THOMSON-CSF LABORATORIES, INC

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Matériel commercialisé également par

THOMSON - CSF / DRT

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MICROCAM™

Microcam™—the Broadcast-Quality, Ultra-Miniature Portable Color Camera

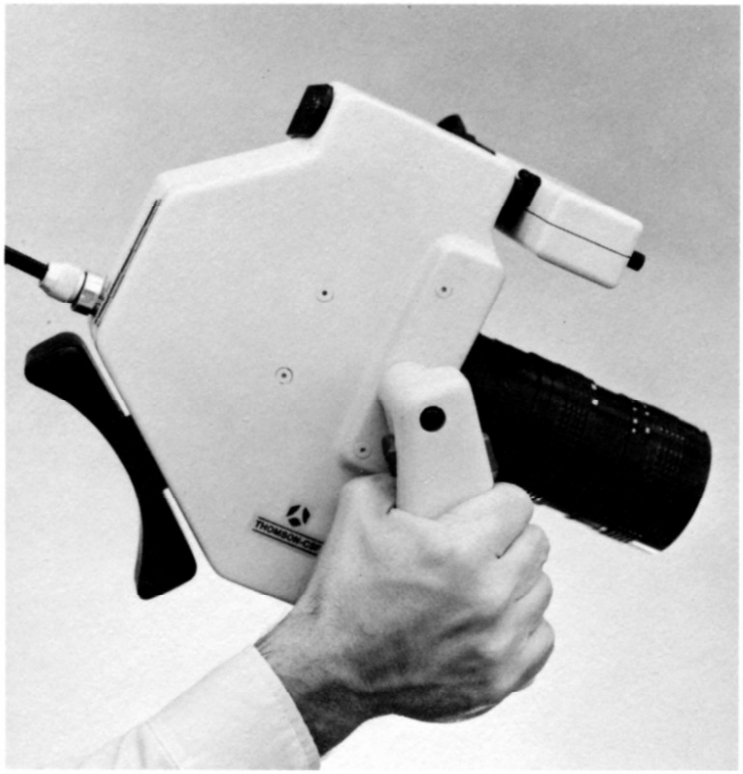
The recent upsurge in electronic news gathering (ENG) has generated the need for a TV camera with the weight and operating simplicity of a movie camera so that a cameraperson can be chosen for his or her journalistic ability, rather than for sheer strength and technical competence. Microcam™ was developed to fit this need by the same CBS Laboratories—now Thomson-CSF Laboratories—and the CBS Television Network team that developed the first Minicam, which was introduced approximately eight years ago. The Microcam project benefited greatly from this experience. The project originated under the CBS Corporate Research Program and, later, was jointly sponsored by Thomson-CSF S.A. and the CBS Television Network.

LOW WEIGHT

The overall design objective for this three-tube, ⅔" Plumbicon® camera was to achieve the lightest possible weight without compromising full broadcast performance. The complete Microcam is contained in two units:

· Camera head with lens and viewfinder	8 lbs. (3.63 kg)
· Electronics pack	3 lbs. (1.36 kg)
Total all-up weight	11 lbs. (4.99 kg)

Design configuration permits each of the elements to be operated and carried independently for maximum flexibility and portability. The eight-pound camera head can be held with one hand, easily, exactly as a conventional film camera.



LOW POWER

Miniaturization has reduced power consumption of the camera components to a remarkably low 22 watts:

· Camera Head	8.5 watts
· Viewfinder	1.5 watts
· Electronics pack	12.0 watts

These low-power requirements permit operation of one hour with a nickel cadmium battery pack which can be recharged in three hours. Longer operation and a fifteen-minute recharge are available as options.

Standard batteries are ½ D cells and weigh 2 pounds per conservative hour of operation. A standard 12-volt film-camera battery belt can also be used, giving several hours of operation.

CAMERA HEAD

- Automatic iris circuit with pistol-grip control has proportional speed control which allows user to "rocker-up" or down the auto-iris reference level.
- VTR trigger switch with momentary ON or ON-OFF latch.
- Full tally system, front tally switchable ON or OFF.
- Three-position filter wheel in front of prism.
- Rear-loading Plumbicons® for easy replacement.
- Low camera profile allows cameraman full visibility.
- F 1.4 Prism Assembly.
- Interchangeable lenses include, among others:

  F 2.0, 6-to-1, 12.5—75 mm
  F 1.4, 7-to-1, 9—63 mm
  F 1.9, 10-to-1, 10—100 mm
  F 1.8, 15-to-1, 19—135 mm
  F 1.4, 6 mm, fixed focal length, for maximum depth of field.

  Motorized iris and zoom is optional.

  Range extenders are available for some of above lenses. Lens specifications and availability are subject to change; with new lenses appearing frequently, consult Thomson-CSF Laboratories.
- Internal camera head set-up controls:

  Over-scan switch

  Focus rock switch

  Test pulse switch for checking each channel with a standardized target current

  Bias light ON/OFF switch. When in the OFF position, automatically removes bias light shading and dark current compensation so no camera readjustment is necessary.

  Bias lamp is quickly and easily accessible for easy replacement.

  Beam-set switch which reduces pre-amp by 6 db permits setting beam controls at 1 F-stop over normal.

VIEWFINDER

- Completely self-contained unit with 1½-inch CRT. Viewfinder is hinge mounted for over-head or floor-level operation, and has a two-inch diagonal magnifier. Highlight brightness is 150-foot lamberts with full DC restoration. 6.9KV provides excellent resolution.
- Controls:

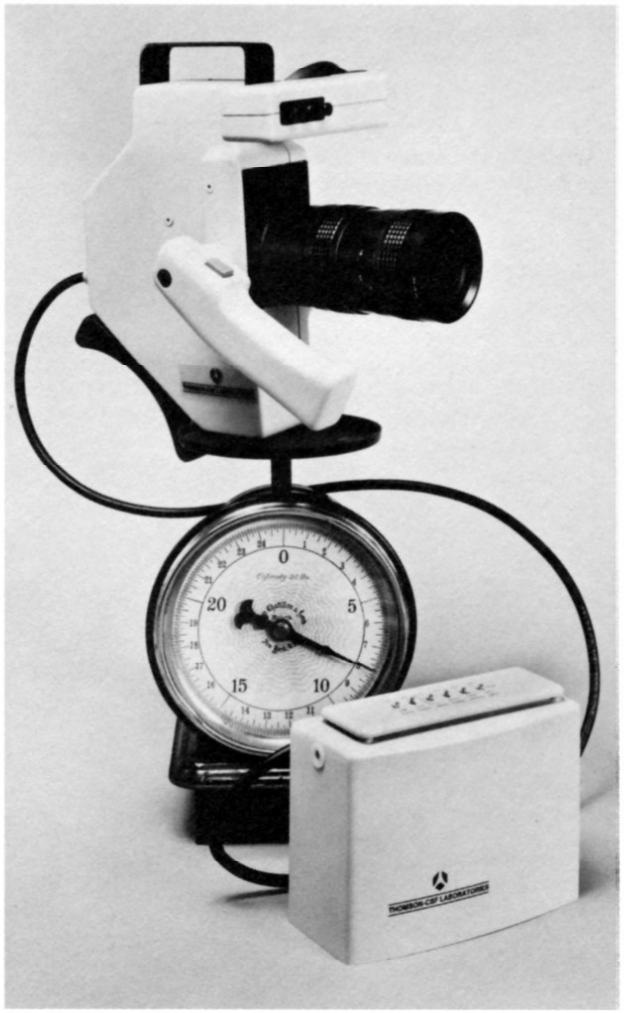
  Brightness, Contrast, Focus, and Video Peaking
- Displays:

  Video level indication with cross-hatch at flesh-tone level

  Iris position pulse at top of picture

  Tape remaining bar at top of picture

  Lights: VTR status, low-battery warning, tally light, and color-balance warning. Color balance warning light alerts operator when incorrect filter is in position when balancing or if one of the three Plumbicon channels is inoperative.
- VTR interface connector automatically switches viewfinder to VTR when VTR is in playback mode.
- Optional 4-inch viewfinder is available with the same 1.5-watt power consumption as the standard 1½-inch viewer. May be plugged into either the camera head or the electronics pack.



ELECTRONICS PACK

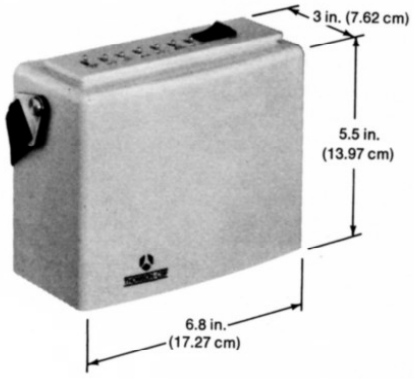
Contains complete signal processing circuits on four micro-circuit boards and provides:

- Two video outputs—1 NTSC and 1 separate luminance and chrominance output for "color-under" type video tape recorders.
- Full 3-channel masking with ON/OFF switch for matching colorimetry to studio cameras.
- Built-in 2-line image enhancer with comb filter and crispening and level-dependent aperture.
- Encoder with full I & Q, including phase compensated I filter.
- Color Genlock by external video or black burst. Genlock range is 360° for color ± 2μ seconds for H timing, ± 1 H for V timing.
- Built-in color bar generator, full or split field.
- Auto master black level with ON/OFF switch.
- Three-position sensitivity switch, 0 db, +6 db and +12 db.
- Adjustable flare compensation.
- Master oscillator requires no warm-up time. Camera warm-up is four seconds from standby.
- RGB output for negative registration through viewfinder or an external monitor.
- Color balance circuit with digital memory.
- External connector for optional 4-inch monitor viewfinder which can be used for tripod operation and used in tandem with camera viewfinder.
- Battery input voltage is 10.4 to 20 volts.
- Automatic shut-down at end of battery life so nickel cadmium cells do not deep discharge.
- "Keep-alive" nickel cadmium battery holds digital memories while changing main battery. Charged from main battery automatically while camera is in use.

Optional video transformers are available to isolate the camera from video output and genlock input coax cables for operator protection if the camera is connected to an improperly grounded AC operated base station. Transformers fit within space allowed for them in the Electronics Pack and add only a few ounces of weight.

MECHANICAL DESIGN

Mechanical packaging was as important as the simplified low-power electronic design in achieving the 11-pound Microcam. Space-age investment casting has permitted intricate, rigid, precision shapes at relatively low cost. Cast metal is impact-resistant aluminum covered with epoxy paint for maximum durability.



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