



Vidicon Camera V 322 Series

THIS self-contained, versatile camera has been designed specifically to meet the needs of educational closed-circuit television. It is, however, equally suitable for numerous small-studio applications and for a variety of other closed-circuit requirements.

Although an inexpensive camera, it produces a high-quality picture and its performance is very stable.

Features

No operational controls except the on/off switch and lens focus.

No separate control unit.

Automatic sensitivity control over large ranges of illumination.

Automatic black-level control.

High definition.

'High-flux' vidicon focusing.

Lower power consumption.

Easy to service.

Solid-state circuits employed throughout.

Available with or without lens turret and viewfinder.

CONSTRUCTION

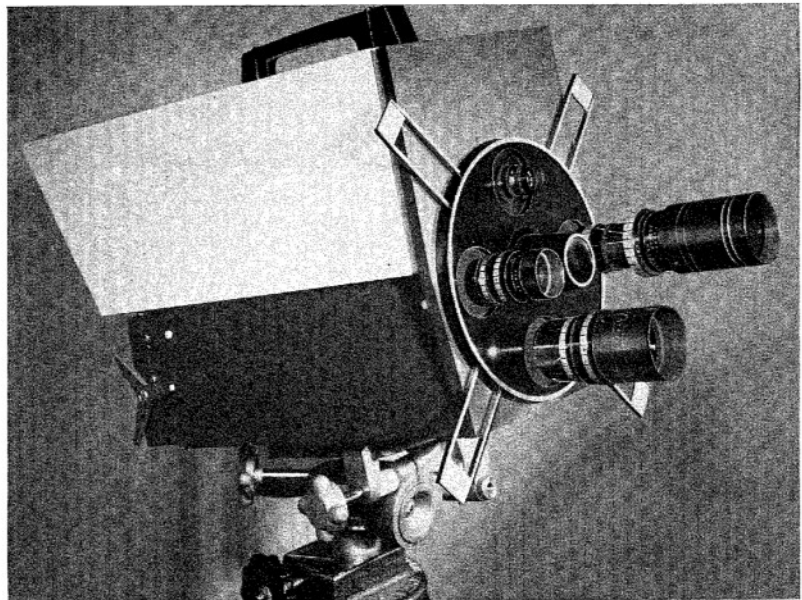
The complete assembly is made up of three parts, the camera itself, the viewfinder and the lens turret. For applications where view-finding and lens changing are not required the basic camera can be supplied by itself, for use with a single lens. The single-lens camera is known as the V322A and the complete assembly, including viewfinder and lens turret, is known as the V322B.

The camera

The camera comprises the vidicon tube, its scanning yoke and two printed boards carrying the video and scanning circuits including power supplies.

The vidicon scanning yoke is movable in the fore-and-aft direction for focusing. The movement is controlled in a non-linear manner either by a three-spoke capstan on the right-hand side or, when this is inconvenient, by a lead screw at the rear. These two mechanisms are interchangeable. A remote focusing unit is available.

The scanning yoke is of advanced design and incorporates a unique method of



Type V322B.

9697

vidicon mounting which locates the tube accurately and rigidly with respect to the yoke assembly. Either the standard 6-inch (15.2 cm) or the ruggedized 5-inch (12.7 cm) vidicon tube can be fitted.

The two printed boards are mounted one on each side of the camera case. These sides are hinged and open downwards to give quick and easy access for servicing. The boards themselves are easily detachable.

When the viewfinder and lens turret are not required, the lens is mounted on a simple plate which forms the front of the camera. Either broadcast or C-type lens mountings can be accommodated.

The viewfinder

The viewfinder is mounted on top of the camera and appears to be an integral part of it.

Access to the interior of the camera is possible without removing the viewfinder.

The 7-inch (17.8 cm), 70°, high-brightness picture tube and the scanning yoke form a complete assembly and the faceplate is sealed against dust.

The other major components comprise a single printed board, the picture-tube high-voltage supply and the power supply.

The lens turret

The manually operated lens turret replaces the single-lens mounting plate and unites the camera with the viewfinder. The turret accepts four C-type or broadcast-mount vidicon lenses on a pitch circle of 5 inches (12.7 cm). Lenses of focal length $\frac{1}{2}$ to 4 inches (1.3 to 10.2 cm) or 1 to 6 inches (2.5 to 12.2 cm) may be accommodated simultaneously without interference to the shorter by the longer focal length. The turret is located by a very positive indexing mechanism and is actuated by protruding spokes which are numbered to identify the lens in use.

CIRCUITS

The camera

Apart from the vidicon tube, this is a completely solid-state equipment. All transistors employed are of types readily available. The most important electrical feature is undoubtedly the automatic black-level control circuit. The development of this circuit, which has been patented, overcomes the most serious barrier to the realization of a fully-automatic television camera—that of black-level drift caused by variations of vidicon dark current, in turn caused by

variations of temperature and of target voltage. Moreover, the circuit does not rely solely upon either a 'theoretical' or a 'real' black-level reference but upon a combination of both, which overcomes the inherent problems of each of these methods on its own.

As a complement to the automatic black-level control, automatic sensitivity control, in the form of the now conventional automatic target voltage regulating circuit, is also incorporated. Together, these two features offer a degree of operational simplicity and reliability hitherto unattainable, and eliminate the need for all operational controls in normal operation other than the on/off switch and lens focus.

The horizontal scanning circuit is normally free-running, resulting in a 'random' interlace, and is crystal-controlled for maximum frequency stability. This has been found to be a most desirable feature when certain types of domestic receivers are used as monitors. The vertical scanning circuit is locked to the frequency of the power source.

Alternatively, a standard 2:1 interlaced signal may be obtained by driving the scanning circuits from an external synchronizing generator or simple 2:1 interlace by additional circuit board.

Both video and modulated r.f. outputs are provided, a choice of three adjustable pre-tuned frequencies in the range 50-88 Mc/s being given.

The viewfinder

A specially developed high-quality deflection yoke ensures geometrical accuracy similar to that of the camera, together with excellent overall focus.

Driving pulses are obtained from the camera but the scanning circuits are otherwise isolated to avoid interaction between camera and viewfinder.

Brightness and contrast controls are provided externally, adjacent to the tube face. All other controls are pre-set and internal.

The power supply is of sufficient capacity to drive both the viewfinder and the camera. The internal power supply of the camera is removed when it is operated with a viewfinder.

Apart from the high-voltage rectifier, solid-state devices are used throughout.

Data Summary

Ambient temperature: -10 to +45°C for continuous operation.

Humidity: Up to 95% over temperature range.

Power supply: 100-125 or 200-250 V, 50 or 60 c/s, single-phase a.c.

Power consumption:
Camera 35 VA. Viewfinder 65 VA.

Dimensions:

Height	Width	Length	Weight
<i>Complete assembly</i>			
12½ in.	8 in.	16½ in.	48 lb
(31.8 cm)	(20.3 cm)	42 cm	(21.5 kg)
<i>Camera only</i>			
4¾ in.	6¾ in.	15½ in.	19 lb
(11 cm)	(17.1 cm)	(38.7 cm)	(8.5 kg)

CAMERA

Scanning standards: 625 lines, 50 fields or 525 lines, 60 fields, random interlace. 2:1 interlace by additional circuit board.

Horizontal scanning rate: 15.625/15.75 kc/s crystal-controlled.

Vertical scanning rate: 50 or 60 c/s, mains-locked.

Video bandwidth: ±0.5 dB at 7 Mc/s. -3 dB at 8 Mc/s.

Limiting horizontal resolution: 600 lines, per picture height B.B.C. zone 1; 500 lines per picture height elsewhere, at 1 ft candle on vidicon face plate.

Sensitivity (with P842 vidicon): Usable picture at 1 ft Lambert with lens at f/1.4 and limited movement. Virtually lag-free pictures at 50 ft Lamberts and lens at f/2.

Auto-sensitivity range: 2000-to-1 above 0.25 ft candle on vidicon faceplate.

Auto-black-level range: Stable black-level set-up over vidicon dark-current change from 0 to 0.25 μA.

Low-frequency response: 5% tilt on 60 c/s square wave. D.C. level set by gated d.c. restorer.

Geometry: No point departs from ideal position by more than 1.5%.

Signal-to-noise ratio: p-p signal/r.m.s. noise 36 dB at 0.3 μA signal current.

Video output: 1 or 1.5 V p-p comp., or 0.7 or 1 V video only, into 75 Ω.

R.F. output level: 100 mV into 75 Ω.

VIEWFINDER

Highlight brightness: Not less than 75 ft Lamberts.

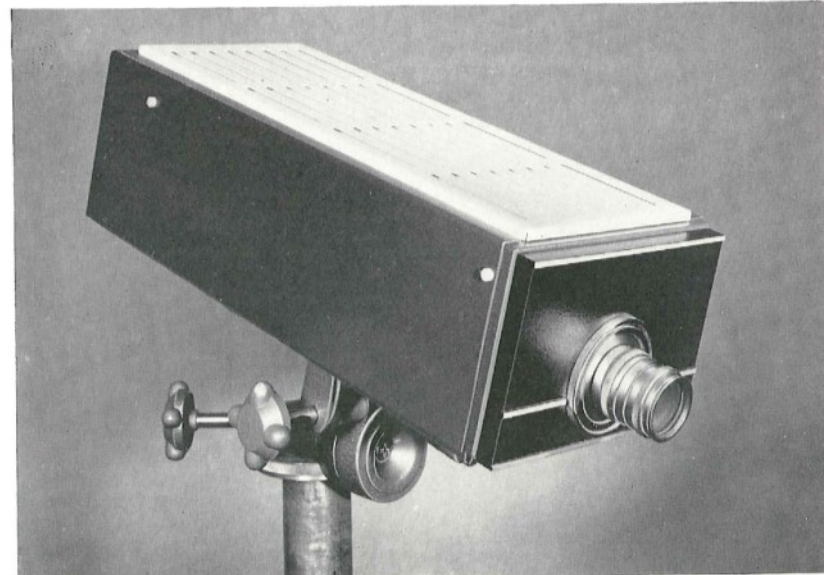
Video bandwidth: ±0.5 dB at 8 Mc/s. -3 dB at 10 Mc/s.

Horizontal resolution: 600 lines per picture height at specified brightness.

Geometry: No point departs from ideal position by more than 2%.

V 322A

9698



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