

EEV

P 4430

Portable

THERMAL

IMAGING

CAMERA





INTRODUCTION

The P4430 is a small hand-held thermal imaging camera using a pyroelectric vidicon. It is a self-contained battery-operated unit incorporating a miniature display monitor and can be fitted with interchangeable variable lenses. The equipment is for general thermal imaging applications and gives good quality monochrome thermal pictures.

SPECIAL FEATURES

- ★ Self-contained, compact and portable for hand-held use.
- ★ Detects man-sized thermal objects at a range of about 200m (75mm lens fitted).
- ★ Integral viewfinder/monitor gives operator a clear, TV-quality image.
- ★ Flicker suppressor gives very steady pictures in the 'chopped' mode.
- ★ Lightweight (3.6kg total, excluding lens, 3kg hand supported).
- ★ Removable pistol-grip handle.
- ★ Rugged for tough conditions.
- ★ A range of lenses can be fitted to give fields of view from 55° to 12°.
- ★ Battery options available for operating times from one hour upwards.
- ★ Additional remote surveillance and recording possible (fitted with output socket).
- ★ Tripod mount available.

DESCRIPTION

The cylindrical camera container is constructed of injection-moulded polycarbonate plastic, which provides a high degree of protection against shock and mechanical damage. The container is water resistant and suitable for outdoor use.

The display is presented on a cathode ray tube with a diagonal screen dimension of 40mm, and is viewed through a transparent window in the camera container. A magnifying and collimating lens is provided for the display, giving adequate eye relief and bi-ocular viewing for an operator wearing breathing apparatus, and a visor may be fitted.

The camera may be operated from rechargeable or disposable batteries assembled in a cartridge inserted in an injection moulded voltage stabilizer unit or for example for training purposes, from a battery substitution unit powered from a mains supply. A battery state indicator is provided, which is visible in the field of view while the camera is in use. The camera container is supported in a webbing sling with a neck strap to which is attached the voltage stabilizer unit containing the battery cartridge.



ENVIRONMENTAL PERFORMANCE

Thermal Environment

The camera is suitable for operation in an environmental temperature range -10°C to +40°C.

Mechanical Environment

The camera will withstand, in consideration of carriage on vehicles, 2g vibration from 1 to 3 Hz and 0.5g vibration from 15 to 40 Hz. Bump and Shock the camera will withstand 500 bumps of 10g, 6ms duration, at the rate of 1 bump per second. The camera will withstand 10 shocks of 30g, 11ms duration.

LENS

A germanium lens 50 or 75mm focal length at f/0.75 is normally fitted, giving a field of view of 18° or 12° approximately. The lens has a hard anti-reflection coating on the exposed surface, and can be cleaned as necessary with an appropriate cloth. The lens is provided with manual focus and iris controls.

SPECTRAL RESPONSE

The response is determined principally by the lens material, and covers the band 8 to 14µm approximately.

DURATION OF OPERATION

The camera requires an input voltage between 9.5V and 15V which may be obtained from 10 disposable batteries. 'Duracell' AA or a similar high capacity type will give an operating duration of approximately 2 hours. Rechargeable cells, for example 10 nickel-cadmium type AA, may be used, giving an operating duration of approximately 1 hour. A light-emitting-diode battery condition indicator, visible through the monitor lens, gives a warning approximately 10 minutes before battery exhaustion. An appropriate battery charger is available as an optional extra.

MAINS SUPPLY

A battery substitution unit powered by the mains supply is offered as an optional extra.

OPERATING MODES

The camera may be operated in two modes, 'panned' or 'chopped'. In the panned mode the image on the monitor represents changes in the temperature differences in the field of view, and the picture will disappear if the camera steadily views a constant temperature distribution in the scene. In this mode the camera must be oscillated slightly by the user in order to maintain the image. In the chopped mode a rotating shutter in the camera chops the incoming radiation, and the image effectively represents the scene temperature distribution when the viewer is stationary. The temperature discrimination in the chopped mode is approximately half that in the panned mode, but the need to move the camera in the panned mode is often an unacceptable inconvenience. The resolution of the camera is 200 lines per picture height for a temperature difference in the resolution element of 2°C approximately in the chopped mode, and 1°C approximately in the panned mode. A selector switch on the camera front provides chopped or panned operation as required.

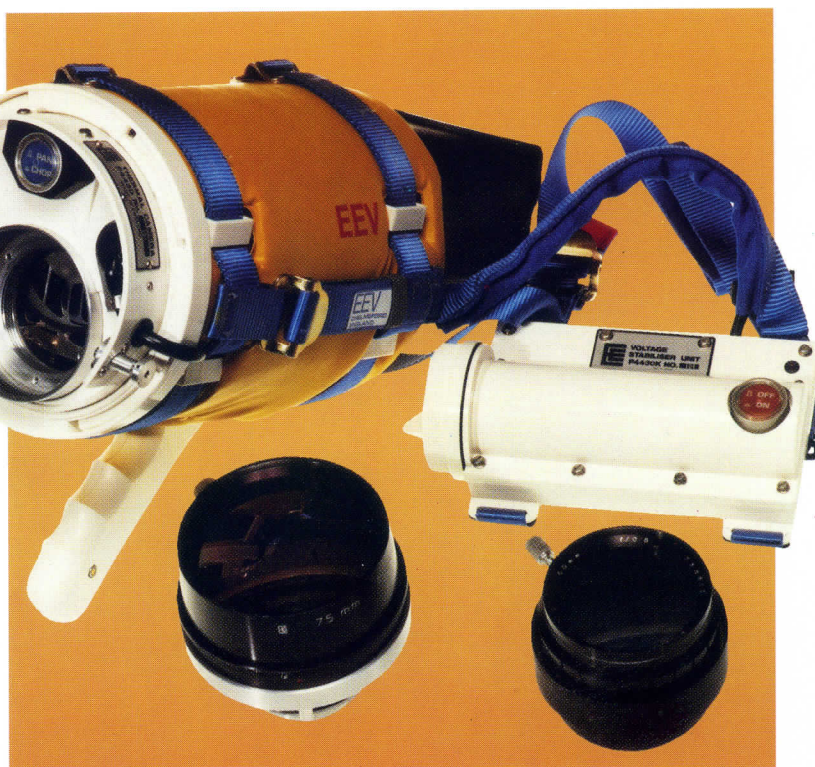
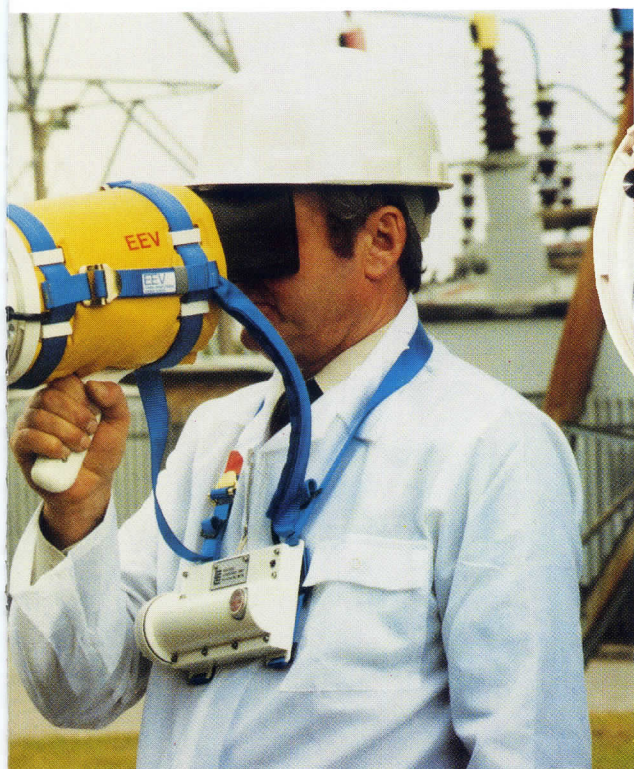
FLICKER SUPPRESSOR

A digital image processor is incorporated in the camera. The video signal is digitized and alternate fields are subtracted. This provides complete suppression of the flicker component of the image in the chopped mode, giving very steady pictures.

EXTERNAL CONTROLS AND CONNECTIONS

The voltage stabilizer unit containing the battery cartridge is provided with an on-off switch. The camera is fitted with a BNC connector to allow the video output, which is 625 line 50 Hz CCIR compatible, or 525 line 60 Hz at 1V level in 75 ohms, to be passed to a further monitor or video tape recorder. The camera and battery pack are connected by a multiway lead, dressed into the webbing harness.

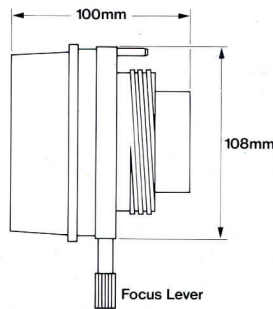
EEV P4430 Portable THERMAL IMAGING CAMERA



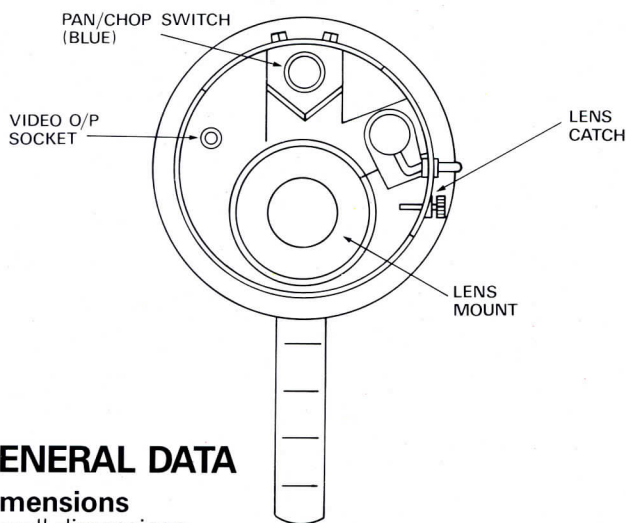
CAMERA WITH LENS REMOVED

SPECIFICATION

Lens Details: 75mm Focal Length



Weight 0.8kg (1.75lbs approximately)
Spectral Response
 8-14 μ m standard (3-5 μ m available)



GENERAL DATA

Dimensions

Overall dimensions
 (excluding handle) 160mm diameter x 270mm approx
 6.30 inches diameter x 10.63 inches approx

Net weight (excluding batteries, lens) 3.6kg approx

Standard voltage stabilizer unit

containing batteries in cartridge 180 x 100 x 55mm approx
 7.09 x 3.94 x 2.17 inches approx

Power Consumption

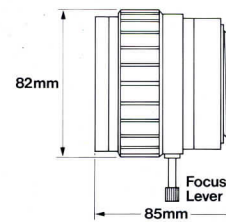
The power consumption is 4 W approximately.

VOLTAGE STABILIZER

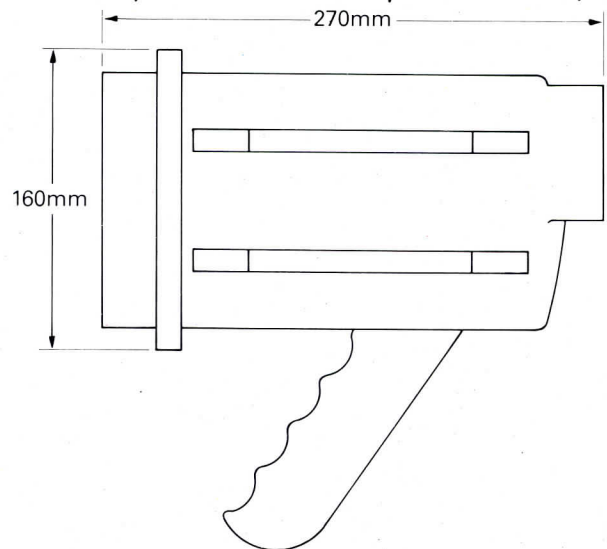
Mechanical Weight 0.5kg (excluding batteries)
 Material Polycarbonate Moulding

Electrical Input 9.5V to 15 Volt
 Output 8.7V @ 420mA

Lens Details: 50mm Focal Length



Weight 0.65kg (1.5lbs approximately)
Spectral Response
 8-14 μ m standard (3-5 μ m available)



EEV Thermal Cameras

UK:
 EEV, Waterhouse Lane, Chelmsford, Essex CM1 2QU, England
 Telephone: (0245) 493493 Telex: 99103 Fax: (0245) 492492
USA:
 EEV Inc, 4 Westchester Plaza, Elmsford, NY 10523, USA
 Telephone: (914) 592 6050 Telex: 6818096 Fax: (914) 592 8342
CANADA:
 EEV Canada Ltd, 67 Westmore Drive, Rexdale, Ontario M9V 3Y6
 Telephone: (416) 745 9494 Telex: 06 989363 Fax: (416) 745 0618
FRANCE:
 EEV Département Tubes Electroniques de GEC Composants
 2 Rue Henri Bergson, 92600 Asnières, (France)
 Telephone: (331) 4790 6215 Telex: 610471 Fax: Paris (331) 4733 1131