SVI·767

MSX DATA CASSETTE
USER'S MANUAL

SVI™
SPECTRAVIDEO

MSX

This equipment generates and uses radio frequency
energy and, if not installed and used properly
(that is, in strict accordance with the manufactu-
rer's instructions), may cause interference to
radio and television reception. It has been type
tested and found to comply with the limits for a
Class B computing device in accordance with the
specifications in Subpart J of Part 15 of FCC
Rules, which are designed to provide reasonable
protection against such interference in a
residential installation. However, there is no
guarantee that interference will not occur in a
particular installation. If this equipment does
cause interference to radio or television recep-
tion, which can be determined by turning the
equipment off and on, the user is encouraged to try
to correct the interference by one or more of the
following measures:

- Reorient the receiving antenna.
- Relocate the computer with respect to the
  receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so
  that computer and receiver are on different
  branch circuits.

If necessary, the user should consult the dealer or
an experienced radio/television technician for
additional suggestions. The user may find the
following booklet prepared by the Federal
Communicaitons Commission helpful:

"How to Identify and Resolve Radio-TV Interference
Problems." This booklet is available from the U.S.
Government Printing Office, Washington, DC 20402
Stock No. 004-000-00345-4.

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Every effort has been made to supply complete and
accurate information in this manual. Spectravideo
International Ltd. reserves the right to change
Technical Specifications and Characteristics at any
time without notice.

USER'S MANUAL

Congratulations. The Spectravideo data cassette
recorder marks your entrance into Spectravideo's
expanding universe of educational, entertainment
and home management programs. This manual is your
guide into this new and exciting world. In the
coming chapters we will show you how to store and
playback your BASIC programs in a few different
ways. Please read this manual carefully and try
every program that we provide as examples.

TABLE OF CONTENTS

1. UNPACKING

The package of the SVI-767 should contain the following items.

(A)   Cassette Drive with a 3-ft. cord (one end with connector)

(B)   This Instruction Manual

(C)   One + 12V DC adapter
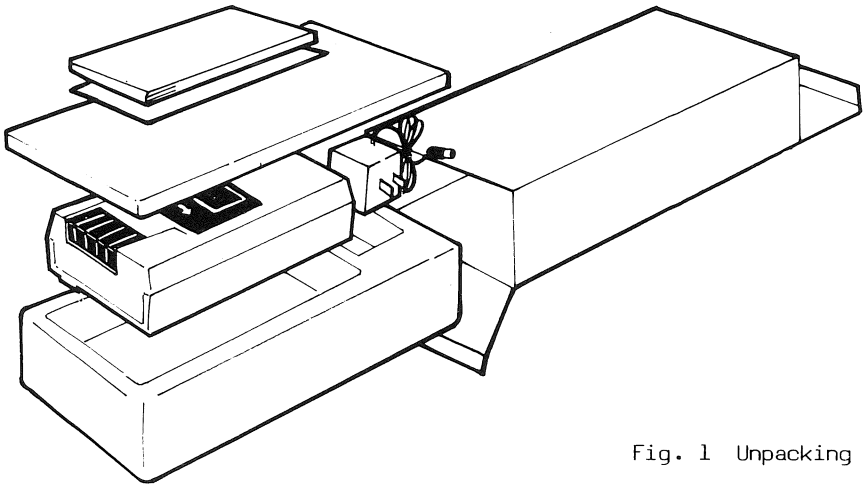
Fig. 1 Unpacking

2. FEATURES

Main Features: A. Built-in tape counter for
                    easy location of recorded
                    program material.

                B. No interface needed –
                    direct hook-up to SVI-728.

                C. Automatic Stop Feature,
                    which stops the recorder
                    when the cassette reaches
                    its end.

Other Features: A. LED
                B. STOP/EJECT button
                C. PLAYBACK button
                D. FAST FORWARD button
                E. REWIND button
                F. RECORD button
                G. Cassette cover
                H. Counter reset button
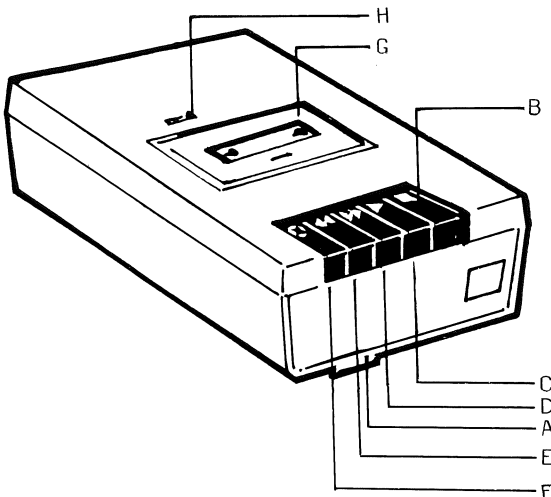
Fig. 2   Feature diagram

3. HOW TO CONNECT THE RECORDER TO THE SVI-728

Insert the 8 pin din plug connector (located on the cable attached to the rear recorder) into the slot on the back of the SVI-728 as shown in figure no. 3.

SVI-728 Computer

SVI-767 DATA CASSETTE
(BACK VIEW)
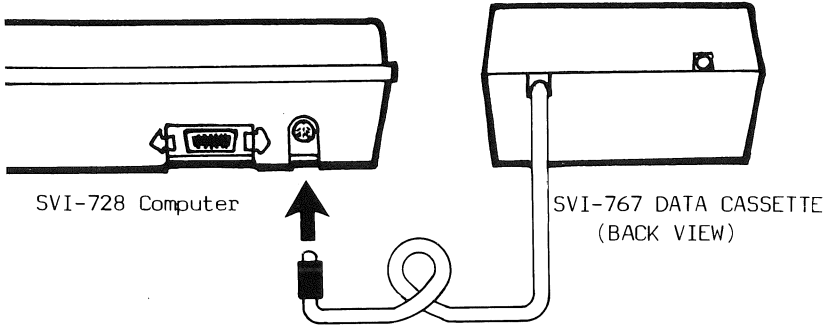
Fig. 3 Connecting the recorder to the computer

Connect the DC adapter to the power socket at the rear of the recorder as shown in figure no. 4.

SVI-767
DATA CASSETTE
(BACK VIEW)
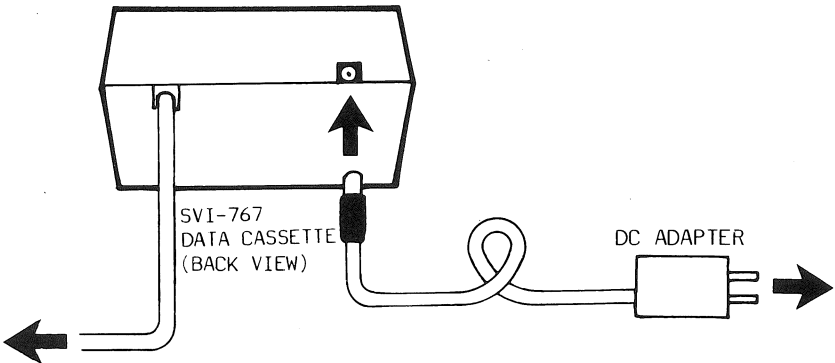
DC ADAPTER

Fig. 4 Connecting the power supply to the recorder

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CAUTION

The external power source should match the
input specification printed on the adapter.
For instance, in Britain, the power output of
a wall outlet is 240 volts and therefore the
input specification should show the same
figure.

4. HOW TO SAVE PROGRAMS ONTO A CASSETTE TAPE

1. Insert a cassette tape into the recorder. This procedure is the same as with most other cassette recorders. Press the STOP/EJECT button to open the cover. Insert the cassette with the tape's opening facing the front of the recorder. If the tape is fully rewound, all the tape will be on the left-hand spool. Press down the cover before continuing.

2. If you want to rewind the tape to the beginning, or fast forward the tape to a particular position (located by counter no.), just simply type the "motor on" command, and press the ENTER key. Then press the Forward or Rewind button on the cassette as required.

3. After you have written your BASIC program, insert the cassette tape into the recorder and make sure the recorder is connected to the SVI-728. If you are using a new cassette tape, advance the tape past the leader to the section that is made for recording. You must be careful not to record on the leader. If you are using a tape that contains previously saved programs, then advance the tape past the last program that you wish to retain. If you record over a previously saved program, you will automatically erase that program.

4. Type the command:

    CSAVE

    in immediate mode (the difference between
    immediate and program modes is explained
    at the beginning of the SVI-728 User's
    Manual). After the word CSAVE you must
    then type the name you wish to give your
    program. For example, if you wrote a
    checkbook program, you may type:

    CSAVE "CHECKBOOK"

    or

    CSAVE "CHBK"

    or anything else you may want to call it.
    After you have typed CSAVE and the name of
    the program surrounded by quotation marks,
    press the ENTER key. The name you give it
    is the name with which it will be stored on
    the cassette and the name which you need to
    use to load it back into the computer (More
    information on "how to load" will be given
    in section 5.)

5. After you have pressed the ENTER key, the
    computer will respond by telling you to
    press the PLAY and RECORD keys on the
    recorder. Press these two keys and the
    computer will begin writing your program
    onto the cassette. Whenever the computer
    is recording onto the tape, the red "IN
    USE" light located on the bottom front of
    the recorder will light up. When the
    computer has finished writing your program,
    the red light will go off and the computer
    will print the "OK" message on the screen.
    That's it. Your program is now saved.

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6. To interrupt the computer and stop it from
    saving a program, hold down the CTRL key
    and press the STOP key. Then release both
    keys. The computer will print its "OK"
    message on the screen, and return control
    back to you.

    Notes:(1)Record Prevent Device
              The cassette used in this unit
              contains special "knockouts" to
              prevent accidental erasure of
              a program (see figure 5). To
              protect recorded information
              against erasure, just remove the
              tabs on the back of the cassette.
              They can be replaced (by covering
              up the holes) should you ever
              want to record on the tape
              again.
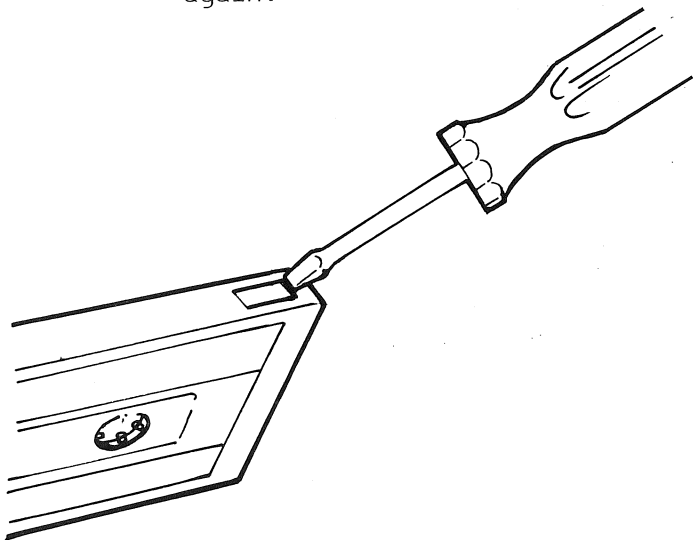
Fig. 5 Removing the record prevent TAB

(2) Tape Counter

The tape counter is for easy
location of material recorded
on tapes. Press the reset
button to set the tape counter
to the "000" position (see
figure 6). This is the
position you start on for
recording or playback.
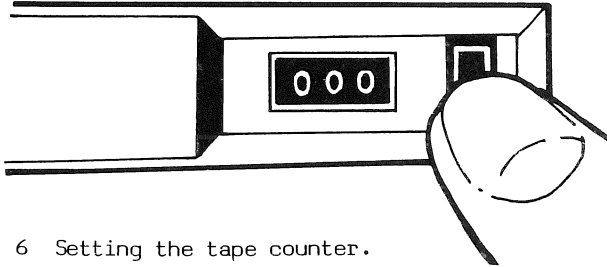
Fig. 6   Setting the tape counter.

5. HOW TO LOAD A PROGRAM INTO THE SVI-728

1. Insert the cassette tape which contains the program into the recorder.

2. Rewind the cassette tape fully by pressing the REWIND key on the recorder. All the tape should be on the lefthand spool.

3. If the program you wish to load is on a preprogrammed tape (i.e. the program was written by someone other than you), then follow the directions included with the program.

4. If you wrote the program yourself, then type :

    CLOAD

    in immediate mode, followed by the name of the program and then press.⌷ENTER⌷ For example, if the name of the program was CHECKBOOK, then you would type

    CLOAD "CHECKBOOK" ⌷ENTER⌷

IMPORTANT: The computer considers the name "CHECKBOOK" to be different from the name "checkbook" or "CHECKbook". Make sure that if you capitalized the name of a program when it was stored, you also capitalize it when you tell the machine which program to load.

5. The computer will then begin to search the
    tape for your program. When it finds the
    CHECKBOOK program it will print the
    message:

    Found: CHECKBOOK

    If other programs are stored on the tape
    before CHECKBOOK, the computer will print
    the message "Skip: DIARY" or whatever other
    programs are located on the tape prior to
    CHECKBOOK.

6. After the checkbook program is loaded into
    the SVI-728, the computer will print its
    "OK" message on the screen. You can then
    RUN the program.

7. If the computer does not find the program
    you named in the CLOAD instruction within
    the period of time that you think it
    should, then perhaps your program is not on
    that tape. To stop the computer from
    loading, hold down the CTRL key and
    press the STOP key. Then release both
    keys.   The computer will print its "OK"
    message on the screen and return control
    back to you. This is the reason that the
    tape counter is included on the data
    recorder. If you write down the location
    on the tape where a particular program is
    stored, you need not search through the
    entire cassette tape to find the program
    later. You need simply FAST FORWARD to the
    appropriate number and then tell the
    computer to CLOAD. The computer will
    find the desired program quickly.

6. SOME OTHER WAYS TO SAVE A PROGRAM ON A CASSETTE TAPE

In chapter 4 we explained how to save your program. Actually, the CSAVE command is only one of three different ways to save programs. Each of the three methods has its advantages and disadvantages. We will now explain the other two ways of saving your work and the technique the computer uses to save your program. Knowing how the computer saves your programs is important for understanding the advantages and disadvantages of each method. We have already mentioned the CSAVE command so we begin with an explanation of this method.

CSAVE   When you use the CSAVE command, the computer "tokenizes" your program. If the computer saved every BASIC command that you had typed exactly as you had typed it, it would take much longer than it actually did. Every character would have to be written, and even though the computer could handle the characters and numbers quickly, it still would take more time than you would care to wait.

                         Therefore, to save time, whenever the CSAVE command is issued, the computer will assign a value for each BASIC command in your program. These values are called tokens, hence the process is called "tokenization". Storing one character instead of several saves much time; therefore the program is saved and loaded very quickly.

BSAVE

The BSAVE and BLOAD commands allow specific portions of the RAM to be saved and loaded. These commands are recommended for the more advanced user. Further information can be found in the Spectravideo MSX BASIC Reference Manual available from your Spectravideo dealer.

HOW TO SAVE

Wouldn't it be nice if there was a way to save the beautiful pictures that you had created on the screen onto a cassette tape? Well, there is! And it's really very simple:

Step 1. Write your graphics program that uses SCREEN 1 or SCREEN 2 (the two graphics screens) and then RUN your program.

Step 2. Press the CTRL STOP key combination and then type:

csave "name"

So, if you draw a circle you might type:

csave "circle"

That's all there is to it. Later when you want to see your work of art, type:

cload "circle"

7. INTRODUCTION TO DATA FILES

The CSAVE command saves only your programs.
Remember that a program is a collection of
commands (or your instructions) to the
computer. The work that the computer performs
and outputs, such as a list of all the posses-
sions in your home, or a list of all your
friends which you can update, cannot be saved
by using the CSAVE command. To store these
types of lists and print them out whenever
needed, you must create a data file. Before
describing how to create a data file, though,
we must understand what it is.

Before the computer age, anytime someone
referred to filing, a picture of a unit of
steel drawers loaded with papers would
probably come to mind. Well, even after
the dawn of the computer era, the concept of a
file hasn't changed much. A file is a collec-
tion of information, kept somewhere other than
inside the computer's memory area. That
"somewhere" can be a cartridge, a cassette
tape or a floppy disk.

To keep order in a filing system — whether it
is a conventional filing cabinet or a cassette
tape — one must organize the files into
distinct units. If one were to label all the
files in a drawer merely with the name
"bills", it would be difficult to distinguish
between bills that had already been paid
and those that were still outstanding.
Similarly, if one were to file all the
information he saved on a cassette tape under
the same name, it would be difficult to
distinguish the various types of information
stored in the file.

There is a special type of data files called
"sequential" file. As its name implies, the
data is written sequentially, that is one item
after the other, in the order it is sent to
the cassette. It is loaded back into the
computer in the same way.

The following steps must be included in a
program to create and access a sequential
file. The ease of working with data files
will be greatly enchanced if you continually
bear in mind the parallel between a computer
data file and the folder file stored in a
filing cabinet. The following 4 steps are
common to both.

1.   OPEN the file for output (from the
     computer to the cassette tape.)

2.   Write data to the file using the PRINT #
     command (or other commands).

3.   CLOSE the file after you have written to
     it. To read data from a file you must
     OPEN it again for input (from the
     cassette tape into the computer).

4.   Use the INPUT # command (or others) to read
     the data.

The above-mentioned commands together with
several others that are used to create and
access sequential commands are illustrated
and explained through the use of sample
programs. Please type the programs carefully
and try them out.

DEMO#1   The first demonstration program
         highlights the following four
         fundamental commands:

         OPEN
         CLOSE
         PRINT #
         INPUT #

         PART I

```
10 open "demo1" for output as #1
20 a = 10 : b = 20
30 c = 30
40 print#1, a;b;c
50 close#1
```

After you have typed part one, RUN
it. This program will save the
numbers 10, 20, and 30 on the tape.

Line 10 instructs the computer to
OPEN (create) a file on the tape
called demo 1 to which we will
output, or write information. The
#1 at the end of line 10 is the
filenumber for the demo#1 file.

The filename is the label that you
use to refer to the file. The
filenumber is what the computer uses
to refer to the file. The
filenumber is a unique number that
is associated with the physical file
when it is opened. It identifies
the route that the computer uses to

send and receive information from
the data cassette recorder. Very
rarely will you need to access more
than one file at a time. Therefore,
use filenumber 1 for those instances
when you are using only one data
file. To specify the maximum number
of files you will open at one time, use
the following Format:

  maxifiles = [number of files]

Lines 20 and 30 define the variables
the program will use.

Line 40 is the one that actually
instructs the computer to write them
on tape, and line 50 closes the
demo# file (filenumber 1).

Now, we will write part two of this
program to read and print the
information that was written on the
tape in part one.

PART II

```
10 open "demol" for input as #1
20 input#1, a,b,c
30 print a,b,c
40 close#1
```

After you have typed this part in, rewind the tape and RUN the program. After you have pressed the play button on the recorder, the numbers should be read and printed. Here's why.

In line 10 the computer is instructed to reopen the file to read the information back into the computer. Notice that the filenumber is again #1.

Line 20 causes the computer to read the information back into the computer, and line 30 prints out the specified variables. Line 40 closes the demo1 file.

DEMO#2   This program illustrates the LINE INPUT# command. The first part of this program writes the string variables a$ and b$ on the tape.

PART I

```
10 open "demo2" for output as #1
20 a$ = "this is a demonstration"
30 b$ = "this is part of it too"
40 print#1, a$, b$
50 close#1
```

After you have typed part one, RUN it. Then type part two.

PART II

Part two will read and print the text stored in a$ and b$ using the command, LINE INPUT#.

```
10 open "demo2" for input as #1
20 line input#1, a$
30 print a$
40 close#1
```

The new command, LINE INPUT# appears on line 20 of part two. This command reads an entire line (up to 254 characters), without delimiters, from a sequential file to a string variable.

DEMO#3   This program demonstrates the last major command needed for sequential data file creation and access. The command is EOF which is the abbreviation for "End of File". First type in part one.

PART I

```
10 open "demo3" for output as #1
20 for a = 0 to 50
30 print#1, a
40 next a
50 close#1
```

RUN part one.

PART II

```
10 open "demo3" for input as #1
20 if eof (1) then goto 70
30 input#1, a
40 print a
50 goto 20
60 close#1
70 print "all done"
```

Rewind the tape and RUN part two.
This program writes the numbers 0-50
into a file and then reads them back
and prints them on the screen. It
prints the message "all done" when
it finishes. What is so great about
that you ask? Well, before we
explain the function of EOF, delete
line 20 from part two of the
program, change line 50 to read
"goto 30" and then RUN the program.
Do you get this error message?

        input past end in 30

You probably do because after the
computer has printed the last item
in the file, number 50, it returns
to the file looking for more data to
read (because line 50 sent it to
line 30 which tells it to read).
But since there is no more data left
in the file, you are told that you
tried to input (transfer from tape
to computer) past the end of the
file.

So how does the EOF command help?
The EOF function checks to see
whether or not the end of a file is
reached. If the end of a file has
been reached (true), then the value
that EOF returns (transmits) to the
program is 1 (one). A 0 (zero) will
be returned if the end of the file
has not been reached. Now let's
look at line 20 again. Here is how
to read it:

If the end of the file has been
reached, then goto 70.

Before each item is read, the EOF
checks to see if the end of file has
been reached. If it has not been
reached (the false or zero
condition), the program continues to
line 30. However if the EOF test
reports a true (1) condition then
the program jumps to line 70 and
prints the "all done" message, thus
avoiding the "input past end" error
message.

This brings us to a close of our
discussion on sequential data files.
Two minor commands that can be used
when working with sequential data
files have not been demonstrated.
They are:

PRINT# USING
INPUT

These commands are described in the
Spectravideo MSX BASIC Reference
Manual.

8. CAUTIONS AND MAINTENANCE

CAUTIONS   (A)   Use this unit in the horizontal position only.

(B)   Do not operate this unit in an area where the temperature is high, or under direct sunlight.

(C)   Periodic cleaning of the head assembly is necessary to avoid dirt.

(D)   Be sure to press the stop button before removing or inserting a cassette tape.

(E)   Metal cassette tape is not recommended for this cassette deck. Tapes of less than sixty minutes will provide optimal performance with this unit. If more than sixty-minute playing time is required, be sure to select a high-quality cassette tape capable of reliable performance.

MAINTENANCE   (A)   The head assembly, the capstan and the pressure roller are always in contact with the tape during operation. Therefore, they tend to get dirty very easily and this has an adverse effect on the recording quality and the volume. Occasional cleaning is necessary.

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(B) To clean the head assembly,
     remove the cassette and
     press the playback button.
     The head assembly then
     becomes accessible. Use a
     cotton swab dipped in
     denatured alcohol or head
     cleaning fluid to clean the
     assembly area gently (see
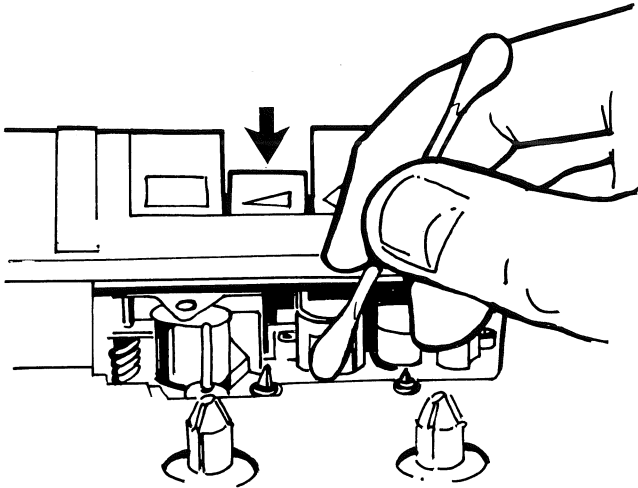   figure 7).

Fig. 7 Cleaning the recording head

(C) Don't put magnetic
     materials, such as a screw-
     driver or a magnet, near the
     head assembly.

(D) When cleaning, be careful
     not to bend the tape guide.

9. SPECIFICATIONS

These specifications are subject to change in order to accommodate improvements in design.

FUNCTIONS	REC/REW/FF/PLAY/STOP/EJECT
HEADS	1 R/P Head 1 Erase Head (DC)
RECORD BIAS	AC 60 Hz
BAUD RATE	1,200 BPS
THIRD HARMONIC DISTORTION	3%
S/N	20 db (min)
OPERATING VOLTAGE	8.4V – 15V DC
RATED VOLTAGE	12V DC
RATED LOAD	9 gm/cm
TORQUE	PLAY mode 40–70 gm/cm FF/REW mode 60 gm/cm
PINCH ROLLER PRESSURE	450 gm + 100 gm
TAPE SPEED	4.75 cm/sec. + 3% 24 RPM + 48 RPM
WOW & FLUTTER	Less than 0.3% (JIS)
FLUCTUATION OF SPEED	Against voltage: 30 RPM (max) at rated load and voltage 8.4V – 15V DC Against load: 50 RPM (max) at rated voltage and load 8 gm/cm to 12 gm/cm

SPECIFICATIONS

WINDING TIME   FF/REW 100 sec (max) for
                      C-60 tapes

COUNTER   3 digits

OTHER FEATURE   Power-ON LED indicator

TEMPERATURE   Operating between 5-35°C

HUMIDITY   Operating between 30-90%

DIMENSIONS (mm)   251(L) x 164(W) x 68 (H)

WEIGHT   Approximately 1.08 KG

SVI™

SPECTRAVIDEO