Ex. GOOG 1033

The Canon Still Video System Is One of a Kind

Imagine a camera that takes color photos but uses a floppy disk instead of film so that no film development is necessary. Then imagine sending these photos 8,000 kilometers in three minutes. You've just imagined Canon's SVS.

Canon U.S.A., Inc. has commercialized a still video system (SVS) that was field-tested at the 1984 Summer Olympics in Los Angeles. Fujio Mitarai, president, announced the product by saying, "The system was designed and is being built exclusively by Canon. The Canon SVS's components are intended for industrial users at this time. Newspapers, magazines and news photo agencies are the most likely immediate users." But this unique system can be used in any business where managing graphic information is required.

The components that Mitarai referred to are the RC-701 high-resolution camera ($2,595) that records up to 50 color pictures on a still video floppy disk, the RT-971 transceiver ($19,900) for transmitting color or monochrome images over telephone lines in three minutes, the RP-601 printer ($6,950) and the RR-551 recorder ($2,695) for instant picture playback on a TV set or monitor. Also available are the BP-7N Ni-Cd battery pack, the Video Visualizer RE-550, the CCD Color Video Camera Module and the RL-303 Laminator. In the following paragraphs, the main components of the system will be examined in further detail.

The Camera

The still video camera resembles a conventional 35 mm SLR camera in appearance, size and—to a large degree—operation. But the RC-701 is the first electronic imaging color camera on the market. It is equipped with a 2/3-inch CCD image sensor. Recording on a two-inch floppy disk at 780 pixels per horizontal line, the camera uses an RGB stripe filter to distinguish colors.

Its shutter speed varies from 1/18 second to 1/2,000 second in nine steps. Four shooting speeds are possible: a single image, two images per second, five images per second or even 10 pictures per second. The head moves automatically from one track to another and it does so soundlessly even at the fastest shooting speed.

Automatic white balance is provided but the color temperature may also be manually adjusted with a nine-position control. Exposure metering is also automatic or manual. For automatic metering, an SV lens is used; for manual, an FD lens. The normal CCD sensitivity is equal to a film speed of ISO 200 but in low-light conditions, sensitivity is automatically raised to EV1.5, the equivalent to ISO 600.

For viewing and focusing an image, a roof prism with laser mat and split-image rangefinder is conveniently equipped. Viewfinder LEDs indicate shooting mode, aperture value, over or under exposure warning, ex-

posure correction, flash charge ready, battery level, manual mode set and floppy disk status. More information is provided by an LCD on the top of the camera, including shutter speed, color temperature, shooting speed, track number and warnings for improper disk loading or full disk. An added feature not found in conventional cameras is the RC-701's built-in data encoding system that can superimpose on the bottom of the image year, month, day, hour, minute, second, shutter speed, aperture and four-digit identification. When data is entered, it is monitored with the LCD.

The user does not have to worry about accidental exposure or double exposure with a floppy disk. The disk, VF-50, is easily snapped into the camera, tracks of the disk are automatically advanced. Even if several pictures have been taken, the disk may be removed and re-inserted. The next picture is then recorded on the next empty track with no need for the user to perform any adjustment. Furthermore, the disk may be erased and used over again indefinitely if reasonable care is taken to avoid damage. Its capacity is 50 images in field or 25 images in frame mode.

With an adapter, the camera can use nearly 60 Canon FD lenses. In addition to these, the company has introduced models designed especially for use with the RC-701, compensating for the CCD's high sensitivity to long-wavelength light. Two lenses are currently available, the SV11-66 mm f/1.2 zoom and the SV 50-150 mm
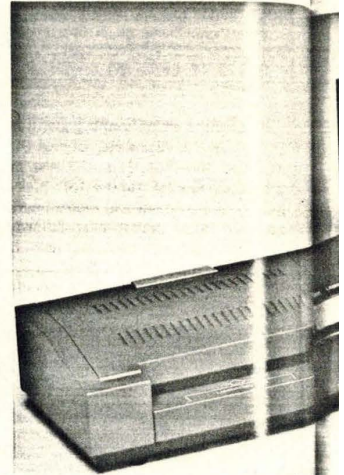
Canon still video system:

f/2.8 zoom. The SV 6 mm f/1.8 wide angle lens will be available later. Because the camera's imaging area is only one-fourth that of a 35 mm camera, the effective focal lengths of the two zoom lenses are 44-264 mm and 200-600 mm, respectively. These models have electronic mounts. Special ICs provide the interface with the camera and 8-bit microcomputers adjust aperture.

Only 50 ms is required for the SV 11-66 to go from maximum f/1.2 to minimum f/22 aperture. The two lenses do not have aperture setting rings, however, because they operate in either shutter priority or programmed modes. Both zooms have macro capability. The SV 11-66 is priced at $695 and the SV 50-150 costs $795.

The Transceiver

The RT-971 sends and receives video images worldwide via public telephone lines or leased lines. It may even be used with cellular telephone, a feature that enhances flexibility and versatility. Transmission time for a color picture is three minutes in the fast mode (field) and six minutes in the slow mode(frame). For monochrome, transmission is twice as fast. Two telephone transmission modes are available, AM for low-noise lines and FM for high-noise lines.

To send a picture, the user inserts the floppy disk. The transceiver reads the disk and stores the digital information in its 256KB memory. The unit then reads the data from its memory and transmits it. Users at either end can view the images on
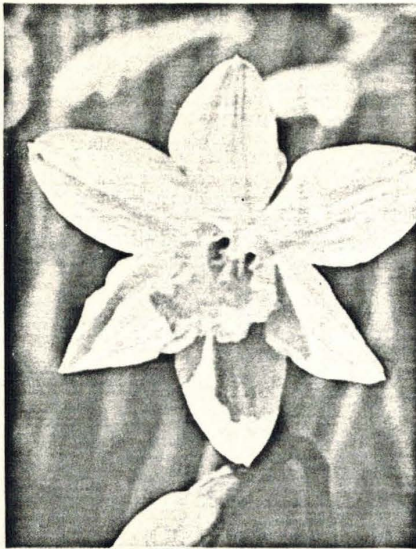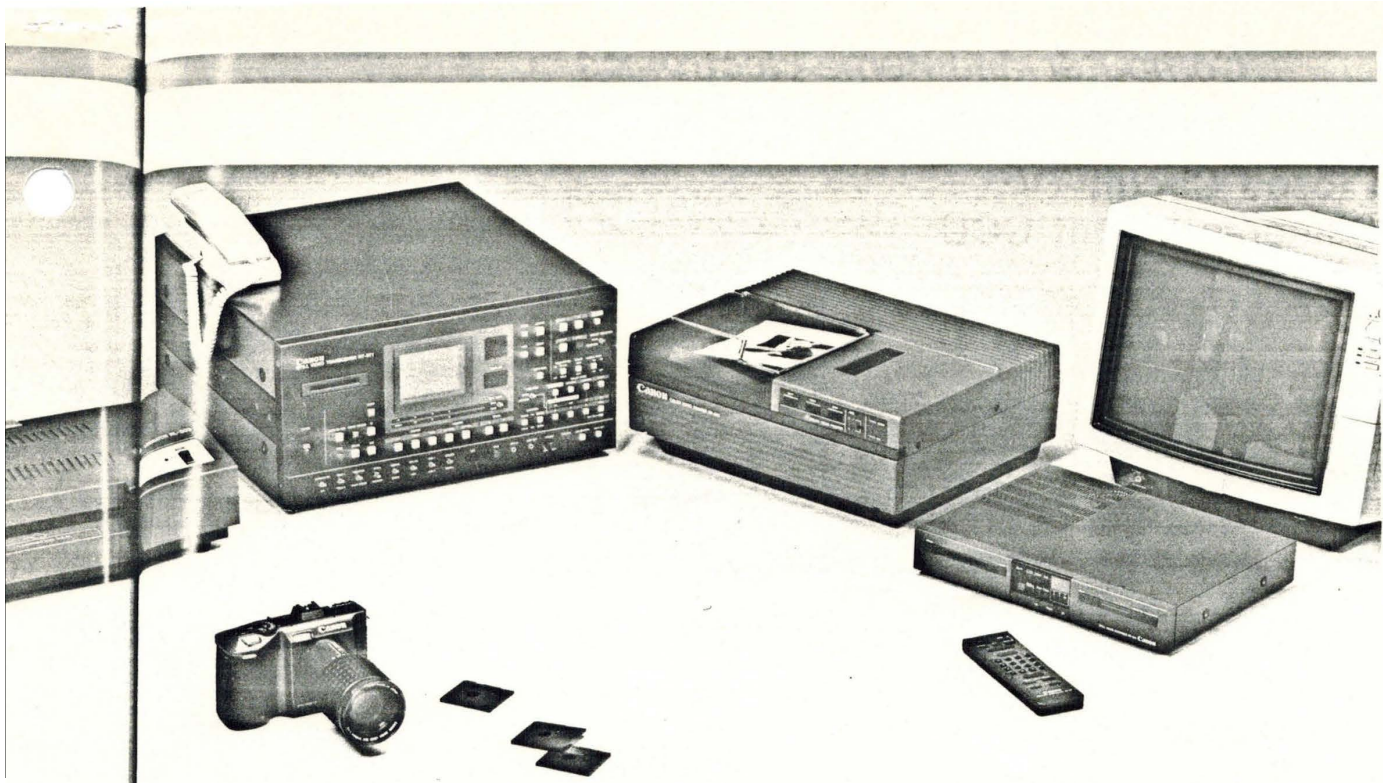
(Left to right) RL-303 laminator, RC-701 still video camera, RT-971 still video tranceiver, RP-601 color video printer, RR-551 still video recorder

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nitor of any size. Two-way com-
munication is possible because each
transceiver is equipped with speaker
and mic.

For color images, red, green and
blue signals are transmitted sequen-
tially and they are reassembled at the
other end. Black is transmitted
separately. The receiving RT-971 co-
pies the digital information onto
another floppy disk. Transmission
and reception require very little from
the users and this ease of use has the
additional advantage of providing
higher reliability.

Moreover, the transceiver can
record/playback freeze-frame images
from other sources such as a VCR or
videodisk player. Compatibility, in
fact, is one of its primary benefits.
The RT-971 may be used with a per-
sonal computer and computer as well
as with the Canon RP-601 video
printer. Thus the transceiver can han-
dle captions and text from a personal
computer (64KB of the RT-971's
memory is for text). It also interfaces
with conventional wirephoto
machines.

Two final functions of the tran-
sceiver should also be mentioned. A
positive-negative reversal switch is in-
cluded as a standard feature, and the
unit may be powered by a car battery
by connection with a converter.

The Printer

The RP-601 is a full-color ink-jet
printer with yellow, cyan, magenta
and black ink. It produces prints in
either of two sizes: 3 5/8 × 4 13/16
inches or 2 11/16 × 3 9/16 inches.
For the larger size, printing time is 4.5
minutes and for the smaller it is three
minutes. Printing is automatic but

may be adjusted manually. The
printer converts analog video signals
into digital signals and this data is en-
tered into the unit's memory. At this
point, the data is analyzed and the
printer's on-board computer selects
hues, brightness and saturation. As
mentioned, these characteristics may
be manually adjusted.

Originals may be made from the
Canon still video camera and visualiz-
er or from freeze-frames of TV, VCR
and videodisk. To assure care-free
operation, the RP-601 includes an au-
tomatic capping mechanism to cover
nozzles during non-use. It also has a
pump that removes bubbles from the
ink supply.

The Recorder

An integral part of the still video
system is the RR-551 video recorder.
This unit allows the pictures from the
camera's floppy disk as well as freeze-
frames of other video sources to be
displayed on a TV set or monitor. It
has a disk drive for the floppy disk
and permits forward or reverse search
at one, two, five or 10 frames per se-
cond.

It displays an image on the
screen for one to 99 seconds.

The recorder can both erase tracks
and re-record erased tracks of the
floppy disk. It is also the unit that
freeze-frames video images from a
TV, VCR or videodisk player. The
RR-551 further records dates,
parameters and other identification
on the bottom of a video image
produced by the still image camera.

Finally, all the recorders's funct-
ions may be remotely controlled (up
to 23 feet away) by an infrared control
unit.

The Visualizer

The RE-550 is an electronic over-
head projector. It is equipped with a
color video camera, Ci-10, that can
feed signals to one or more TV mo-
nitors or to a large-screen projection
video system for mass audiences. Its
Ci-10 CCD camera provides 780
horizontal and 490 vertical pixels. Un-
like conventional overhead projec-
tors, this model can accommodate
three-dimensional objects as well as
transparencies. It can connect with
the Canon transceiver or printer and

it produces images ranging in size
form 91 × 121.6 mm to 314.6 ×
233.3 mm. The unit's lens is an 8.3-16
mm f/1.7-2.2 zoom with macro and
it can focus an object as close as 1.29
inches. The RE-550 also produces
flicker-free images with its high-
frequency lighting system and it has
a built-in microphone. An external
mic may also be used.

This outline of the SVS indicates
the range of capabilities of Canon's
most recent innovation.
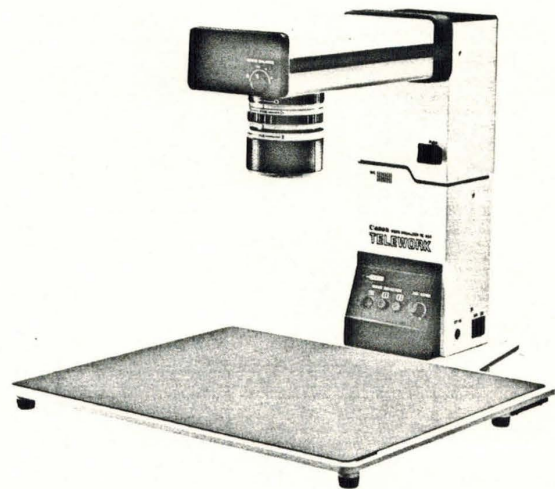
Telework RE-550 video visualizer