explained above.



## 3-2 Accessibility

### The Level Switch

The DAC has two levels of operation. These can be used by the system operator to control access to the PC data.

In level 2, all DAC operations can be performed in the TC, DM, IR, and SR areas. The DAC can be in level 2, however, only when the key is inserted, because the key must be in the level 1 or OFF position to be removed.

Not all operations can be performed in level 1, and those which can be performed can be restricted to the addresses in the TC and DM data areas that have been registered in advance in level 2. The group of registered addresses that are accessible from level 1 is called the Accessible Address Registry, or the AA Registry.

### The AA Registries

While there is only one AA Registry in effect at any one time, it is possible to store two different registries and to activate either, or neither, from level 2. If neither registry is in effect, then all addresses in the TC and DM area will be accessible.

One registry, the PC AA Registry, resides in the DM area of the PC and must be input in advance using a Programming Console or via the user program. The other registry, the DAC AA Registry, is recorded into the DAC using its keyboard. Both registries are stored in EEPROM and thus are not lost in the event of a power interruption.

Refer to later parts of this section for details on using registries.

### 3-3 DAC Function Summary

The following table provides a summary of the functions described in the remainder of this section.

Operation	Key Sequence	Function
DISPLAY PV	<b>SEL</b> <b>1</b> <b>ENT</b>	Monitors the status of up to 3 Timer and Counter PVs and/or DM words (levels 1 and 2). Also monitors words and bits in the IR and SR (level 2 only).
DISPLAY PV	<b>SEL</b> <b>2</b> <b>ENT</b>	Displays timer and counter SVs (levels 1 and 2).
CHANGE PV	<b>SEL</b> <b>3</b> <b>ENT</b>	Changes timer and counter PVs and DM words (levels 1 and 2). Also changes IR and SR words and bits (level 2 only).
CHANGE SV	<b>SEL</b> <b>4</b> <b>ENT</b>	Changes timer and counter SVs (levels 1 and 2).
Error/Message Display	<b>SEL</b> <b>5</b> <b>ENT</b>	Displays data produced via the Failure Alarm (FAL(06) and (FALS(07)) and Message (MSG(46)) Instructions and Errors (levels 1 and 2).
PC AA Registry Display	<b>SEL</b> <b>6</b> <b>ENT</b>	Displays the addresses currently accessible from level 1 (levels 1 and 2).
Keyboard Mapping	<b>SEL</b> <b>7</b> <b>ENT</b>	Keys 0 to 9 and A to F turn ON bits 00 to 15 of the address recorded in the Keyboard Map Define operation (only one bit can be ON at a time) (levels 1 and 2).
DAC AA Registry Record	<b>SEL</b> <b>A</b> <b>ENT</b>	Records addresses into the DAC AA Registry. Only addresses in this group are accessible from level 1 when this registry is in effect; this operation can also put the PC AA Registry into effect (level 2 only).
DAC AA Registry Clear	<b>SEL</b> <b>B</b> <b>ENT</b>	Clears the DAC AA Registry (level 2 only).
Keyboard Map Define	<b>SEL</b> <b>C</b> <b>ENT</b>	Records or deletes the address used in the Keyboard Mapping operation (level 2 only).
PC CPU Version	<b>SEL</b> <b>E</b> <b>ENT</b>	Reads the version of the PC CPU onto the DAC display (level 2 only).
PC AA Registry Copy	<b>SEL</b> <b>F</b> <b>ENT</b>	Copies the PC AA Registry from the PC DM area into the DAC (level 2 only).

**Note** In addition to the operations above, which are initiated by the DAC, some operations initiated by instructions programmed in advance in the Message (MSG(46)) Instruction can be monitored or completed with the DAC. These operations include Bit/Word Monitor, SV Monitor, Data Change, SV Change, and Buzzer operation.

After the PC mode has been changed during DAC operation, and the DAC hung up, disconnect the cable and reconnect it for initialization.

### 3-4 Basic Key Sequences

#### Operations Restricted to Level 2

Operation	Key sequence	Page
DAC AA Registry Record		
DAC AA Registry Clear		
Keyboard Map Define		
PC CPU Version		
PC AA Registry Copy		



Operations in Levels 1 and 2

Operation	Key sequence	Page
Bit/Word Monitor		
SV Monitor		
Data Change		
SV Change		
Error/Message Display		
AA Registry Display		
Keyboard Mapping		

**Note** The first four operations can also be selected by holding down the SEL key and pressing ENT when the desired operation appears.

### 3-5 The PC AA Registry

PC AA Registry defines one of two groups of DM and TC area addresses which can be accessed from level 1. The other group is the DAC AA Registry. At any one time, it is possible to put into effect either one of these groups or neither, but not both, as the active AA Registry. The PC AA Registry is recorded in advance in the DM area of the PC with a Programming Console or via the user program. The addresses can be recorded individually or in blocks of consecutive addresses. The Registry is recorded in EEPROM and thus is not lost when there is a power interruption.

#### 3-5-1 DM Area Allocation

##### The Registry Selector

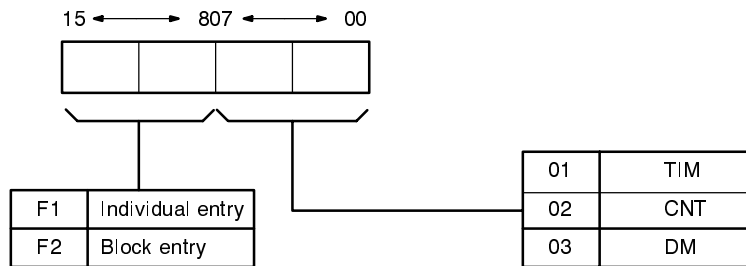
The Registry Selector Address, DM m, determines which Registry is in effect. If the value of DM m is neither 5502 nor 4401, then all TC and DM addresses are accessible from level 1. If the value is 4401, then the DAC AA Registry is in effect. If the value is 5502, then the PC AA Registry is in effect. The contents of the following address, DM (m+1) specify the first Leading Address of the region of the DM area containing the PC AA Registry.

##### The Leading Address Code

Each Leading Address contains two codes, the code in bits 08 to 15 determines whether the addresses in the section following it are recorded in block or individual form; the code in bits 00 to 07 determines whether the addresses are timers, counters, or DM words.

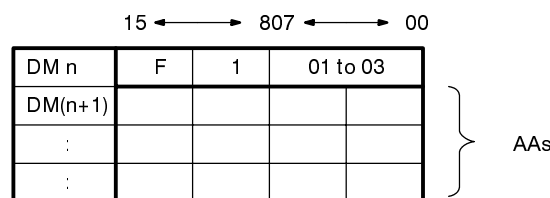
There is one leading address for each timer, counter, and DM section. A word is considered to contain a leading address when bits 08 to 15 contain either F1 or F2. If bits 08 to 15 contain F1 the following data is assumed to be individual addresses; if bits 08 to 15 contain F2, the following addresses are assumed to be in pairs, each of which specifies one block of addresses.

The code for address type is contained in bits 00 to 07. If bits 00 to 07 contain 01, a timer is specified; if they contain 02, a counter is specified; and if they contain 03, a DM word is specified. In the following examples, the first Leading Address, which is the contents of DM (m+1), is n.



##### Individual Entry of AAs

Each address, beginning with DM (n+1), contains a single accessible address. When the last accessible address of the first type (TIM, CNT, or DM) has been entered, enter the leading address of the next section, specifying the entry form and address type. After the last section, enter the end code, FFFF. Be sure not to enter the same address twice in the TIM and CNT sections. Enter accessible addresses consecutively, without gaps.



**Block Entry of AAs**

In this case, pairs of addresses, beginning with DM (n+1) and DM (n+2), identify the first and last accessible addresses in blocks. The second address of each pair must be greater than the first. The first and last addresses and all addresses in between are accessible. Again, when the last accessible address of the first type has been entered, enter the leading address of the next section, specifying the entry form and address type. After the last section, enter the end code, FFFF. Be sure not to enter the same address twice in the TIM and CNT sections. Enter address pairs consecutively, without gaps.

		15 ← → 807 ← → 00		
DM n	F	2	01 to 03	
DM(n+1)				
DM(n+2)				
⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮

} Address pair  
} Address pair

**Example of DM Area Entry**

Address	Contents	Meaning
DM 0200	5502	Registry Selector for PC AA Registry
DM 0201	0500	Address of the first Leading Address

Address	Contents	Meaning
DM 0500	F201	TIM Block Entry
DM 0501	0000	TIM 000 to 010
DM 0502	0010	
DM 0503	0100	TIM 100 to 108
DM 0504	0108	
DM 0505	F103	DM Individual Entry
DM 0506	0001	DM 0001
DM 0507	0021	DM 0021
DM 0508	0105	DM 0105
DM 0509	0200	DM 0200
DM 0510	F102	CNT Block Entry
DM 0511	0320	CNT 320 to 339
DM 0512	0339	
DM 0513	0013	CNT 013 to 017
DM 0514	0017	
DM 0515	FFFF	End Code

**Setting the DAC AA Registry** When both the PC AA and DAC AA Registries have been entered, a Registry Selector value of 4401 in the PC DM will put the DAC AA Registry into effect.

4	4	0	1
---	---	---	---

**Open Access**

Any Registry Selector value other than 4401 or 5502 leaves all of the TC and DM areas accessible from level 1.

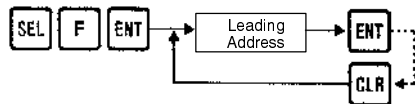
0	0	0	0
---	---	---	---

Any value other than 4401 or 5502

**3-5-2 PC AA Registry Copy**

This operation, which can be performed in level 2 only, copies the PC AA Registry from the PC DM area to the DAC. The DAC AA Registry can still be in effect. The Leading Address is the first address of the section in the PC DM area containing the PC AA Registry.

**Key Sequence**



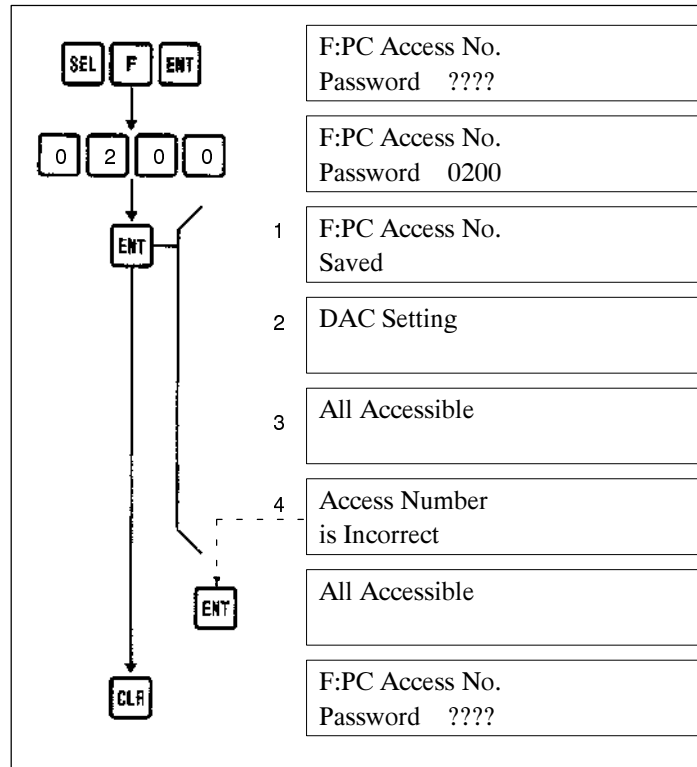
**Example**

After selecting operation F, the DAC prompt will request the password. Enter the first Leading Address (access number) in the DM area of the PC. In the following example, the Leading Address is DM 0500.

Upon entering the Leading Address, any one of four displays will appear, depending on the value of the Registry Selector. If the Registry Selector value is 5502 and the PC AA Registry is in readable form, display 1 will appear and the PC AA Registry will have been copied to the DAC. If the Registry Selector value is 4401, then display 2 will appear, and if it's value is neither 5502 nor 4401, display 3 will appear.

If the value is 5502, but the data at the Leading Address is not readable, then display 4 will appear. At this point press ENT and all TC and DM addresses will be accessible in level 1. Press CLR to return to the beginning of the operation. The last read Registry Selector value will determine which Registry, if either, is in effect. In other words, if 4401 is read out after the PC

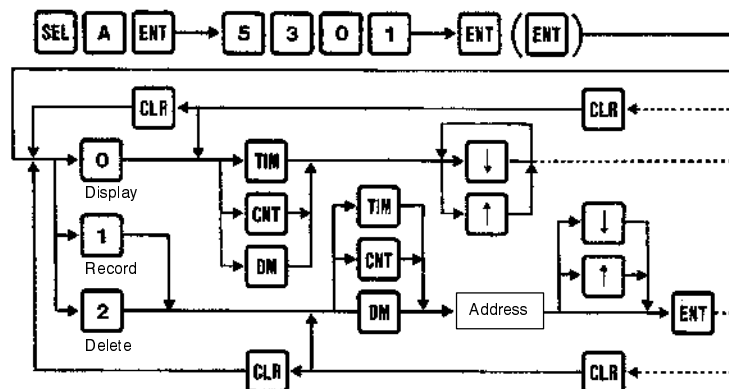
AA Registry has been put into effect, then the PC AA Registry will be replaced by the DAC AA Registry as the effective AA Registry.



### 3-5-3 DAC AA Registry Record

This operation, which can only be performed in level 2, displays, records, or deletes addresses in the DAC AA Registry one at a time using the DAC key-board. When the DAC AA Registry is in effect, only the addresses recorded in it can be accessed from level 1.

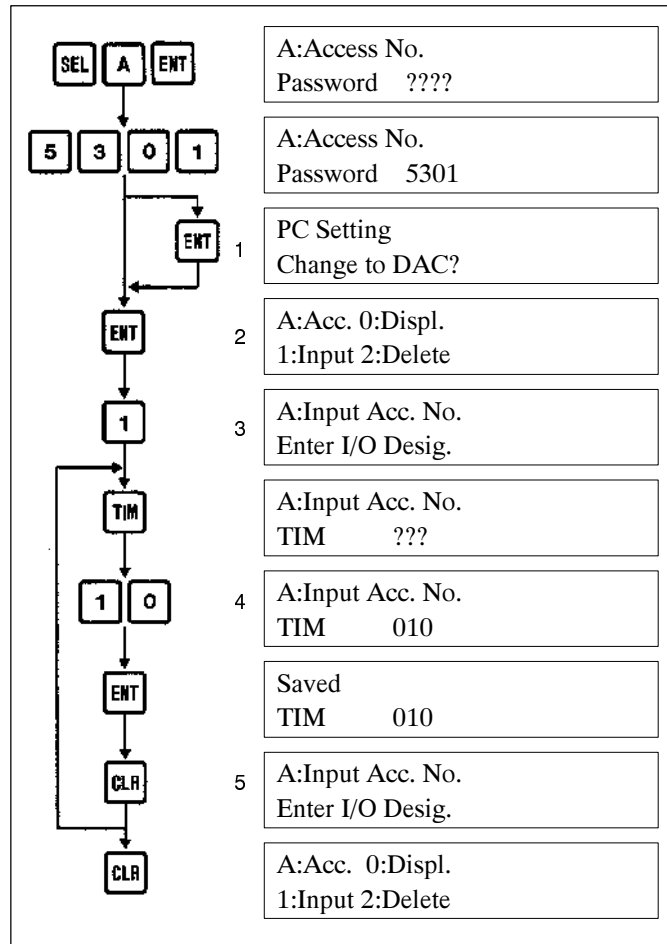
#### Key Sequence



**Example: Recording an Address into the DAC AA Registry**

Select operation A and enter the password. If the value of the Registry Selector last read was not 4401, then display 1, below, will appear.

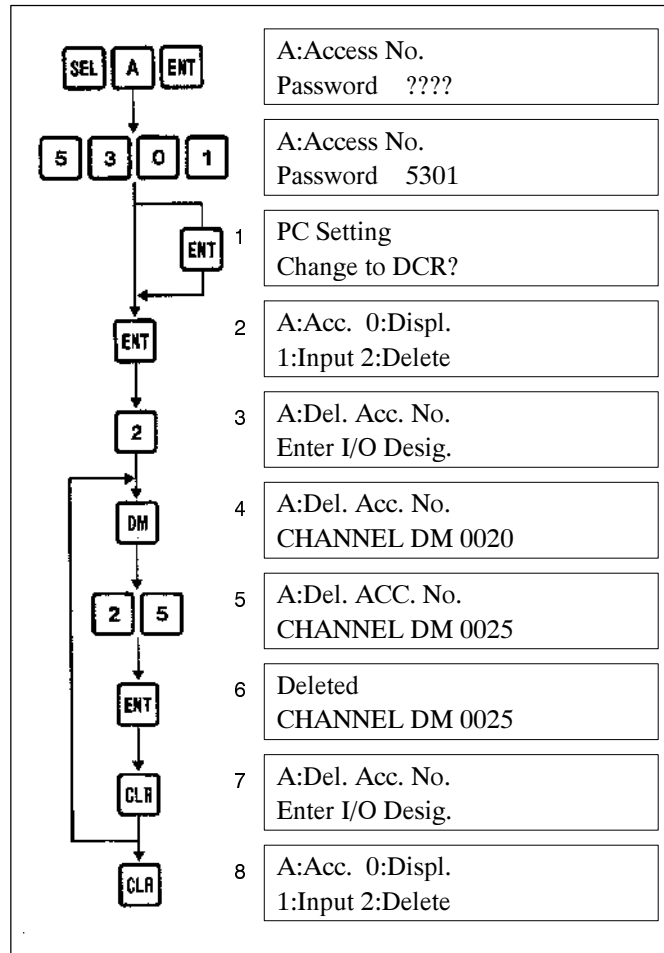
Press ENT again to change to the DAC AA Registry, and then press 1 to record. Next, press TIM, CNT, or DM, to specify the address type, and then enter the address (access number). The same address cannot be recorded as both a timer and counter. If an attempt is made to record the same address twice, a display will appear indicating that the address already exists. In this case or after successfully recording an address, press CLR once to continue recording, or twice to change to the display or delete modes. If a Registry Selector value other than 4401 is read after setting the DAC AA Registry, then the DAC AA Registry will no longer be in effect.



**Example: Deleting an Address from the DAC AA Registry**

Select operation A and enter the password. If the value of the Registry Selector last read was not 4401, then display 1, below, will appear.

Press ENT again to change to the DAC AA Registry. Press 2 to choose delete mode, then TIM, CNT, or DM, to specify the address type, and then enter the address. If the address is not in the Registry, then a display indicating that the data has not been entered will appear. In this case or after successfully deleting an address, press CLR once to continue deleting or twice to change to the display or record mode.



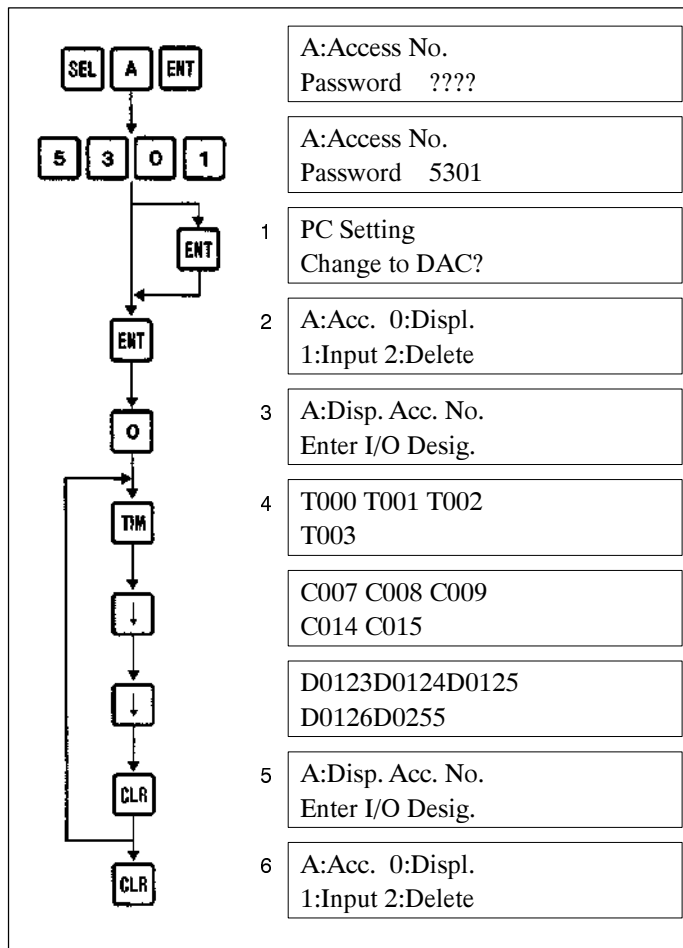
**Example: Displaying the DAC AA Registry**

Select operation A and enter the password. If the value of the Registry Selector last read was not 4401, then display 1, below, will appear.

Press ENT again to change to the DAC AA Registry. Press 0 to choose display mode, and then TIM, CNT, or DM, to specify the address type.

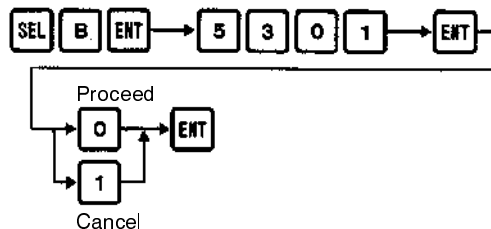
If the Registry is empty, a display will appear requesting the input of addresses. The display can show up to six addresses, in two rows of three, at one time. Use the arrow keys to scroll up and down within the Registry, or

press CLR once, and then an address type, to jump to the beginning of the that section. Press CLR twice to change to the delete or record modes.



### 3-5-4 Clearing the DAC AA Registry

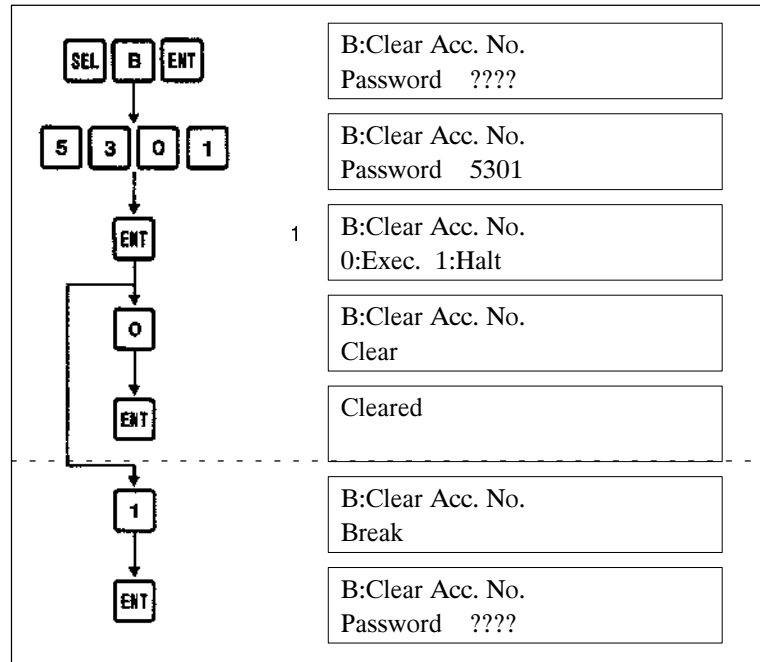
This operation, which clears the entire DAC AA Registry at once, can only be performed in level 2.





**Example**

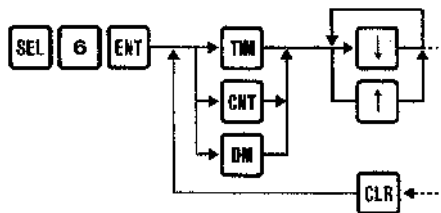
Select operation B and enter the password. At this point it is possible to cancel the operation without clearing the Registry by pressing 1. Pressing 0 clears the Registry.



**3-5-5 Displaying the AA Registry**

This operation displays the current AA Registry, either the PC AA Registry, the DAC AA Registry, or neither, depending on the value of the Registry Selector last read. It can be performed in both levels 1 and 2.

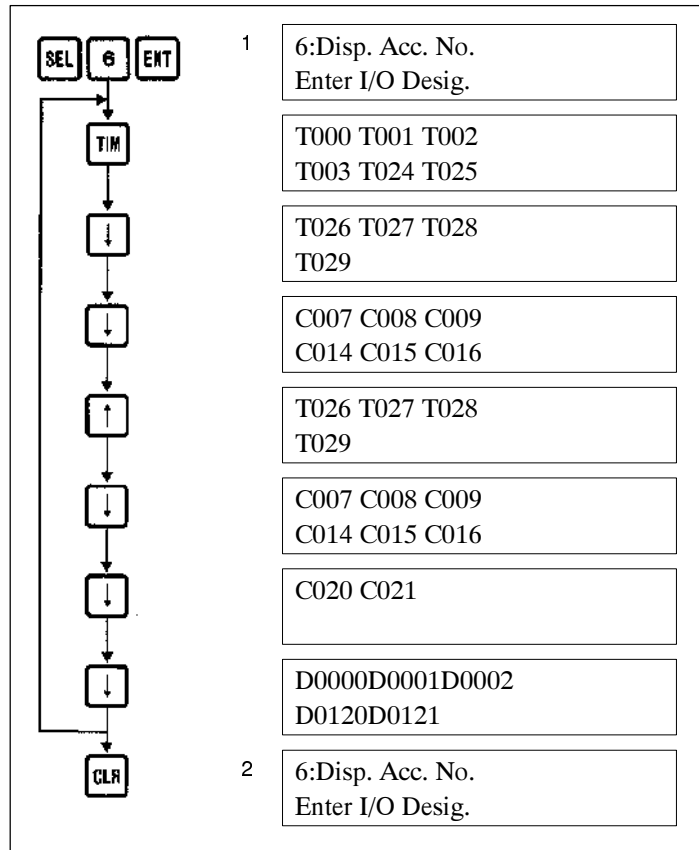
**Key Sequence**



Select operation 6 and then press TIM, CNT, or DM to specify the address type. If the Registry is empty, a display requesting the input of addresses will appear. If the last read Registry Selector value was neither 4401 nor 5502, a display will appear indicating that all addresses are accessible.

When there are addresses in the Registry, the display will show up to six addresses, in two rows of three, at one time. Use the arrow keys to scroll up and down within the Registry, or press CLR once and then an address type

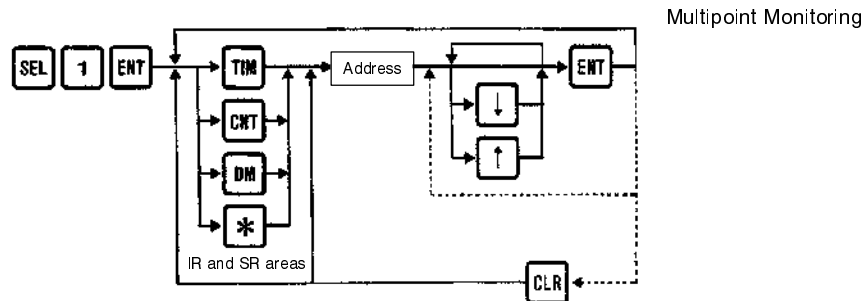
to jump to the beginning of the that section. Press CLR twice to change to the delete or record modes.



### 3-6 Bit/Word Monitor

In level 1, this operation monitors up to 6 timer and counter Present Values and DM Words, of which 3 appear on the display at any one time. Access in level 1 is restricted to those addresses which are in the current AA Registry. In level 2, access is unaffected by the AA Registry and bits and words in the IR and SR areas can also be monitored.

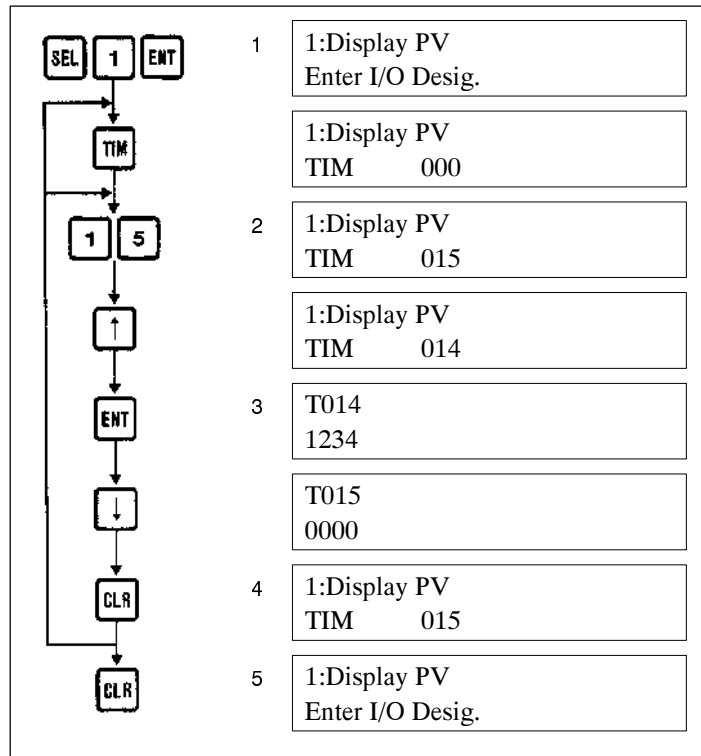
#### Key Sequence



#### Example

Select operation 1 and specify the address type by pressing TIM, CNT, DM, or \*. Next, enter the address. At this point the content should appear below the address, in decimal form for timers and counters, and in hexadecimal form for DM, IR, and SR words.

It is possible to scroll from address to address, displaying current contents, using the arrow keys. If, in level 1, one of these addresses is not in the AA Registry, then a display will appear indicating that it is prohibited. Proceed to the next address or return to the preceding address by pressing the arrow keys. Press CLR and a new address, or a new address type and address, to move to a different area.

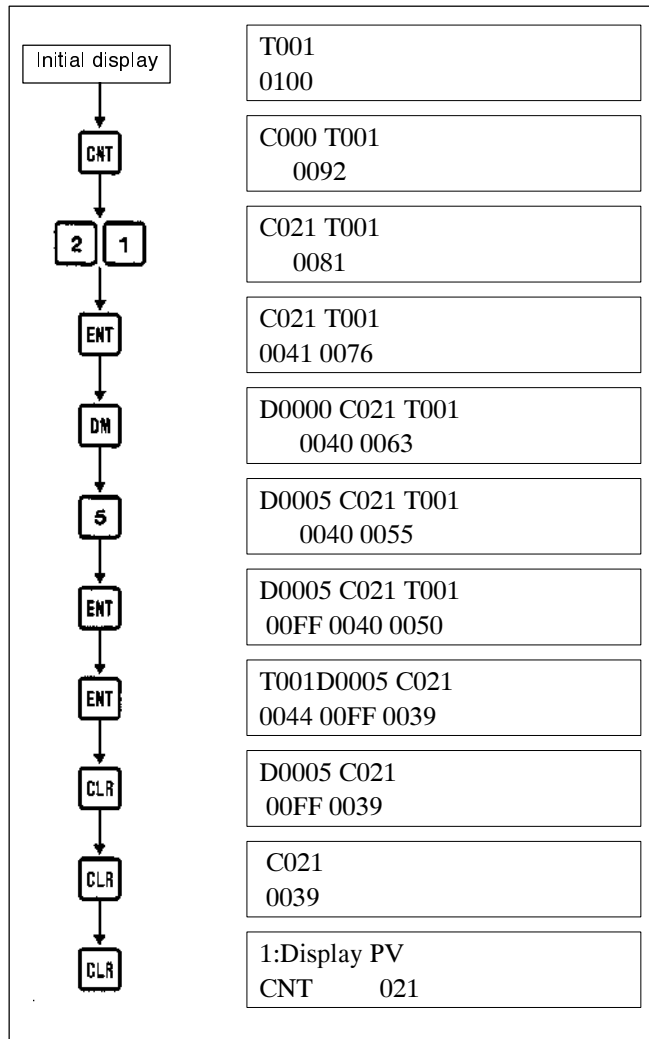


**Multipoint Monitoring**

The DAC can keep track of 6 addresses, of which up to 3 can appear on the display. When an address is entered, it appears at the left side of the display and shifts any existing addresses one to the right. If there is an address on the right side of the display, it scrolls off screen.

Press CLR to delete the address on the left side of the display and recall the address just off screen to the right. Press ENT to bring the rightmost address to the left side of the screen. In level 1, the buzzer sound indicates that the address entered is not accessible.

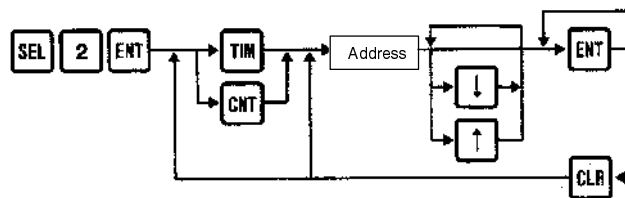
Example



### 3-7 SV Monitor

This operation displays timer and counter SVs. It can be performed in both levels 1 and 2, although access in level 1 is limited to those addresses listed in the AA Registry.

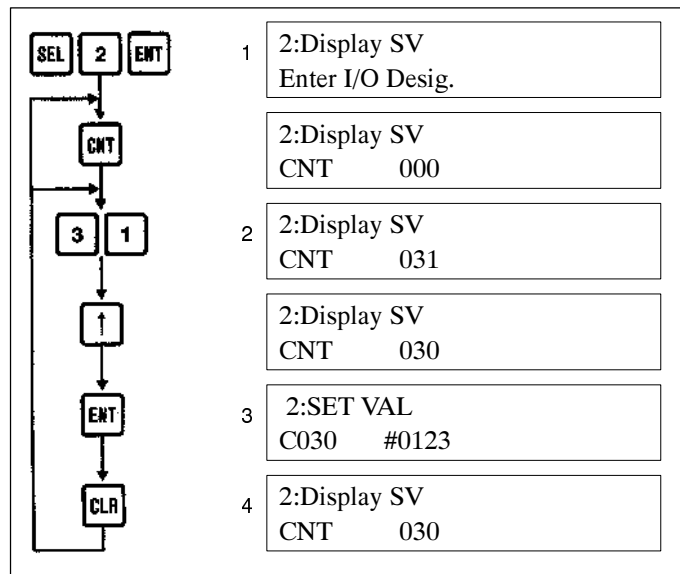
Key Sequence



Example

Select operation 2, specify timer or counter by pressing TIM or CNT, and enter the desired address. Before pressing ENT, it is possible to change the address with the arrow keys.

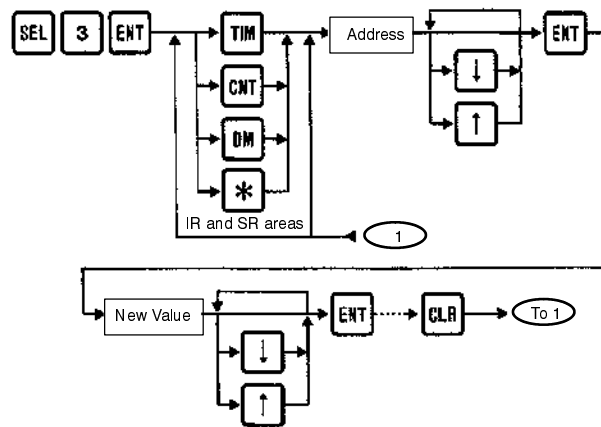
If, in level 1, an address which is not listed in the AA Registry is entered, then a display will appear indicating that it is prohibited. Proceed to the next address, or return to the preceding address, with the arrow keys. Alternatively, press CLR and a new address, or TIM or CNT and a new address to continue displaying.



### 3-8 Data Change

In level 2, this operation changes the PVs of timers and counters and data in the DM, IR, and SR areas. In level 1, it can change the PVs of timers and counters and data in the DM area, but only when the addresses are listed in the AA Registry.

#### Key Sequence

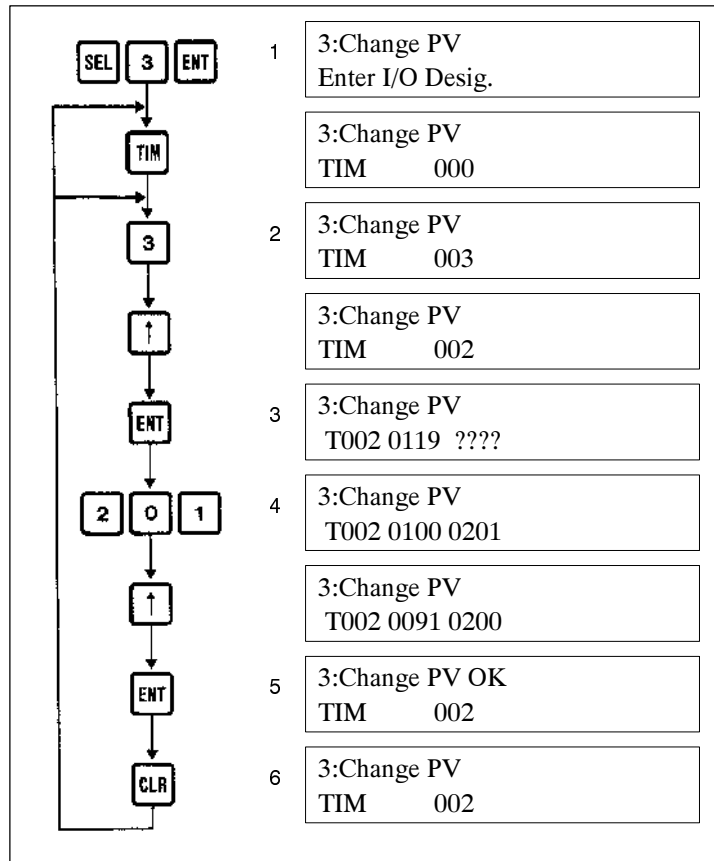


#### Example

Select operation 3, specify the data area, and enter the desired address. Before pressing ENT, it is possible to proceed to the next address, or return to the preceding address, with the arrow keys.

If, in level 1, an address which is not listed in the AA Registry is entered, then a display will appear indicating that it is prohibited. In this case, press CLR and enter a new address. When the address has been entered, the display will show the current value of the address.

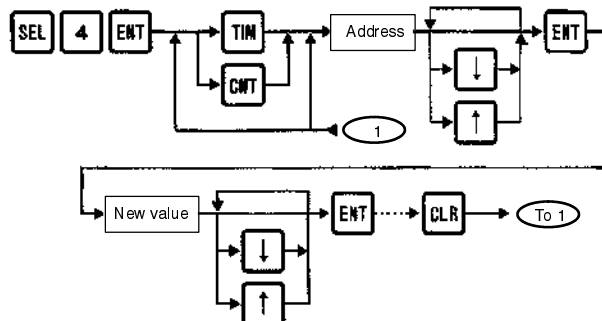
Enter the new value, with timer and counter PVs in decimal form, and with DM, IR, and SR data in hexadecimal form. To continue changes, press CLR and enter the next address or specify the next data area.



### 3-9 SV Change

This operation changes the SVs of timers and counters in both levels 1 and 2, although in level 1 access is limited to addresses which are listed in the active AA Registry.

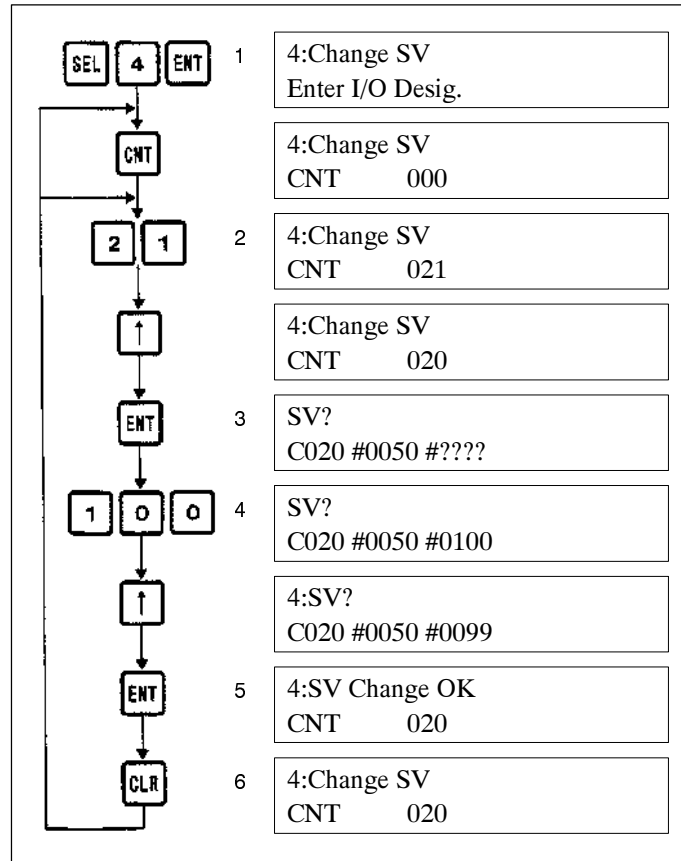
#### Key Sequence



**Example**

Select operation 4, specify timer or counter by pressing TIM or CNT, and enter the desired address. Before pressing ENT, it is possible to change the address with the arrow keys.

If, in level 1, an address which is not listed in the AA Registry is entered, then a display will appear indicating that it is prohibited. In this case, press CLR and enter a new address. When the address has been entered, the current timer or counter SV will appear in the center of the display. Enter the new SV in decimal form. To continue changes, press CLR and enter the next address or specify the next data area.



### 3-10 Command Execution via MSG(46)

Buzzer operation, as well as the display and modification of data in the TC, DM, IR, and SR areas, can be controlled through the Message Instruction, MSG(46), in C200H, C1000H, and C2000H PCs.

MSG(46) must be programmed in advance containing an ASCII code command as an operand. When MSG(46) containing a display command is executed, then the corresponding display appears in the DAC with information about the programmed address.

When a MSG(46) containing a change command is executed, then the value of the programmed address is changed to the programmed value.

When a MSG(46) containing a change request command is executed, then the corresponding input prompt display appears in the DAC, and the programmed address can be changed by inputting data in the DAC keyboard.

When a MSG(46) containing a buzzer sound command is executed, then the buzzer will sound, either continuously or intermittently, for the programmed interval.

**Summary of Operations and Corresponding Commands**

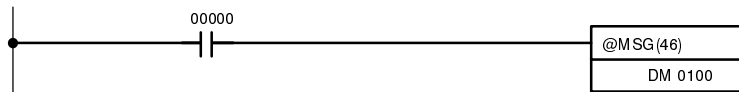
Addresses: aaa or aaaa  
 Data: dddd  
 Time (seconds):ss

Command type	Operation	Command code
Monitor	TIM PV Monitor	@RGTMaaa\$
	CNT PV Monitor	@RGCTaaa\$
	DM Monitor	@RGDMaaaa\$
	IR,SR Monitor	@RGCHaaa\$
	TIM SV Monitor	@RSTMaaa\$
	CNT SV Monitor	@RSC Taaa\$
Change	TIM PV Change	@WGTMaaa#ddd\$
	CNT PV Change	@WGCTaaa#ddd\$
	DM Data Change	@WGDMaaaa#ddd\$
	IR,SR Data Change	@WGCHaaa#ddd\$
	TIM SV Change	@WSTMaaa#ddd\$
	CNT SV Change	@WSC Taaa#ddd\$
Change Request	TIM PV Change Request	@WGTMaaa\$
	CNT PV Change Request	@WGCTaaa\$
	DM Data Change Request	@WGDMaaaa\$
	IR,SR Data Change Request	@WGCHaaa\$
	TIM SV Change Request	@WSTMaaa\$
	CNT SV Change Request	@WSC Taaa\$
Buzzer	Intermittent	@BZPL#ss\$
	Continuous	@BZCN#ss\$

**Example 1: Changing the SV of TIM 010 to TIM 050**

When IR 00000 is turned on, MSG(46) will be executed, reading the command from the DM area and changing the SV of TIM 010 to #0050. At that time, the DAC displays "SV Change OK." After the command is executed, it is cleared from the memory of the CPU.

- Ladder Diagram



- Command in DM area

Address	Contents	Command code
DM 0100	4057	@W
DM 0101	5354	ST
DM 0102	4D30	M0
DM 0103	3130	10
DM 0104	2330	#0
DM 0105	3035	05
DM 0106	3024	0\$



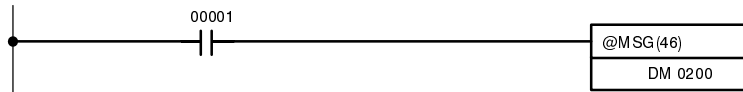
- DAC Display

```
4:SV Change OK
TIM      010
```

**Example 2: Data Change Request for DM 0105**

When IR 00001 is turned on, MSG(46) will be executed, reading the command from the DM area and initializing the Data Change operation for DM 0105. The DAC display shows the contents and requests a new value, any value can be entered. After the command is executed, it is cleared from memory by the CPU, so it is only executed once.

- Program Diagram



- Command in DM Area

Address	Contents	Command code
DM 0200	4057	@W
DM 0201	4744	GD
DM 0202	4D30	M0
DM 0203	3130	10
DM 0204	3524	5\$

- DAC Display

```
3:Change PV
D0105 0050 ????
```

### 3-11 Error/Message Display

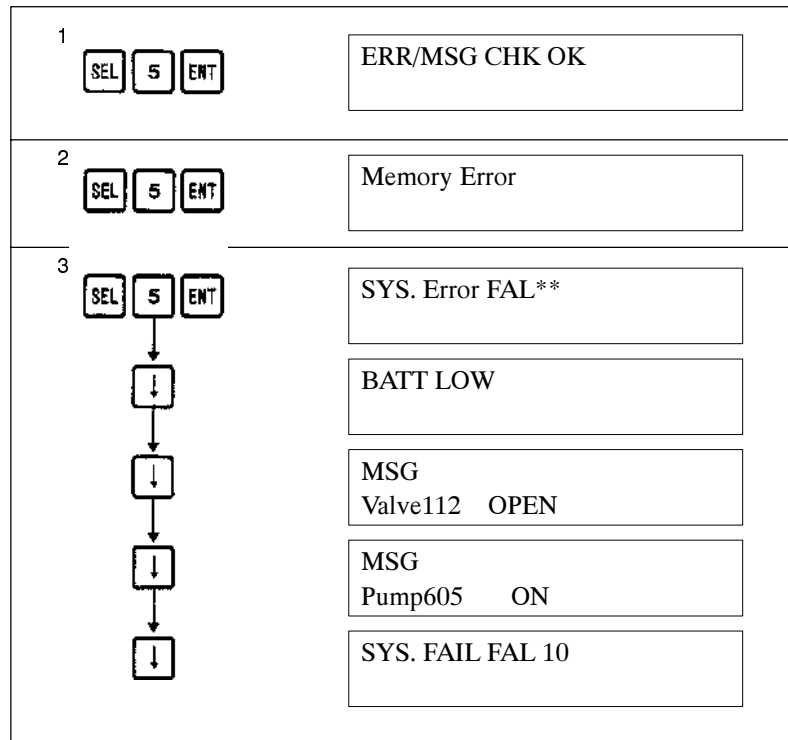
In both levels 1 and 2 it is possible to display errors produced via FAL(06) or FALS(07). With the C200H, C1000H, and C2000H, messages produced by MSG (46) can also be displayed. While the DAC can display an error, it cannot clear it. Connect the Programming Console to clear errors.

**Key Sequence**



When there are no error codes or messages, then the display will read "OK". If there is a fatal error (i.e., an error that stops the PC such as a Memory Error), then no other messages can be displayed. If a fatal error occurs, connect the Programming Console and clear the error. When there are no fatal

errors but there are non-fatal errors messages, then these can be read out successively with the arrow key, as shown below.



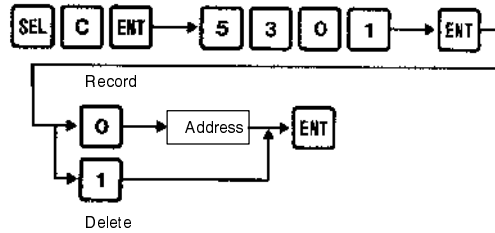
### 3-12 Error Display Summary

Error type	Error message	Applicable PCs
Fatal	Memory error	All
	No End instruction	All
	I/O bus error	All
	I/O setting error	All except C__P PCs
	I/O Unit excess	All except C__P PCs
	FALS System error	All except C__P PCs
	JMP excess	C__P PCs
Non-fatal	FAL System error	All except C__P PCs
	DPL error	C1000H, C2000H, C2000
	Remote I/O error	All except C__P PCs
	I/O table error	All except C__P PCs
	Battery error	All
	Scan time error	All
	Special I/O error	C200H

### 3-13 Keyboard Map Define

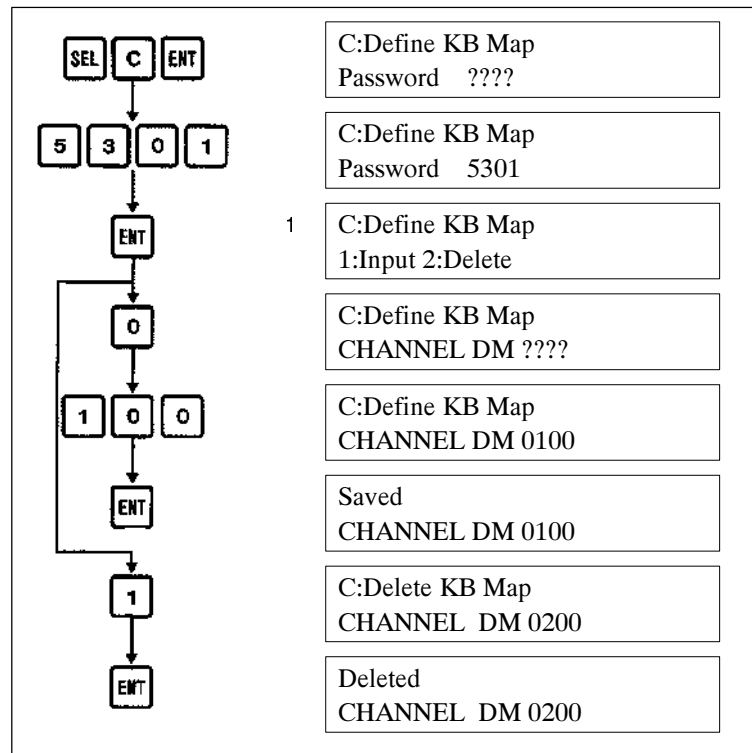
This operation, which can be performed in level 2 only, records a single DM address for Keyboard Mapping. In the Keyboard Mapping operation, the bits of the recorded address turn ON and OFF as their corresponding keys are pressed. Only one bit can be ON at one time. The selected address is retained in memory in the event of a power interruption. The Keyboard Mapping operation will be accessible in level 1 only if the selected address is listed in the AA Registry or if no AA Registry is active.

#### Key Sequence



Select operation C and enter the password. Press 0 to enter record mode or 1 to enter delete mode. If an address has been recorded previously and 0 is pressed, a display will appear indicating that an address already exists. The existing address must be deleted before a new address can be recorded, i.e., there can only be one Keyboard Mapping address.

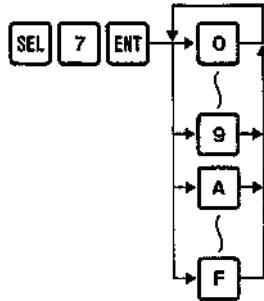
#### Example



### 3-14 Keyboard Mapping

This operation, which can be performed in both levels 1 and 2, is useful during debugging. It allows the operator to turn ON and OFF bits 00 to 15 of the address recorded in Keyboard Mapping Define operation by pressing keys 0 to 9 and A to F. Only one bit can be ON at a time. The operation is accessible from level 1 only if the recorded address is listed in the AA Registry or if there is no active AA Registry.

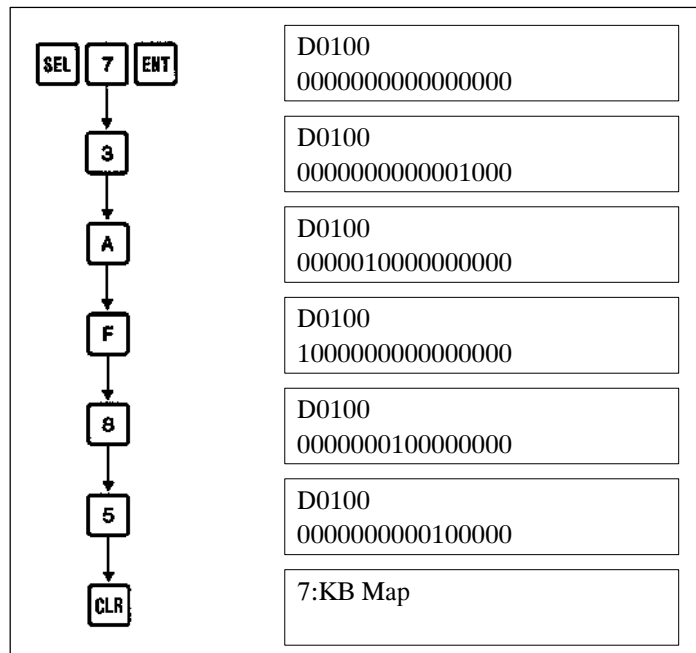
**Key Sequence**



**Example**

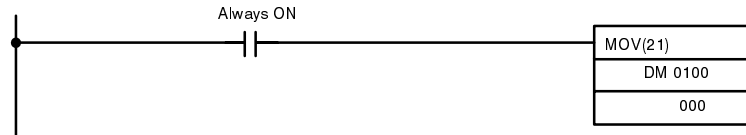
Select operation 7. The display should show the address and a row of 16 0s. The 0s correspond to bits 00 to 15 of the recorded address and to keys 0 to 9 and A to F, right to left. When a key is pressed its corresponding bit will change to 1. If more than one key is pressed, only the first pressed will be ON. Only one bit can be ON at a time.

If an address hasn't been recorded in the Keyboard Mapping Define operation, then the display will read "NOT IN KB MAP". In this case, an address must be recorded before proceeding. In level 1, if an address has been recorded but not entered into the current AA Registry, the display will indicate that access is prohibited. In this case, the address must be recorded into the AA Registry before proceeding, an operation that can only be performed in level 2.



**Example: Using Keyboard Mapping in Debugging**

In the Keyboard Mapping operation, the following program causes the bits of IR 000 to turn ON and OFF as keys 0 to 9 and A to F are pressed.



### 3-15 PC CPU Version Display

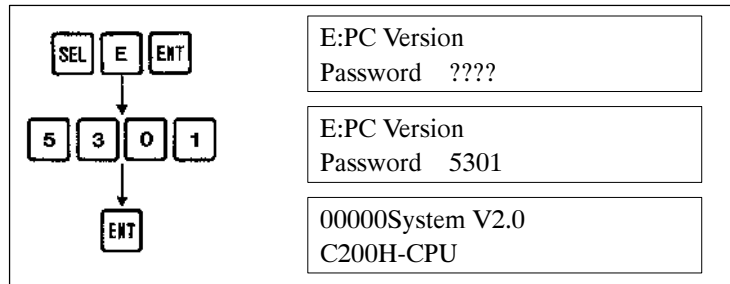
This operation, which can be performed in level 2 only, reads out the version of the PC CPU in all C-series PCs, except for P-type or K-type PCs. The -V\_ suffix of the CPU version is not equivalent to that in the System ROM format.

**Key Sequence**



**Example**

Select operation E, and enter the password. The CPU version will appear on the display.

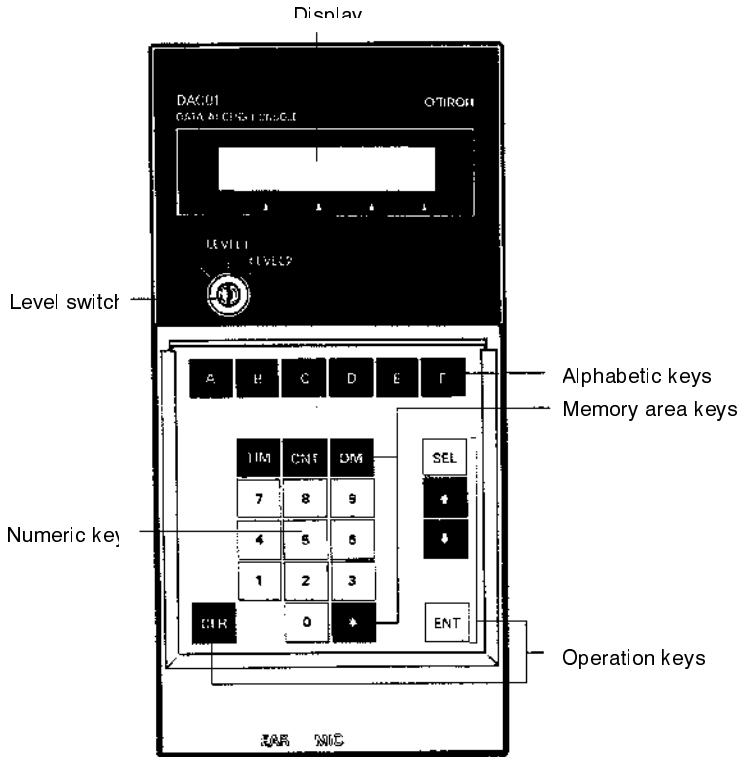


**SECTION 4**  
**Components and Switch Settings**

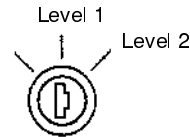
4-1 Components ..... 36  
4-2 Switch Settings ..... 37

# 4-1 Components

## Front Panel



**Note** The key cannot be removed from the DAC from the LEVEL 2 position.

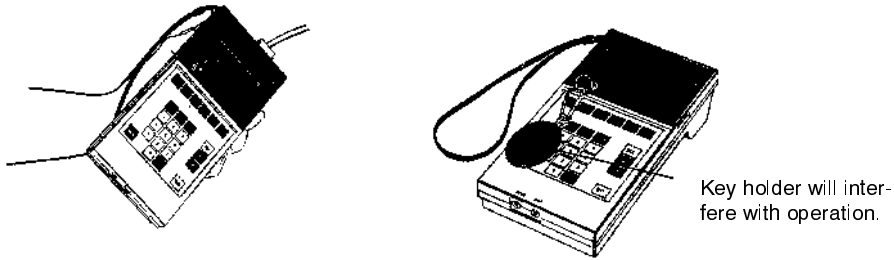


## Key Function

Key type	Key	Function
Numeric keys	0 ~ 9	Number input and operation selection.
Alphabetic keys	A ~ F	Hexadecimal number input and operation selection.
Operation keys	SEL	Begins operation selection. Displays operations in order when held.
	ENT	Selects operation, enters data, generally confirms input.
	CLR	Returns the DAC to the previous step when entering data.
	↓	INCR displayed address or value by one. Operates continuously when held.
	↑	DECR displayed address or value by one. Operates continuously when held.
Data area keys	TIM	Designates a timer.
	CNT	Designates a counter.
	DM	Designates the DM area.
	*	Designates IR and SR areas. (LEVEL 2 only)

**Hand-held Operation**

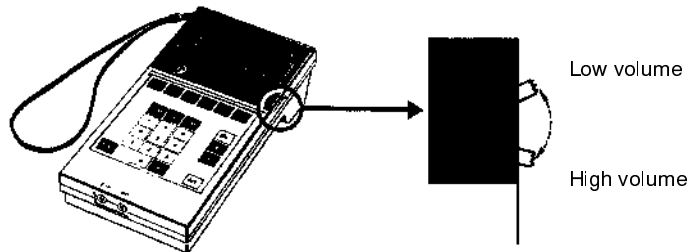
The DAC can be easily hand-held for operation. Do not attach a key holder, as it will interfere with keyboard operation.



## 4-2 Switch Settings

**Buzzer Volume Adjustment**

The volume of the buzzer can be adjusted with the lever on the right side of the DAC.

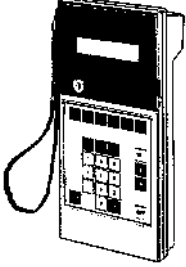

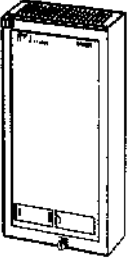
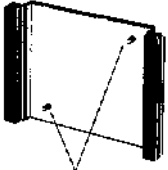


**Note** The DAC is capable of displaying in both English and Japanese. If the display is illegible, check whether the English/Japanese switch on the CPU is set to Japanese.



# Appendix A

## Standard Models

Name	Specifications	Model number
<p>Data Access Console</p> 	<p>See Appendix B.</p>	<p>C200H-DAC01</p>
<p>Connecting</p> 	<p>Length: 2 m</p>	<p>C200H-CN222</p>
	<p>Length: 4 m</p>	<p>C200H-CN422</p>
<p>Programming Console Adapter</p> 	<p>Connects DAC to PCs other than C200H.</p>	<p>C500-AP003</p>
<p>Mounting Bracket</p>  <p>Mounting screws (two)</p>	<p>Used to mount the DAC on a panel.</p>	<p>C200H-ATT01</p>

# Appendix B

## DAC Specifications

Item	Specification
Ambient temperature range	0% to 45°C
Ambient humidity range	35% to 85%
Power supply	5 V, 170 mA max. (Supplied from CPU.)
Dimensions (mm)	96 (W) x 192 (H) x 48 (D)
Display	LCD (2 rows of 16 characters)
Keyboard	0 to 9, A to F, TIM, CNT, DM, *, SEL, ENT, CLR, UP, DOWN)
Level switch	OFF, level 1, level 2
Connectors	Two are available. Use only one at a time.
Weight	400 g.

# Appendix C

## Data Areas

Refer to the *PC Operation Manuals* for more detailed information.

PC	TC area	DM area	IR area	SR area
C2000H	TC 000 to TC 511	DM 0000 to DM 6655	IR 000 to IR 236	SR 237 to SR 255
C1000H	TC 000 to TC 511	DM 0000 to DM 4095	IR 000 to IR 236	SR 237 to SR 255
C200H	TC 000 to TC 511	DM 0000 to DM 1999 (DM 1000 to DM 1999: Read Only)	IR 000 to IR 246	SR 247 to SR 255
C500	TC 000 to TC 127	DM 000 to DM 511	IR 00 to IR 57	SR 58 to SR 63
C120	TC 000 to TC 127	DM 000 to DM 511	IR 00 to IR 58	SR 59 to SR 63
C__P	TC 00 to TC 47	DM 00 to DM 63	IR 00 to IR 17	SR 18 to SR 19
C__K	TC 00 to TC 47	DM 00 to DM 63	IR 00 to IR 17	SR 18 to SR 19

## Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

Cat. No. W173-E1-1A

↑  
Revision code

The following table outlines the changes made to the manual during each revision.

Revision code	Date	Revised content
1	May 1990	Original production
1A	November 1992	<b>Page 12:</b> Information has been added to the Note at the bottom of the page.