

Closed Circuit Television Reading Aids for the Partially Sighted

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Introduction

Optical aids have long been used to augment residual vision but such aids vary considerably in type, cost, availability and acceptability. They include simple hand magnifiers, industrial magnifiers (which often have illumination built-in), spectacle magnifiers and spectacle-mounted or hand-held telescopes. Up to 20x magnification is in common use but all aids have disadvantages and demand considerable adaptation and persistence from the patient. Higher powers invariably have a small field and a very short working distance (ie the space between the aid and the material to be viewed).

Closed circuit television confers certain advantages not available from optical aids:

- (i) greater magnification.
- (ii) ergonomic advantages of a relatively normal reading position.
- (iii) variable magnification with zoom lenses.
- (iv) image reversal - that is the capability of switching from conventional black print on white background to white on black which is preferred by many users.
- (v) enhanced contrast.
- (vi) electronic window to assist in reading just one line of print.

VII *Greater field of view by use of 12", 17" or 19" screen CRT's.*

The disadvantages are that the aids are bulky, difficult to move about, may need frequent skilled maintenance and are expensive. *10 years of history in this field leads us to not accept this graph as valid as a specific or general ~~statement~~ commentary.*

Table 1 is a summary of the main characteristics of the aids which are commercially available, and is based on information supplied by the manufacturers. Prices do not include delivery, duty or VAT.

Table 1 Summary of main features of CCTV reading aids

Manufacturer	Model	Separate camera and monitor	Screen size, inches	Minimum magnification	Maximum magnification	Image reversal	Electronic window/line	Split screen	Reading table	Use with moving carriage typewriter	Use with fixed carriage typewriter	Price range
Apollo Lasers	Portareader		12	6	45 55	S	S	S	S	S		D
Apollo Lasers	2C	S	19	6	60	S	S	S	S	S	S	C
Apollo Lasers	Dual Image	S	17	6	60	S	S	S	S	S	S	C
ElektronOptik	Magnivision	S	17	13	38	S	S	E	S	S	E	C
			24									
Interzeag	Makrolector		17		35	S			S	E		C
			20									
John Heathcoat	Focus Mk II	S	12	5	50	S			S	S		D
			17	8	75							
John Heathcoat	Focus Mk III	S	17	10	75	S			S	S		C
Pelco Sales	LVA 501		19	7	43	S		S	S	S		D
Pelco Sales	LVA 401		19	7	43	S		S	S	S		D
Reinecker	Videomatic P			5	35	S	S		S	S		C
Reinecker	Videomatic Z	S	20	5	25	S	S		S	S		
			24	8	35							
Reinecker	Videomatic ESP	S		5	25	S	S	S	S	S		
Reinecker	Videomatic EDL	S	24	5	25	S	S		S	S		
Reinecker	Videomatic C	S	26		40				S	S		
Visualtek	Voyager VR-1		12	3	45	S	S		S	S		D
Visualtek	RS-10	S	19	4	60	S	S		S	E		C
Visualtek	Commuter		9	6	15	S			E			D
Visualtek	CVS-3	S	19	4	60	S	S	S	S	S		C
Visualtek	RS-9	S	19	4	60	S	S	S	S	S	S	C
Visualtek	Microviewer	S	19	4	60	S		S	S	E		C

S standard, E extra; A very high, B high, C medium, D low

Apollo Lasers Inc, Electronic Visual Aids Division, 6357 Arizona Circle, P.O. Box 45002, Los Angeles, California 90045, USA. Tel: (213) 776-3343.

UK Agent: Photo-Scan Ltd, Dolphin Estate, Windmill Road, Sunbury on Thames, Middlesex, England. Tel: Sunbury (09327) 89741.

Model: PortaReader, Cat.No. 5100~~8~~

Description: One piece, lightweight portable system with 12 inch monitor, low voltage camera with built-in typewriter viewing capability, electronic window, image reversal, and special 6:1 zoom lens (6x - ~~4~~⁵x magnification).

Price: \$1750.00 plus \$135.00 for conversion to 240 volts, 50 Hz.

5110 XY Reading Platform \$100.00

Description: 19 inch monitor on stand, and vertically mounted low-voltage camera with pan and tilt capability, built-in typing aid, electronic window, image reversal, x-y reading platform and special 6:1 zoom lens (6x - 60x magnification).

Price: \$2450.00 plus cost of conversion to 240 volts, 50 Hz

Model: Dual Image System, Cat.No. 6100

Description: Permits simultaneous viewing of two different objects on split screen. 17 inch monitor, two cameras with zoom lenses, two x-y reading platforms and two stands.

Price: \$4100 plus cost of conversion to 240 volts, 50 Hz

Extra: Microfiche Reader, Cat.No. 7100B

Price: \$375.00

Extra: CRT Readout System, Cat.No. 8100B

Description: Pan and tilt motor drive, camera mount and joystick control.

Price: \$850.00

ElektronOptik AB, Box 7040, S-350 07 Vaxjo, Sweden. Tel: 0470 69400.

UK Agent: To be appointed.

Model: Magnivision type 04

Description: Light-weight (300 gr.) camera with 17 or 24

inch monitor. Camera can be moved by hand or attached to a camera arm on the monitor. Magnification up to 38 times. Flicker-free image. Depth of field 10 - 25 mm at maximum magnification. Positive or negative image. Electronic reference lines and frames.

Price: ? Swedish Kroner

Extra: Camera Arm

Description: Includes optics unit, built-in illumination and an arm with coupling piece. With a second camera and a reference and framing module it permits the simultaneous viewing (split screen) of two images. Height setting 305 to 220 mm. Depth of field 32 mm with maximum magnification and 150 mm with minimum magnification.

Price: ? Swedish Kroner

Extra: Hand-held camera

Description: Small lightweight camera for both right-hand and left-hand use. The camera can be held in the position that suits the object being read; the picture can still be presented horizontally on the screen merely by turning a control on the reading unit.

Price: ? Swedish Kroner

Interzeag AG, Rietbachstrasse 5, CH-8952 Schlieren, Switzerland.
Tel: 01 730 70 61.

Model: Makrolector 140

Description: Compact camera with 2/3 inch Vidikon, built-in contrast and picture inversion. Zoom lens with close-up lens for ridgeless adjustment of the magnification (up to 35x for 17 inch monitor). Illuminated adjustable table on ball-bearing slides 380 x 380 mm (15 x 15 inches) which can be locked in each direction. Monitors 17 inch and 20 inch. Typewriter calculator accessory. Yellow filter with line cover.

Price: 5970 Swiss Francs ex warehouse with 17 inch monitor.

John Heathcoat & Co Ltd, Tiverton, Devon EX16 5LL, England. Tel:
08842 4949.

Model: Focus Mk II

Description: Separate camera and monitor. Magnification 5x - 50x with 12 inch monitor, and 8x - 75x with 17 inch monitor. Positive and negative images, simple hand focussing, built-in light source, special x-y platform which can be removed for use with a typewriter.

Price: L805.00 with 12 inch monitor, L855.00 with 17 inch monitor. Delivery and installation L45.00.

Model: Focus Mk III

Description: Normal or absolute contrast picture with image reversal. Magnification 10x - 75x with 17 inch monitor. Simple electronic focussing. Adjustable light source. Slave monitors available.

Price: L1230.00. Electronic window module L120.00. Delivery and installation L45.00.

Pelco Sales Inc, 351 East Alondra Blvd, Gardena, California 90248, USA. Tel: (213) 321-5591.

Model: LVA501

Description: 19 inch monitor display. Solid-state 2:1 interlace vidicon camera. 7x to 43x magnification. Dual multi-level illuminators use inexpensive replacement lamps. Positive/negative image selectivity. Larger 14 inch by 19 inch scanning table, 12 inch travel range, adjustable drag and margin stops. Mounted on highly versatile heavy-duty leg frame with casters for high mobility. Typewriting capability without attachments. Operates from 117 volts, 60 Hz supply.

Price: \$1995.00 FOB Gardena, California

Model: LVA401

Description: 19 inch monitor display. Solid-state 2:1 interlace vidicon camera. 7x to 43x magnification. Dual multi-level illuminators use inexpensive replacement lamps. Positive/negative image selectivity. 14 inch by 19 inch scanning table with 12 inch travel range, adjustable drag and margin stops. Typewriting capability without attachments. Operates from 117 volts, 60 Hz supply.

Price: \$1895.00 FOB Gardena, California

Reinecker Videotechnik Gmbh, Darmstadter Strasse 3, D-6101
Bickenbach, German Federal Republic. Tel: 06257 4897.

Model: Videomatic P

Description: Camera and monitor are an integral unit. Magnification 5x - 20x or 8x - 35x. Positive or negative display. Built-in electronic line cover. Operation from 220 volt, 50 Hz supply.

Price: 4420 Deutschemarks FOB Frankfurt/Main Airport

Model: Videomatic Z

Description: Separate camera and monitor. Magnification 5x - 25x (20 inch monitor) or 8x - 35x (24 inch monitor). Sharpness adjustment is by an electric motor upon push button operation. Electronic mask, positive and negative image.

Price: ?

Model: Videomatic ESP

Description: Two cameras and one monitor. Magnification 5x - 25x. A control knob enables the image split to be controlled by percentage; or one image only to be shown. The magnification of the two images can be controlled independently. The upper image is always negative (white on black) and the lower image positive.

Price: ?

Model: Videomatic EDL

Description: Separate camera and monitor. Magnification 5x - 25x with 24 inch monitor. The table has been designed for the special requirements of computer programmers; the table has the size of a double computer sheet. Electronic masking, positive and negative images.

Price: ?

Model: Videomatic T

Description: Horizontally mounted camera with movement vertically and horizontally for reading visual display units. Magnification 1x - 15x. Pure black and white scanning with no grey tones.

Price: ?

Model: Videomatic C

Description: Separate colour camera and monitor giving up

to 40x magnification with a 26 inch monitor. With a switching lever attached to the front of the colour monitor, an electronically generated symbol can be guided to any spot of the image. With the aid of this cursor, it is possible to point to any part of the object shown. The colour of the symbol changes, depending on the background, from white to black to remain well visible. A video recorder can be connected to the monitor, and TV programmes may be received.
Price: ?

Extra: Videomatic M

Description: Motor-controlled reading table for use by the finger disabled.

Price: ?

Extra: Videomatic R

Description: Electronic calculator display which is directly connected so that it appears on one half of a split screen display.

Price: ?

Visualtek, 1610 26th Street, Santa Monica, California 90404, USA.
Tel: (213) 829-6841.

UK Agent: Wormald International Sensory Aids Ltd, 7 Musters Road, West Bridgford, Nottingham NG2 7PP, England. Tel: 0602 865995.

Model: Voyager VR-1, VR-2, VR-3, VR-51, VR-52, VR-53

Description: Camera, lens and monitor (12 inch) completely self-contained with front-mounted controls. Magnification from 3x to 45x. Built-in non-glare fluorescent illumination, positive/negative images selectivity, electronic line markers, aperture preset capability. Fully portable with built-in carrying handle.

Price: \$1795.00 - \$2095.00 FOB Santa Monica, California

Model: RS-10

Description: Powerful video visual aid with separate camera, lens and monitor. The camera is mounted on a compact foldable stand with built-in handle and master on/off control. Electronic line marker, monitor stand with tilt adjustment, protective covers are standard. Available as options are the typewriter accessory, lens and key lock.

Magnification is 4x to 60x with 19 inch monitor.

Price: From \$2425.00 FOB Santa Monica, California

Model: C-4 Commuter

Description: Smallest most portable video visual aid weighs 21 pounds and will fit underneath an airplane seat. 9 inch monitor, magnification 6x to 15x.

Price: \$1295.00 FOB Santa Monica, California

Model: CRT Viewing System CVS-3, CVS-2, CVS-1

Description: Versatile reading system for use with virtually all computer systems. Camera is mounted on special stand to enable user to scan a computer screen and adjust magnification, brightness, and contrast to suit individual needs. Model CVS-3 includes complete RS-10 system plus second camera, lens and special stand.

Price: From \$1770.00 to \$4195.00 FOB Santa Monica, California.

Model: Read/Write Typing Aid System RS-9

Description: Two camera, single monitor for use with all typewriters including fixed carriage ones. Includes split screen feature. Review and correction capability is under manual control.

Price: \$4175.00 FOB Santa Monica, California.

Model: Microviewer Read/Write System

Description: Microfiche viewing system and read/write system combined provides access to microfiche materials and regular reading material simultaneously via split screen feature.

Price: From \$1195.00 - \$3695.00 FOB Santa Monica, California.

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