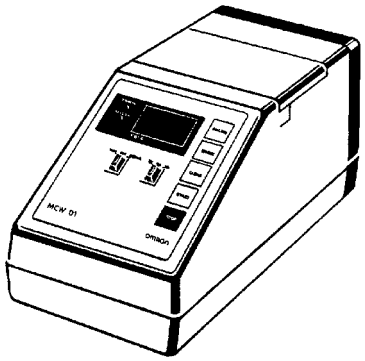
CV500-MCW01-E
Memory Card Writer

Operation Manual

Produced October 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.

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

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

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, often means “word” and is abbreviated “Wd” in documentation in this sense.

The abbreviation “PC” means Programmable Controller and is not used as an abbreviation for anything else.

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... 1. Indicates lists of one sort or another, such as procedures, checklists, etc.

TABLE OF CONTENTS

About this Manual:

This manual describes the installation and operation of the CV500-MCW01-E Memory Card Writer and includes the sections described below.

Please read this manual completely and be sure you understand the information provided before attempting to install and operate the Memory Card Writer.

Section 1 provides an introduction to the Memory Card Writer, including its system configuration and features.

Section 2 describes the computer connections and provides the wiring procedures for RS-232C connectors.

Section 3 describes the components of the Memory Card Writer and provides its external dimensions.

Section 4 describes the operations possible from the Memory Card Writer. Refer to the CVSS manuals for details on manipulating the Memory Card Writer from the CVSS.

Section 5 describes the error codes that may appear on the 7-segment display during operation.

The ***Appendix*** provides a list of technical specifications.

The Memory Card Writer can be connected to an IBM PC/AT or compatible computer running CV Support Software (CVSS) to manipulate the Memory Card Writer's RAM buffer from the CVSS. Actual CVSS operating procedures are provided in the following three manuals. Specific procedures for the Memory Card Writer are provided in the *Offline* manual (W201).

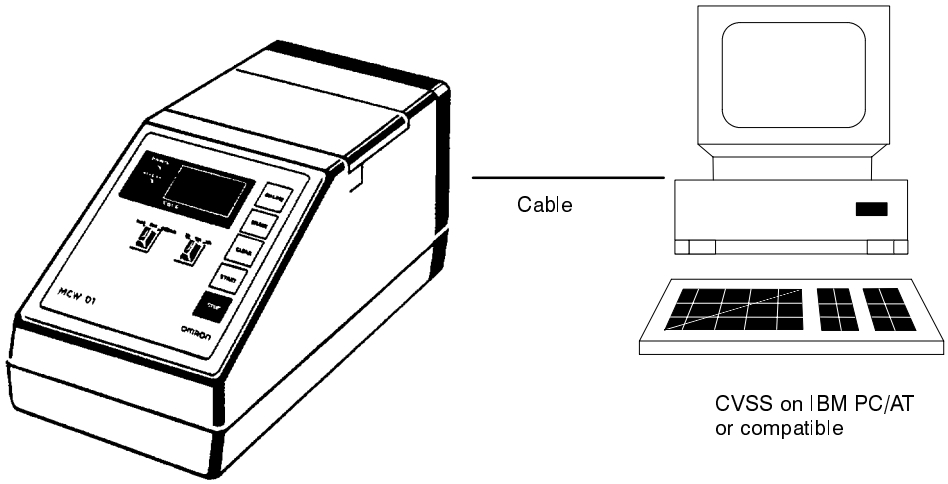
Manual	Cat. No.
CV Support Software Operation Manual: Basics	W196-E1
CV Support Software Operation Manual: Offline	W201-E1
CV Support Software Operation Manual: Online	W200-E1

SECTION 1
System Configuration and Features

This section provides an introduction to the Memory Card Writer, including its system configuration and features.

1-1 System Configuration

The CV500-MCW01-E Memory Card Writer is connected to an IBM AT/PC computer running CVSS to read and write Memory Cards for CV-series PCs.



CV500-MCW01-E Memory Card Writer

1-2 Features

CVSS Compatibility

The Memory Card Writer can be connected to an IBM PC/AT or compatible running CV Support Software (CVSS) to use CVSS offline Memory Card operations to transfer, copy, delete, rename, initialize, or print individual files to the Memory Card Writer buffer RAM.

Three Card Types

The Memory Card Writer is compatible with three types of memory card: RAM cards, EEPROM cards, and EPROM cards. Reading, writing, and verifying is possible between each type of card and the buffer RAM.

SECTION 2
Connections

This section describes the computer connections and provides the wiring procedures for RS-232C connectors.

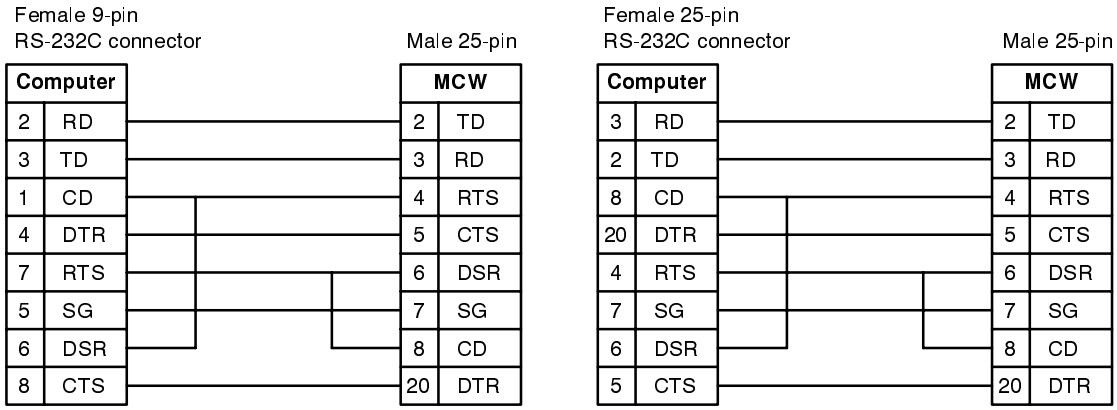
2-1 Computer Connections

Memory Card Writer Connections

The computer is connected to the Memory Card Writer through either a 9-pin or 25-pin RS-232C port on the computer and the RS-232C connector on the Memory Card Writer.

The Operator must provide a cable that is wired for this connection as shown below.

Refer to *2-2 Wiring RS-232C Cable Connectors* for details on preparing RS-232C cable.



Printer Connections

The computer is connected to a printer through a printer port on the computer. The operator must provide a standard Centronics interface cable. Centronics interface cables are commercially available.

2-2 Wiring RS-232C Cable Connectors

The following procedures should be followed when wiring RS-232C connectors. Both the connectors and the cable are commercially available.

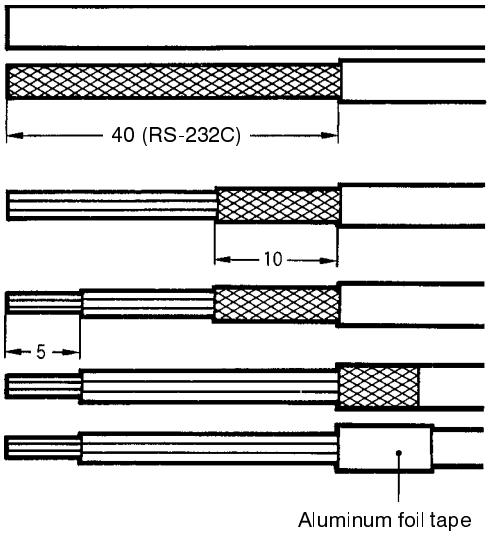
Shielded Wire Connecting to FG

The procedures listed below correspond to the following diagrams.

1, 2, 3...

1. Cut the cable to the required length.
2. Use a razor blade to cut away the sheath (being careful not to damage the braiding underneath): 40 mm for RS-232C cable.
3. Use scissors to cut away all but 10 mm of the exposed braiding.
4. Use wire strippers to remove the insulation from the last 5 mm of each wire.
5. Move the boot to cut the edge of the sheath and fold the braiding back over the end of it.

6. Wrap aluminum foil tape over the top of the braiding on top of the boot for one and a half turns.

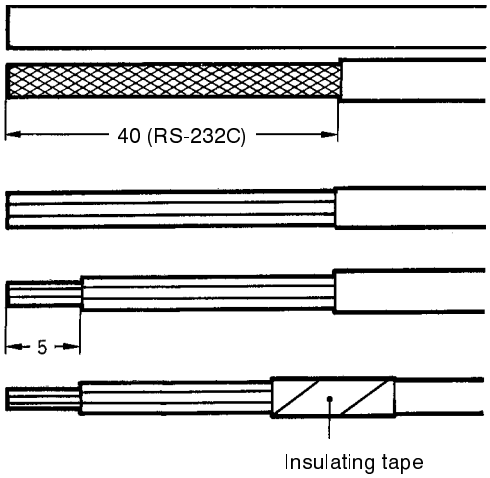


Shielded Wire Not Connecting to FG

The procedures outlined in the list below correspond to the following diagrams.

1, 2, 3...

1. Cut the cable to the required length.
2. Use a razor blade to cut away the sheath: 40 mm for RS-232C cable.
3. Use scissors to cut away the exposed braiding.
4. Use wire strippers to remove the insulation from the last 5 mm of all wires.
5. Wrap insulating tape over the top and end of the the cut sheath.



Soldering

Observe the following when soldering the prepared wires onto the connectors.

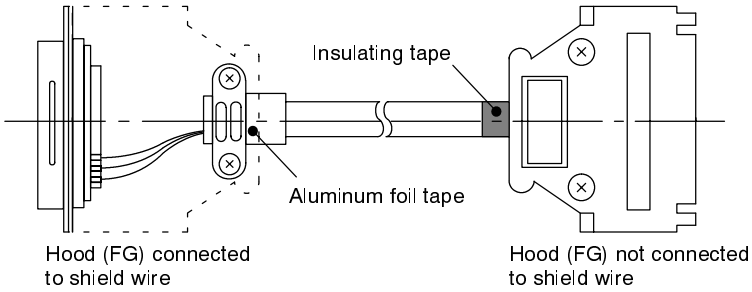
1, 2, 3...

1. Place heat-shrinking tubes over all wires, far enough away from the end so as not to interfere with the soldering.
2. Pre-solder all wires and connector terminals.
3. Solder wires, inserting 4 mm of the exposed 5 mm of wire into the connector terminal.

4. Move the heat-shrinking tubes onto the soldered area and shrink them into place.

Hood Assembly

Assemble the hood as shown in the following diagram. Be sure to connect one end of the shielded wire to FG.

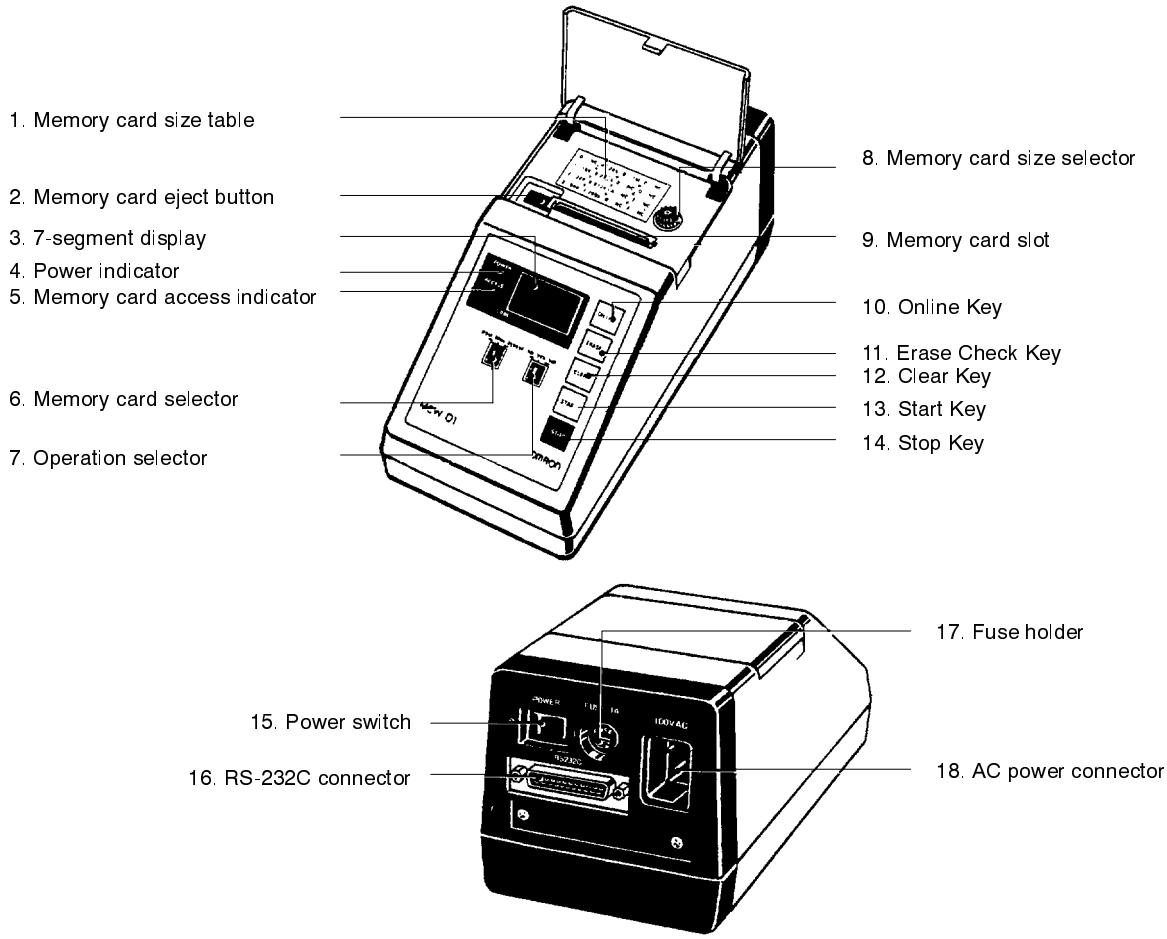


SECTION 3
Nomenclature and Functions

This section describes the components of the Memory Card Writer and provides its external dimensions.

3-1 Nomenclature and Functions

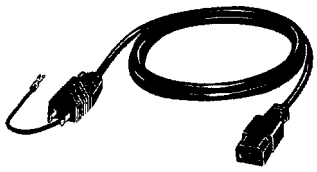
CV500-MCW01 Memory Card Writer



No.	Name	Function
1	Memory card size table	Turn the memory card size selector to set the memory card size according to the values in this table when formatting the buffer RAM or conducting the memory card erase check. Values 0 and 9, plus A to F, cannot be used.
2	Memory card eject button	Press the eject button to eject the memory card. Do not press the eject button during memory card communications. A continually changing 7-segment display indicates that the memory card is communicating.
3	7-segment display	A 2-digit alphanumeric display indicates the operational or error status.
4	Power indicator	Lights while the power is turned on.
5	Memory card access indicator	Lights green during execution of an online or offline operation. Changes to red if an error occurs during operation. Press the Stop Key to reset.
6	Memory card selector	Used to set the memory card type. Data can be written to three types of memory card: RAM cards, EEPROM cards, and EPROM cards. This setting is valid only when writing to a memory card. A symbol on the left of the 7-segment display indicates the type of memory card. ROM: a RAM: b EEPROM: c
7	Operation selector	Selects the card read, write, or verify operation. A symbol on the right of the 7-segment display indicates the current operation. Read: a Verify: b Write: c
8	Memory card size selector	Used to set the memory card size for formatting the Memory Card Writer buffer RAM. Do not set 0, 9, or A to F.

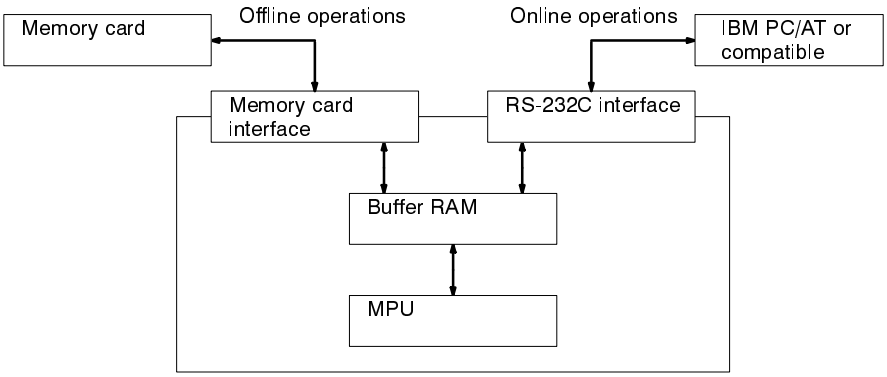
No.	Name	Function
9	Memory card slot	Slot to insert the memory card. Do not close the lid while a memory card is inserted.
10	Online Key	Press this key to select online processing. The 7-segment display indicates 0l during online operation.
11	Erase Check Key	Press this key to select the memory card erase check. d on the right of the 7-segment display indicates that the erase check has been selected.
12	Clear Key	Press this key to format the Memory Card Writer buffer RAM to the size designated with the memory card size selector. e on the right of the 7-segment display indicates that the Clear Key has been pressed.
13	Start Key	Press the key to start the selected operation.
14	Stop Key	Press this key to stop the current operation, or press it during an error display to return to operation selection. The Stop Key does not stop online formatting, 1-file card reads, or online initialization.
15	Power switch	Turns the Memory Card Writer on and off. Turn the switch to 1 to turn on the power or to 0 to turn off the power.
16	RS-232C connector	Connector for online operation. Connect this connector to the IBM AT/PC or compatible running CVSS with a cable. Lock the connectors with the screw locks when using the cable.
17	Fuse holder	Fuse to protect the AC power circuit. Replace with a 5.2-diameter x 20 mm, 1-A fuse.
18	AC power supply connector	Connect the power cable accessory. Supply a voltage between 100 V and 120 V.

Accessories

Name and appearance	Description
Power cord 	Supplies AC power to the Memory Card Writer.

3-2 Internal Configuration

Internal Configuration Diagram



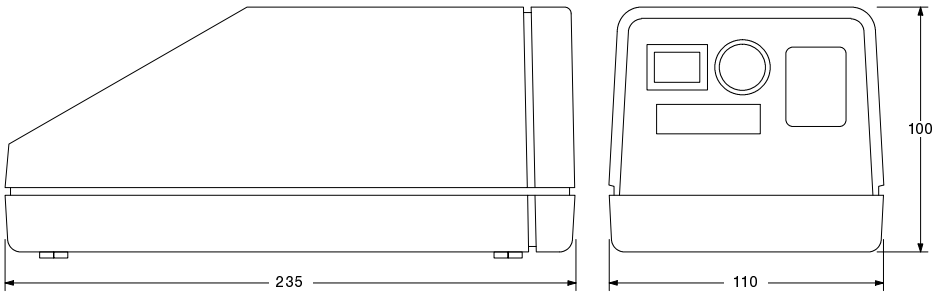
Offline Processing When the Memory Card Writer is offline, operations are available to transfer and verify data between the memory card and buffer RAM.

Online Processing When the Memory Card Writer is online with the IBM AT/PC or compatible running CVSS, offline Memory Card operations are available to transfer, copy, delete, rename, initialize, or print between the memory card and Memory Card Writer buffer RAM.

Note The contents of the buffer RAM are not retained when the power is turned off.

3-3 Dimensions

All dimensions are in millimeters.

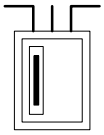
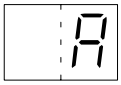
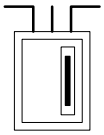
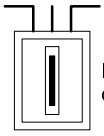
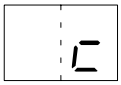
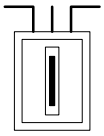
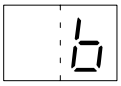
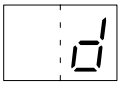
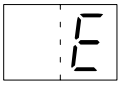


SECTION 4
Operation

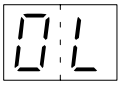
This section describes the operations possible from the Memory Card Writer. Refer to the CVSS manuals for details on manipulating the Memory Card Writer from the CVSS.

4-1 Overview

4-1-1 Offline Operations

Name	Procedure	Display	Function
Read card	RD VER WR  Press Start Key.		Writes the contents of the memory card to the buffer RAM. Left digit of the display is unrelated to this operation.
Write card	RD VER WR  ROM RAM EEROM  Match to card type. Press Start Key.	 Right-digit displayed	Writes the contents of the buffer RAM to the memory card. Left digit of the display indicates the position of the memory card selector, as follows: Switch setting / Card type / Display ROM / EPROM / A RAM / RAM / b EEROM / EEPROM / c
Verify	RD VER WR  Press Start Key.		Compares the buffer RAM contents and memory card contents. Use this operation after writing to the card. Left digit of the display is unrelated to this operation.
Erase check	 Set size of checked card. Press Erase Key. Press Start Key.		Makes sure that an EPROM card is in FF status (erased). Use this operation before writing to an EPROM memory card. Left digit of the display is unrelated to this operation.
Format buffer RAM	 Set the format size. Press Clear Key. Press Start Key.		Initializes the buffer RAM to the specified size of memory card. Format (clear) the buffer RAM to change the format size after the power is turned on or during operation. All existing files will be deleted from the buffer RAM when this operation is executed. Left digit of the display is unrelated to this operation.

4-1-2 Online Processing

Name	Procedure	Display	Function
Online start	Press Online Key. Press Start Key.		Places the Memory Card online with the CVSS so that offline Memory Card operations can be used (see following table).

CVSS Operations The following operations are performed from the CVSS.

Operation	Function
Comp QA Memory card	Transfers files between the data disk or hard disk and the Memory Card Writer buffer RAM.
Copy file	Copies a file in the Memory Card Writer buffer RAM.
Chge file name	Renames a file in the Memory Card Writer buffer RAM.
Delete file	Deletes a file in the Memory Card Writer buffer RAM.
Initialize	Initializes the Memory Card Writer buffer RAM. Always execute this operation before using a new card.
Print	Prints the directory of files in the Memory Card Writer buffer RAM.

4-2 Details

4-2-1 Formatting the Buffer RAM

Initialize the buffer RAM first before proceeding with other operations. This will clear all data from the RAM and prepare it for operation.

All Memory Card Writer online and offline processing operates via the buffer RAM. Format the buffer RAM whenever the power is turned on or a different size of memory card is used.

The approximate time required to format the buffer RAM when the memory card size selector is set to "5" is 2 seconds. The larger the format size, the longer the time required to complete the formatting.

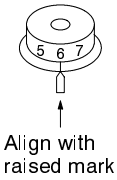
Note

1. The buffer RAM format operation formats the buffer RAM inside the Memory Card Writer. It is not possible to format a memory card directly.
2. All existing files will be deleted from the buffer RAM when this operation is executed.

1, 2, 3...

1. Turn the selector to set the memory card size according to the value in the memory card size table.

   Example: Set to "6" for a 512-Kbyte memory card.



2. Press the Clear Key to select the buffer RAM format operation.

   e will appear on the right of the 7-segment display.
3. Press the Start Key to start formatting the buffer RAM.

   The display will change continuously while formatting is completed.

   00 will be displayed if formatting ends normally.

4-2-2 Reading a Memory Card

When a memory card is read, all the files in the memory card are written to the buffer RAM in the Memory Card Writer. Files already in the buffer RAM when this operation is executed are not deleted and the read files are appended to them. Any file with the same name, however, will be overwritten. If the capacity or the RAM is exceeded, an error will be displayed after the maximum possible amount of data has been read.

The approximate time required to read a 256-Kbyte SRAM memory card containing a 125-Kbyte file is 6 seconds. The larger the file size, the longer the time to read the card. The time is the same for all types of memory card.

Note
1. The STOP Key is disabled while a file is being read.
2. Do not eject the memory card during a read operation (while the 7-segment display is changing) as this may damage the memory.

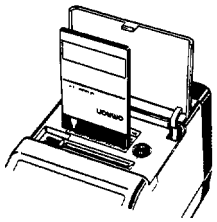
1, 2, 3...
1. Format the buffer RAM to the desired size.

   The error code e4 will be displayed and no data will be read if the buffer RAM is not formatted before the read card operation is performed.
2. Turn the operation selector to RD.

   a will appear on the right of the 7-segment display.

   The memory card selector can be set to any position.
3. Insert the memory card.

   Note Be sure to insert the card in the correct direction.



4. Press the Start Key to execute the read card operation.

   The display will change continuously while the card is being read.

   00 will be displayed if reading ends normally.

4-2-3 Writing a Memory Card

When a memory card is written, the contents of the buffer RAM are written to the memory card.

An SRAM or EEPROM memory card must first be write-enabled. Use the erase check before writing to an EPROM memory card. An EPROM card must be erased and checked with the erase check operation before writing. An EPROM memory card can be written only once, i.e., once data has been written to an EPROM card, it must be completely erased before writing to it will be possible again.

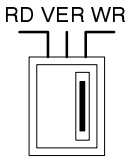
The larger the memory card size, the longer the time to write the card. The approximate time required to write to a card also depends on the type of card, as follows:

64-Kbyte EEPROM card:	8 seconds
128-Kbyte SRAM card:	7 seconds
512-Kbyte EPROM card:	23 minutes

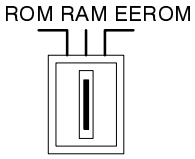
Note
1. The contents of the buffer RAM are written directly to the memory card. Existing data is overwritten and deleted by the write card operation. To append data to the existing data in the card, first read the files from the card with the read card operation to append them to the existing contents of the buffer RAM, then write the contents of the buffer RAM back to the memory card.
2. Do not eject the memory card during operation (while the 7-segment display is changing) as this may damage the memory.

1, 2, 3...
1. Select the format size to the size of the memory card to which data will be written and initialize the RAM.
2. Create files in the buffer RAM with online or offline processing.
3. Turn the operation selector to WR.

   c will appear on the right of the 7-segment display.



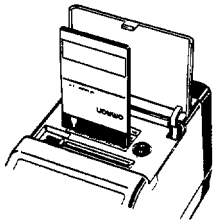
4. Set the memory card selector to the type of card used.



A symbol at the left of the 7-segment display will indicate the type of memory card that has been selected, as follows:
ROM: a
RAM: b
EEPROM: c

5. Insert the memory card.

Note Be sure to insert the card in the correct direction.



6. Press the Start Key to execute the write card operation.
The display will change continuously while the card is being written.
00 will be displayed if writing ends normally.

4-2-4 Verification

This operation is used to compare the RAM buffer contents and the contents of the memory card in the Memory Card Writer. Use this operation after writing to the card to verify that the memory car was written correctly.

The approximate time required to verify a 256-Kbyte SRAM memory card is 6 seconds. The larger the card size, the longer the time to verify the card. The time is the same for all types of memory card.

Note
1. The verify check will generate an e5 error if it is executed after a card is read.
2. Do not eject the memory card during a verify operation (while the 7-segment display is changing) as this may damage the memory.

1, 2, 3...
1. Write files to the card with the write card operation.
2. Turn the operation selector to RD.
b will appear on the right of the 7-segment display.
3. Press the Start Key to compare the contents of the card with the contents of the RAM buffer.
The display will change continuously during the verification.
00 will be displayed if the verify check detects no differences.

4-2-5 Erase Check

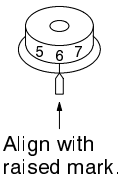
This operation is used to make sure that an EPROM card is in FF status (erased). Erase the EPROM card before using this check, and use this operation before writing to an EPROM memory card.

The approximate time required to check if a 512-Kbyte EEPROM memory card is erased is 9 seconds. The larger the card size, the longer the time to check the card.

1, 2, 3...

1. Insert an empty memory card.
2. Turn the selector to set the memory card size according to the value in the memory card size table.

   Example: Set to "6" for a 512-Kbyte memory card.



3. Press the ERASE Key to select the erase check operation.

   d will appear on the right of the 7-segment display.
4. Press the Start Key to start the erase check.

   00 will be displayed if erase check detects no errors.

4-2-6 Starting Online Processing

The CVSS offline Memory Card operations can be used if the IBM AT/PC or compatible running CVSS is connected to the Memory Card Writer. The Memory Card operations include initializing the buffer RAM, transferring individual files, copying, renaming and deleting files, and printing a directory of files in the Memory Card Writer buffer RAM. Refer to the following manual for details: *CV Support Software Operation Manual: Offline.*

1, 2, 3...

1. Connect the computer running CVSS to the Memory Card Writer with a cable.
2. Turn on the computer and start CVSS.
3. Turn on the Memory Card Writer power supply.
4. Press the Online Key. 0l will be displayed.
5. Press the Start Key. The memory card access indicator will light green.
6. Select the CVSS offline Memory Card operations.

   Select the required operations from the Memory Card menu.

   Press the Stop Key to return to offline operation.

4-3 Using the Memory Card Writer

These examples show how to copy a memory card with a Memory Card Writer.

Select the Computer A memory card operation from the menu then specify the name of each file to be transferred. (The Computer A memory card operation copies from the CVSS floppy disk to the Memory Card Writer buffer RAM.) Files copied with this operation are date-stamped 80/00/00.

When a card is read, all files are copied from the memory card to the Memory Card Writer buffer RAM.

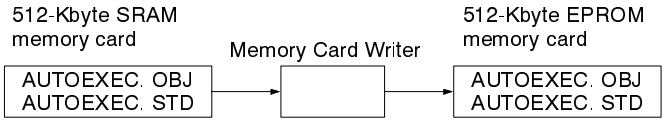
If the size of files in the memory card or the size of the specified files on the floppy disk exceeds the formatted size of the buffer RAM, the surplus data is not transmitted.

Example 1

The following example shows how to copy data between memory cards of the same size. In this example, files from a 512-Kbyte SRAM memory card are copied to a 512-Kbyte EPROM memory card.

1, 2, 3...

1. Format the buffer RAM to 512 Kbytes.
2. Read the SRAM card.
3. Write the EPROM card.

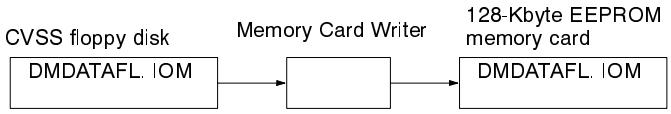


Example 2

The following example shows how to copy a file from the floppy disk loaded in the CVSS to the memory card. In this example, a file from the CVSS floppy disk is copied to a 128-Kbyte EEPROM memory card.

1, 2, 3...

1. Format buffer RAM to 128 Kbytes.
2. Execute Computer A memory card from the CVSS.
3. Write the EEPROM card at the Memory Card Writer.

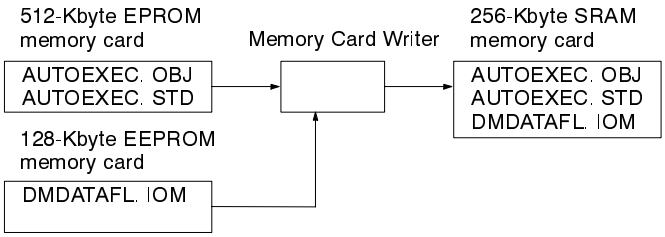


Example 3

The following example shows how to copy files from memory cards of different sizes to a single memory card. In this example, files from a 512-Kbyte EPROM card and a 128-Kbyte EEPROM memory card are copied to a 256-Kbyte SRAM memory card.

1, 2, 3...

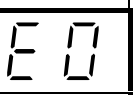
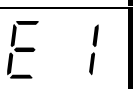
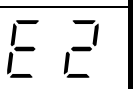
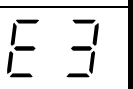
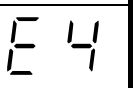
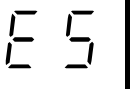
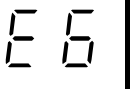
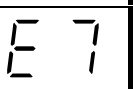
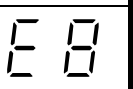
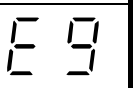
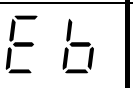
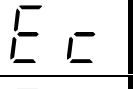
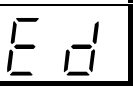
1. Format the buffer RAM to 128 Kbytes.
2. Read the first card.
3. Read second card.
4. Write the SRAM card.



SECTION 5
Error Codes

This section describes the error codes that may appear on the 7-segment display during operation.

An error code from the table below appears on the 7-segment display when an error occurs during Memory Card Writer operation.

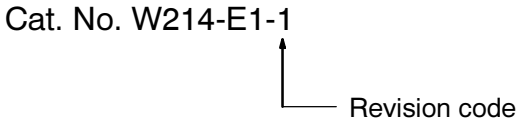
Error code	Error	Cause	Remedy
	Communications error	Communications ended abnormally during CVSS Memory Card operation.	Check cable connectors are tight. Repeat operation.
	Erase check error	The EPROM memory card is not erased. (Occurs when erase check is run).	Use a correctly erased EPROM memory card.
	Write error	The memory card selector did not match the type of card inserted in the Memory Card Writer when writing a card.	Set the memory card selector to match the type of card inserted in the Memory Card Writer.
		The EPROM already contained data when the write card command was used.	Use an erased EPROM memory card.
	Insertion error	Memory card not inserted or incorrectly inserted during online processing.	Insert a memory card into the slot.
	Formatting error	The memory card size selector was set to an illegal position during formatting.	Set the memory card size setting rotary switch to match the size of the memory card to be written.
		Buffer RAM not formatted when reading a card.	Format the buffer RAM.
		Abnormal buffer RAM during formatting.	Consult your nearest OMRON sales office, listed at the rear of this manual.
	Verify error	Buffer RAM contents did not match the memory card contents. (Occurs during the verify check.)	Repeat the verify check after writing the card again.
	Size error	Insufficient free space remaining in the buffer RAM when reading a card.	Use online processing to delete unwanted files and increase the free space. Alternatively, format the buffer RAM. All existing data is deleted when the buffer RAM is formatted.
	Write protect error	Writing disabled with the SRAM or EEPROM memory card write-protect switch when writing to the card. Or, an EPROM memory card is inserted but the memory card selector is set to RAM or EEPROM.	Enable writing with the write protect switch before writing to an SRAM or EEPROM memory card. Set the memory card selector to match the type of card inserted in the Memory Card Writer.
	Checksum error	Incorrect sum for a file with a sum value (identifier OBJ, LDP, SFC, STD, or IOM) when reading a card.	Repair the file.
	Read error	Memory card damaged or an internal Memory Card Writer error occurred when reading a card.	If the same error occurs when reading another memory card, consult your nearest OMRON sales office, listed at the rear of this manual.
	Read error	An internal Memory Card Writer error occurred when reading a card.	Consult your nearest OMRON sales office, listed at the rear of this manual.
	Write error	The buffer RAM format size did not match the memory card size when writing a card.	Insert a memory card matching the buffer RAM format size, or reformat the buffer RAM to match the size of the inserted memory card. Note that all existing data is deleted when the buffer RAM is formatted.
	Read error	Unformatted memory card used when a card is read.	Insert a formatted memory card. Write to the card after formatting the buffer RAM.
	Battery low	No battery in the SRAM memory card or the battery voltage is down.	Insert a new battery in the memory card.

Appendix
Specifications

Item	Specifications
Power supply voltage	100 to 120 VAC, 50/60 Hz
Supply voltage range	85 to 132 VAC
Power consumption	50 VA max.
Operating temperature range	0%C to +50%C
Operating humidity range	35% to 85% (with no condensation)
Operating environment	No corrosive gases
Storage temperature range	–20%C to +65%C
Applicable memory cards	SRAM, EEPROM, or EPROM 16, 32, 64, 128, 256, 512, 768, or 1,000 Kbytes
Dimensions	110 x 235 x 100 mm (WxDxH)
Weight	1.2 kg max.

Revision History

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



The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
1	October 1992	Original production