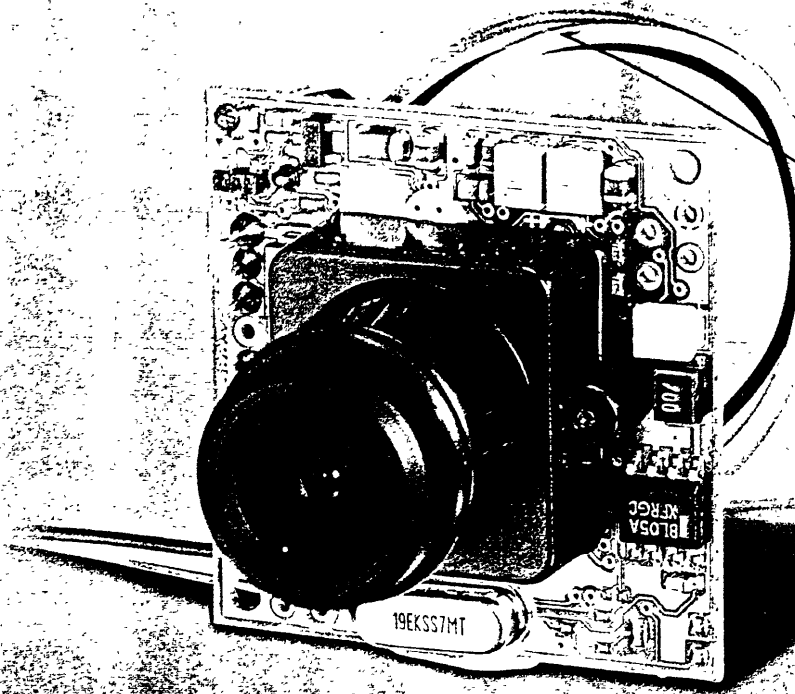
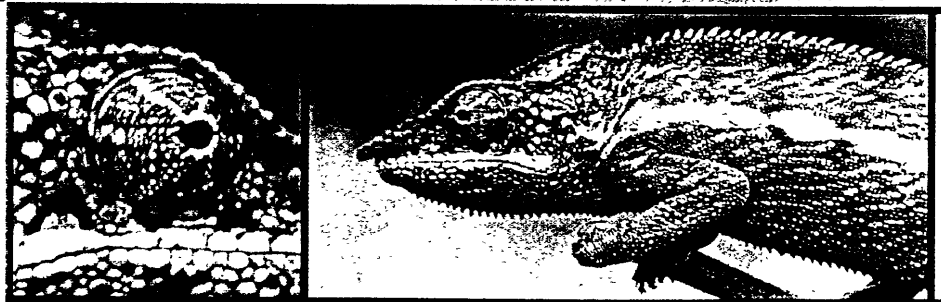
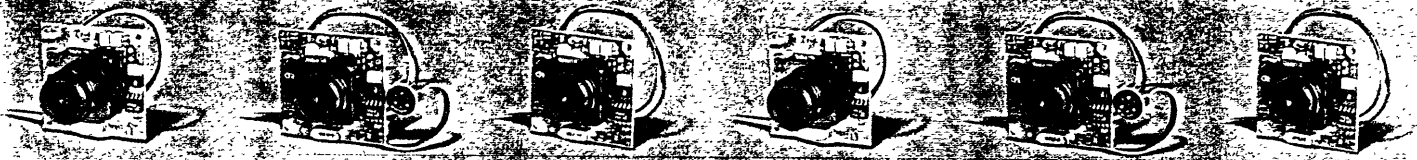


249 622  
249 634



Black & white camera module



VCM 36

## Discover a world of new imaging solutions

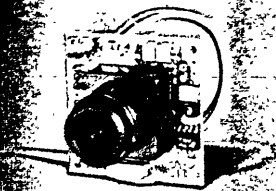
Thanks to its small dimensions, flexibility, high level of featuring and superior image quality, the VCM 36 B&W Camera Modules will prove to be successful solutions for a wide variety of imaging applications.

*Let's make things better*

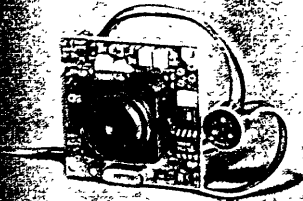


**PHILIPS**

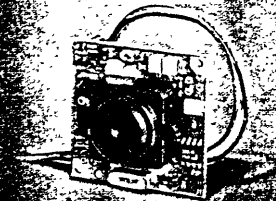
# Black & white camera module



VCM 3610  
with integrated lens



VCM 3602  
with pinhole lens and audio



VCM 3600  
with pinhole lens

Key features of the new VCM 36 family are:

- low light sensitivity (<0.1 lux)
- available with integrated lens, pinhole lens and CS-mount
- audio possibility for all types
- superior image quality
- various modes for optimal application flexibility

## Specification: B/W camera module VCM 36

	VCM 3610	VCM 3600
<b>1. Electrical</b>		
Pick up element	1/3"IT CCD, mounted on PCB	
Number of picture elements	512(H) x 582 (V) (CCIR)	512 (H) x 492 (V) (EIA)
Horizontal resolution	≥380 TVL at centre of picture	
Sensitivity	≤0.5 lux, integrated lens	≤3 lux, pinhole
Signal to noise ratio	≥48 dB AGC off Ambient temperature: 25 °C. Measured at output of camera	
Gamma	Fixed 0.45	
Gain control	Automatic	
Contour enhancement	Implemented	
Iris	Electronic IRIS (automatic shutter speed control) from: (1/50 (1/60 EIA) to less than 1/100000) - electronic IRIS can be switched off by jumper	
Output	1 Vpp Baseband video (75 Ohm)	
Power supply	10-12V DC	
Power consumption	<1 W	
Synchronisation	Free running	
Back light compensation	Yes (optional switch off by jumper)	
Mirror mode	Selectable on module PCB	
Flickerless mode	Selectable on module PCB	

## VCM 36



Audio	Optional for all types (700mV line)	
<b>2. Mechanical</b>		
Lens mount	Integrated lens	Pinhole lens
Lens:		
Focal length	3.8 mm	4.0 mm
Angles of view	>72 deg horizontal >54 deg vertical	>66 deg horizontal >53 deg vertical >85 deg diagonal
Relative aperture	F 2.0	F 5.0
Dimensions (mm)	32 x 32	32 x 32
Interfaces	Board connector with: Power (+ 12V, Gnd) and Video out	
<b>3. Environmental</b>		
Ambient temperature:		
Operating	-25 to +55 °C	
Storage	-25 to +70 °C	
Ambient humidity:		
Operating	20 to 93% RH	
Storage	up to 98% RH	
EMC	According to CE and FCC part 15 class B	

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 Internet: <http://www.security-cameras.philips.com>



# PHILIPS

Let's make things better.

DRAFT

Application note  
VCM36  
B/W camera module

Content

1 Introduction

2 Features

2.1 Mirror mode

2.2 Electronic iris

2.3 Fixed shutter speed

2.4 Manual gain control

2.5 Power supply

2.7 Back light compensation

3 Output signals

3.1 Video

3.2 CBLK

3.3 Iris

4 Operation

5 Connectors

6 Lens mount

Appendix:

a) Mechanical drawing of the VC36

b) Mechanical drawing of the connector A

## 1 Introduction

The B&W single board camera module is designed to fit in almost every application. Regardless of his small dimensions the VCM36 still offers the most thinkable camera features as:

- 1/3" CCD (EIA or CCIR)
- integrated lens / pinhole lens
- audio
- back light compensation
- mirror mode
- etc.

This application note is written to help our customers to use the VCM36 in their applications.

## 2 Features

The several features of the VCM36 will be discussed in this chapter.

### 2.1 Mirror mode

The VCM36 contains a CCD who is capable of displaying the image in mirror mode. This means that the horizontal lines are read out of the CCD in an opposite direction. This will have the effect that what left in the scene will be right on the monitor. See figure 1.

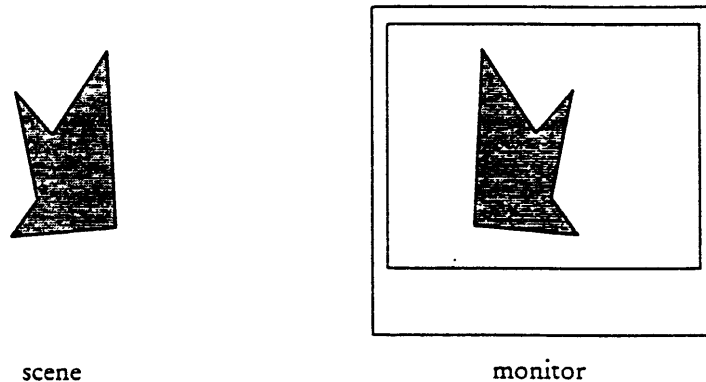


Figure 1 Mirror mode

The module can be put in mirror mode by removing a jumper on the camera modules PWB. The position of the jumpers is described in chapter 4.

## 2.2 Electronic iris

The camera has an electronic iris circuit. This means that the camera can be used together with a fixed iris lens and still is able to handle most difficult light circumstances. This is done by varying the integration time of the CCD. To do this the output signal of the CCD is measured and compared with an internal reference. If the output signal is too high the integration time of the CCD is decreased and when the output signal is too low the integration time is increased.

The maximum integration time is determined by the TV system of the camera; EIA = 1/60 sec and CCIR = 1/50 of a sec. The minimum integration time is 1/100000 sec. The minimum integration time can be changed by removing jumpers. This is discussed in chapter 4.

## 2.3 Fixed shutter speed

Besides the electronic iris function the VCM36 offers also the possibility of fixed shutter speeds. This means that the integration time of the CCD is not determined by the output of the CCD, but has a fixed value. The camera has 2 different fixed shutter speed values. See also chapter 4.

## 2.4 Manual gain control

The camera has an automatic gain control, which means that the camera will keep its output level as long as possible constant. The maximum gain is 30 dB.

Beside the AGC the gain can also be controlled via an external DC-voltage. This DC voltage should be 0 between 5V and should have an impedance lower than 1 Kohm. This DC voltage can be supplied to the camera via the MGC input.

Together with the iris output signal a complete different AGC circuit can be made (f.e. a top detector). See chapter 4 for more detailed information.

## 2.5 Power supply

The camera module only requires a single DC voltage between 10 and 13.2V. All the required DC levels are made on the camera itself. The power consumption is less than 1.1 Watt.

## 2.6 Backlight compensation

The camera will be supplied with backlight compensation on. This means that auto exposure controls in the camera module will look especial to the centre area of the picture.

However if this feature is not wanted for a certain application the BLC-mode can be switched off by placing a jumper. If BLC is switched off the complete picture is used for the auto exposure control.

### 3 Output signals

#### 3.1 Video

The camera provides a standard CCIR or EIA signal. This means that on a normalised test chart (and optimal light conditions) the output of the camera is 1Vpp. This 1Vpp is inclusive the sync pulse of 300 mV.

The camera has two different video outputs: An ac-coupled output (which means that there is no fixed (DC) level. This output can be found on the 3 pole connector. The other one is a DC-coupled output. With this output the bottom of the sync pulse is fixed at (approx) 0.5V. The bottom of the sync pulse will stay at this level independent of the video content. This output can be accessed via one of the solder holes (see chapter 4).

#### 3.2 CBLK

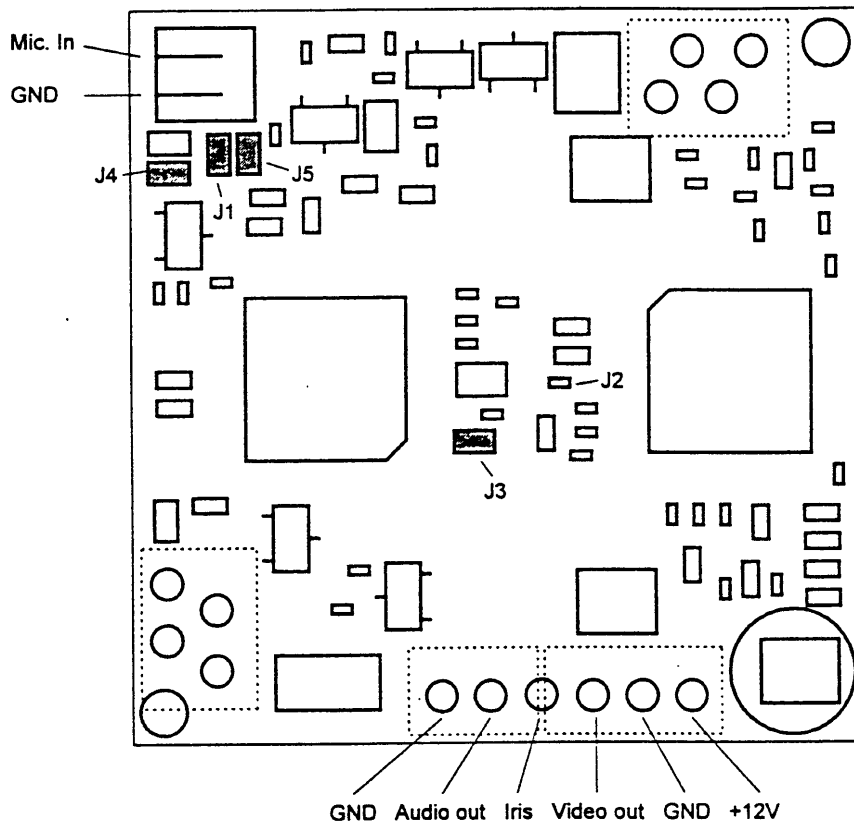
CBLK stands for composite blanking signal. The blanking period is the not active video period of the camera in H and in V direction. If the signal is high (5V) the camera will not generate active video. Please note that the CBLK is an output signal and not a control input drive signal.

#### 3.3 Iris

The Iris signal is a signal that is proportional to the output signal of the CCD. Therefor this signal can be used to control an auto exposure loop of the camera. For example for the electronic iris this signal is used to determine the integration time of the CCD. This means that as long as the electronic iris is working and it has not reached the maximum integration time of the CCD this iris signal will be constant (with a certain tolerance) and independent of the amount of light. The iris signal can be used to control an auto iris lens (electronic iris should be off). Also the iris signal can be used to make an external AGC control circuit (f.e. a top detector).

4 Operation

The camera has several features. Some of them can be selected via an external input and some require a removing or placement of a component. Those features are discussed in chapter two. The position of the jumpers can be found in figure 4.



Function	
Mirror mode	J1 On: jumper J1 removed Off: jumper J1 placed
Minimum integration time	
Fixed shutter speed	
Manual Gain Control	
Backlight compensation	



## 5 Connectors

The VCM36 has standard one 3 pole connector for power in, ground and video out (ac-coupled). The connector is from AMP and the part number is: 173981 3P BMV. The contra part (cable) is CT 173 977 3.

For the audio signal a 2 pole connector is used. That connector is also from AMP (part number: .....). The camera module will be supplied with a cable assy. Further in the board solder holes can be found. These solder holes are placed in such a way that it is possible to put in a micro-match connector from AMP.

## 6 Lens mount

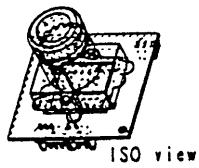
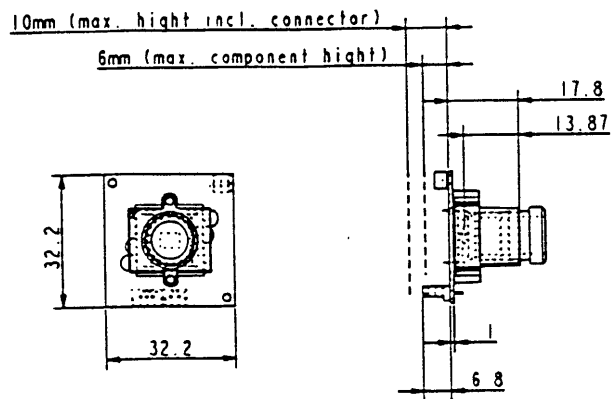
The camera module will come either with a pinhole lens, integrated lens or CS-mount lens interface. The integrated lenses comes with standard M12-0.5 thread.

### Appendix:

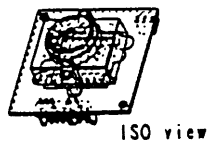
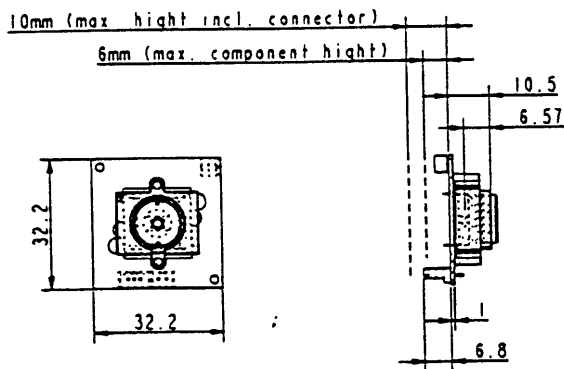
1. Mechanical drawing of the VC36
2. Mechanical drawing of the connector A

Appendix 1 Mechanical drawing VCM36

Fixed lens:



Pinhole lens:



Appendix 2 Specification connector