

# Philips' Range of Fixed Focal-length Lenses

- High quality optics
- Fixed-iris, manual-iris, DC-iris and video-iris types
- Reliable, robust auto-iris mechanism
- 1/3" and 1/2" formats
- Standard C and CS-mount
- Standard 4-pole miniature plug for simple connection



As CCTV cameras become more reliable and maintenance-free through the use of solid-state charge-coupled device (CCD) technology, the lenses also need to have the same high standards of quality and reliability.

The Philips range of Fixed Focal-length Lenses meet these tough requirements by providing long and reliable operation with no maintenance. Comprising manual-iris, dc-iris and video-iris types, the lens range from wide-angle to tele-

photo to cover virtually all applications in CCTV observation systems.

Designed for easy installation onto a wide variety of CCTV cameras, they are available for cameras with 1/3" and 1/2" image sensor formats. The extent of the range of lenses means that an installer will always be able to select the most appropriate lens for both camera and application.

For cameras with 1/3" and 1/2" image sensors and automatic sensitivity

control, the manual-iris lens range includes wide-angle, standard and tele-photo focal length versions. They all feature manual adjustment of iris and focus.

DC-iris and video-iris lenses include all the features of the manual-iris types but are used in applications with widely varying lighting conditions. These lenses are available with a standard 4-pole connector.

## Features - Manual-iris

	LTC 3211/20	LTC 3231/20	LTC 3241/20	LTC 3311/21	LTC 3331/21	LTC 3341/21
<b>USA model</b>	<b>TC9703</b>	<b>TC9706</b>	<b>TC9712</b>			
Image format	1/2"	1/2"	1/2"	1/3"	1/3"	1/3"
Focal length	3.7 mm	6 mm	12 mm	2.8 mm	4 mm	8 mm
Iris range	F1.6 - close	F1.4 - close	F1.4 - close	F1.2 - close	F1.2 - close	F1.2 - close
Min. Object Distance	0.2m (0.65ft)	0.3m (1ft)	0.8m (2.6ft)	0.3m (1ft)	0.3m (1ft)	0.3m (1ft)
Weight	34 g (0.074 lb)	32 g (0.07 lb)	26 g (0.056 lb)	35 g (0.076 lb)	32 g (0.07 lb)	26 g (0.056 lb)
Dimensions						
lens (A)	32 mm (1.25")	32 mm (1.25")	32 mm (1.25")	36.6 mm (1.44")	36.6 mm (1.44")	36.6 mm (1.44")
width (B)	32 mm (1.25")	32 mm (1.25")	32 mm (1.25")	36.6 mm (1.44")	36.6 mm (1.44")	36.6 mm (1.44")
length (C)	35.7 mm (1.4")	35.7 mm (1.4")	35.7 mm (1.4")	36.3 mm (1.42")	33.8 mm (1.33")	33.8 mm (1.33")
focal point (D)	12.5 mm	12.5 mm	12.5 mm	12.5 mm	12.5 mm	12.5 mm
CS-mount (E)	5.1 mm (0.2")	5.1 mm (0.2")	5.1 mm (0.2")	5.6 mm (0.22")	5.6 mm (0.22")	5.6 mm (0.22")
Lens mount	CS-mount	CS-mount	CS-mount	CS-mount	CS-mount	CS-mount
Angle of view (1/2")	95° X 73°	58° X 45°	30° X 23°	N/A	N/A	N/A
Angle of view (1/3")	73° X 54°	45° X 34°	23° X 17°	94° X 72°	64° X 49°	33° X 25°
Iris control	manual	manual	manual	manual	manual	manual
Focus control	manual	manual	manual	manual	manual	manual

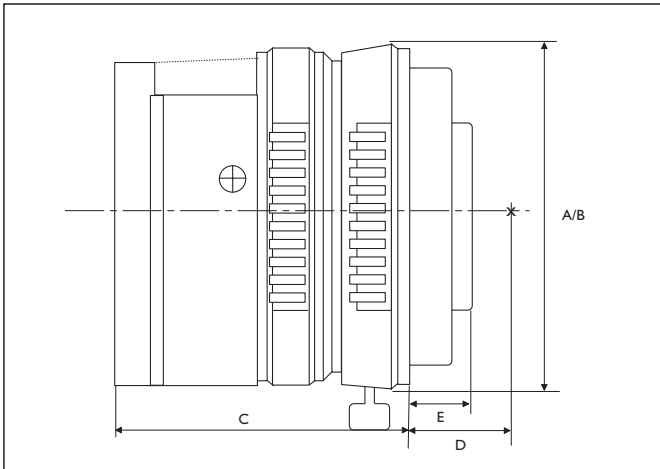
## Features - DC-iris

	LTC 3214/20	LTC 3234/20	LTC 3244/20	LTC 3314/21	LTC 3334/21	LTC 3344/21
Image format	1/2"	1/2"	1/2"	1/3"	1/3"	1/3"
Focal length	3.7 mm	6 mm	12 mm	2.8 mm	4 mm	8 mm
Iris range	F1.6 - 300	F1.4 - 300	F1.4 - 300	F1.2 - 200	F1.2 - 200	F1.2 - 200
Min. Object Distance	0.2m (0.65ft)	0.2m (0.65ft)	0.3m (1ft)	0.3m (1ft)	0.3m (1ft)	0.3m (1ft)
Weight	57 g (0.12 lb)	60 g (0.13 lb)	46 g (0.1 lb)	52 g (0.115 lb)	49 g (1.08 lb)	44 g (0.097 lb)
Dimensions						
lens (A)	42.8 mm (1.68")	42.8 mm (1.68")	42.8 mm (1.68")	36.8 mm (1.45")	36.8 mm (1.45")	36.8 mm (1.45")
width (B)	47.1 mm (1.85")	47.1 mm (1.85")	47.1 mm (1.85")	43.5 mm (1.71")	43.5 mm (1.71")	43.5 mm (1.71")
length (C)	36.5 mm (1.43")	36.5 mm (1.43")	36.5 mm (1.43")	36.3 mm (1.42")	33.8 mm (1.33")	33.8 mm (1.33")
focal point (D)	12.5 mm	12.5 mm	12.5 mm	12.5 mm	12.5 mm	12.5 mm
CS-mount (E)	4.4 mm (0.17")	4.4 mm (0.17")	4.4 mm (0.17")	5.6 mm (0.22")	5.6 mm (0.22")	5.6 mm (0.22")
Lens mount	CS-mount	CS-mount	CS-mount	CS-mount	CS-mount	CS-mount
Angle of view (1/2")	95° X 73°	58° X 45°	30° X 23°	N/A	N/A	N/A
Angle of view (1/3")	73° X 54°	45° X 34°	23° X 17°	94° X 72°	64° X 49°	33° X 25°
Iris control	DC	DC	DC	DC	DC	DC
Focus control	manual	manual	manual	manual	manual	manual
4-pin connector	DC-iris	DC-iris	DC-iris	DC-iris	DC-iris	DC-iris

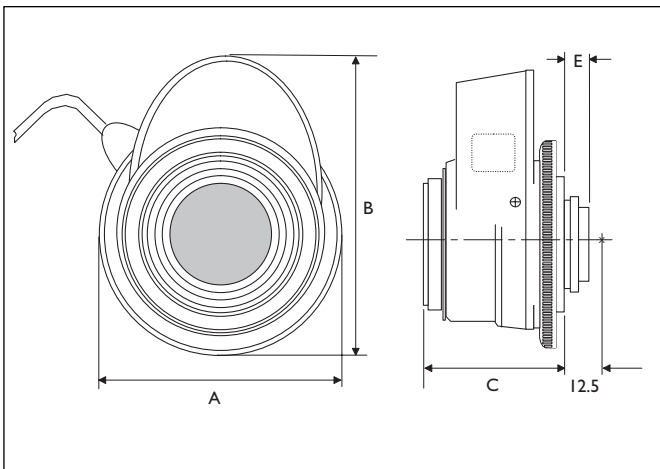
Note: Angle of view = Horizontal x Vertical field angle to the nearest degree.

## Features Video Iris

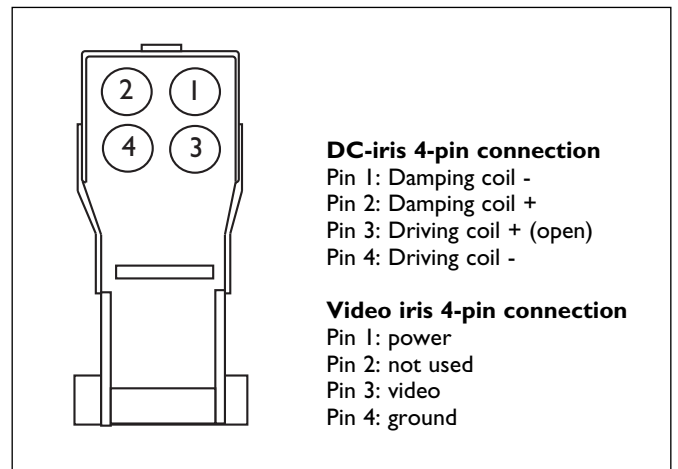
	LTC 3123/40	LTC 3133/40	LTC 3043/40	LTC 3053/40
Image format	2/3"	2/3"	1"	1"
Focal length	8 mm	16 mm	25 mm	50 mm
Iris range	F1.4 - 360	F1.4 - 360	F1.4 - 360	F1.8 - 360
Min. Object Distance	0.2m (0.65ft)	0.5m (1.6ft)	0.9m (3ft)	1m (3.3ft)
Weight	140 g (0.31 lb)	110 g (0.24 lb)	140 g (0.31 lb)	230 g (0.51 lb)
Dimensions				
lens (A)	46.5 mm (1.83")	46.5 mm (1.83")	46.5 mm (1.83")	62 mm (2.44")
width (B)	50.5 mm (1.99")	50.5 mm (1.99")	50.5 mm (1.99")	62 mm (2.44")
length (C)	51.1 mm (2.01")	46.7 mm (1.84")	51.8 mm (2.04")	51 mm (2.01")
focal point (D)	17.526 mm	17.526 mm	17.526 mm	17.526 mm
C-mount (E)	3.8 mm (0.15")	4.5 mm (0.18")	3.4 mm (0.13")	3.5 mm (0.14")
Lens mount	C-mount	C-mount	C-mount	C-mount
Angle of view (1/2")	44° X 33°	23° X 17°	15° X 11°	7.3° X 5.5°
Angle of view (1/3")	33° X 25°	17° X 13°	11° X 8.3°	5.5° X 4.1°
Iris control	video	video	video	video
Focus control	manual	manual	manual	manual
4-pin connector	video-iris	video-iris	video-iris	video-iris



**Manual-iris Lens**



**DC-iris and Video Iris Lens**



### DC-iris 4-pin connection

- Pin 1: Damping coil -
- Pin 2: Damping coil +
- Pin 3: Driving coil + (open)
- Pin 4: Driving coil -

### Video iris 4-pin connection

- Pin 1: power
- Pin 2: not used
- Pin 3: video
- Pin 4: ground

**4-pin Connector (Front view)**

### Choosing the correct lens

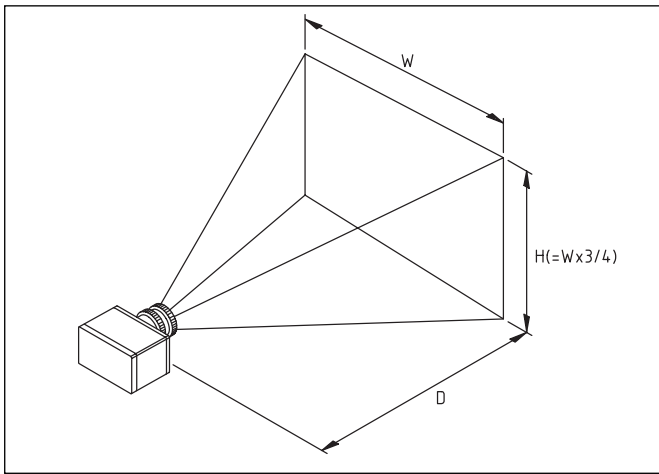
There is a simple relationship between the required field of view and the focal length of the lens to be used (see Field of View figure).

To determine this:

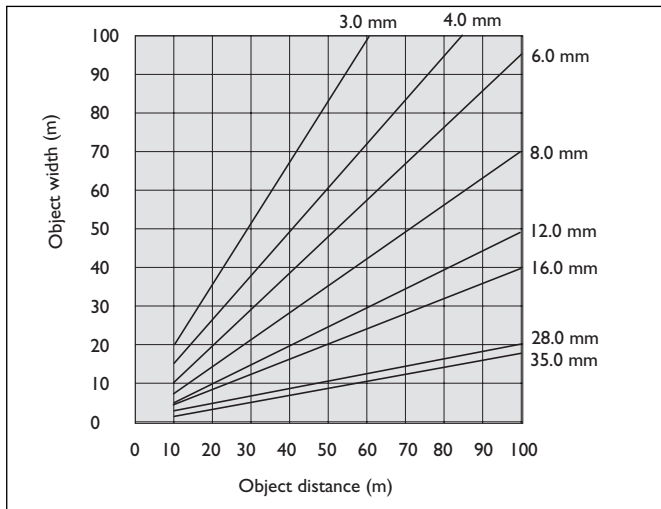
- Estimate or measure the maximum width "W" of the field of view.
- Estimate or measure the distance "D" between the camera and the object to be viewed.

- For 1/2" lens, use Graph 1 and for 1/3" lens use Graph 2. Find the point on the graph for the lens and the sensor format corresponding to the "W" and "D" co-ordinates. To ensure complete coverage of the object, select the lens indicated by the line above this object.

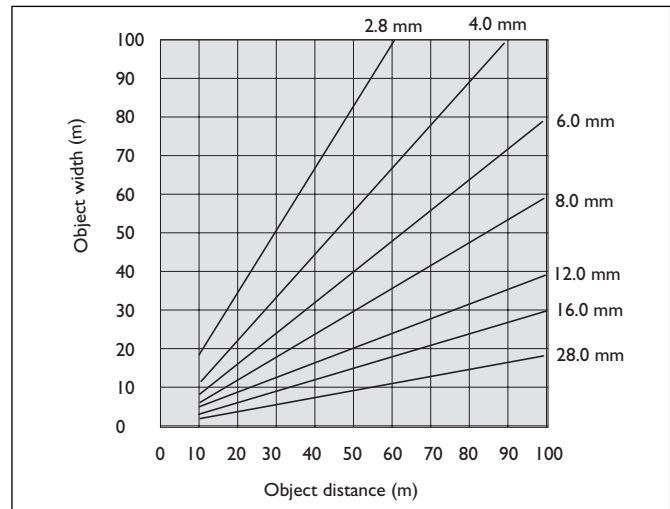
Normally, for optimum coverage of the field of view, 1/3" and 1/2" lens are used with camera heads with 1/3" and 1/2" format sensors respectively. However, 1/2" lens may be used with 1/3" cameras but the outer areas of the field of view of the lens will not be seen by the sensor.



**Field of View**



**Graph 1 - Field of View (1/2" cameras)**



**Graph 2 - Field of View (1/3" cameras)**

