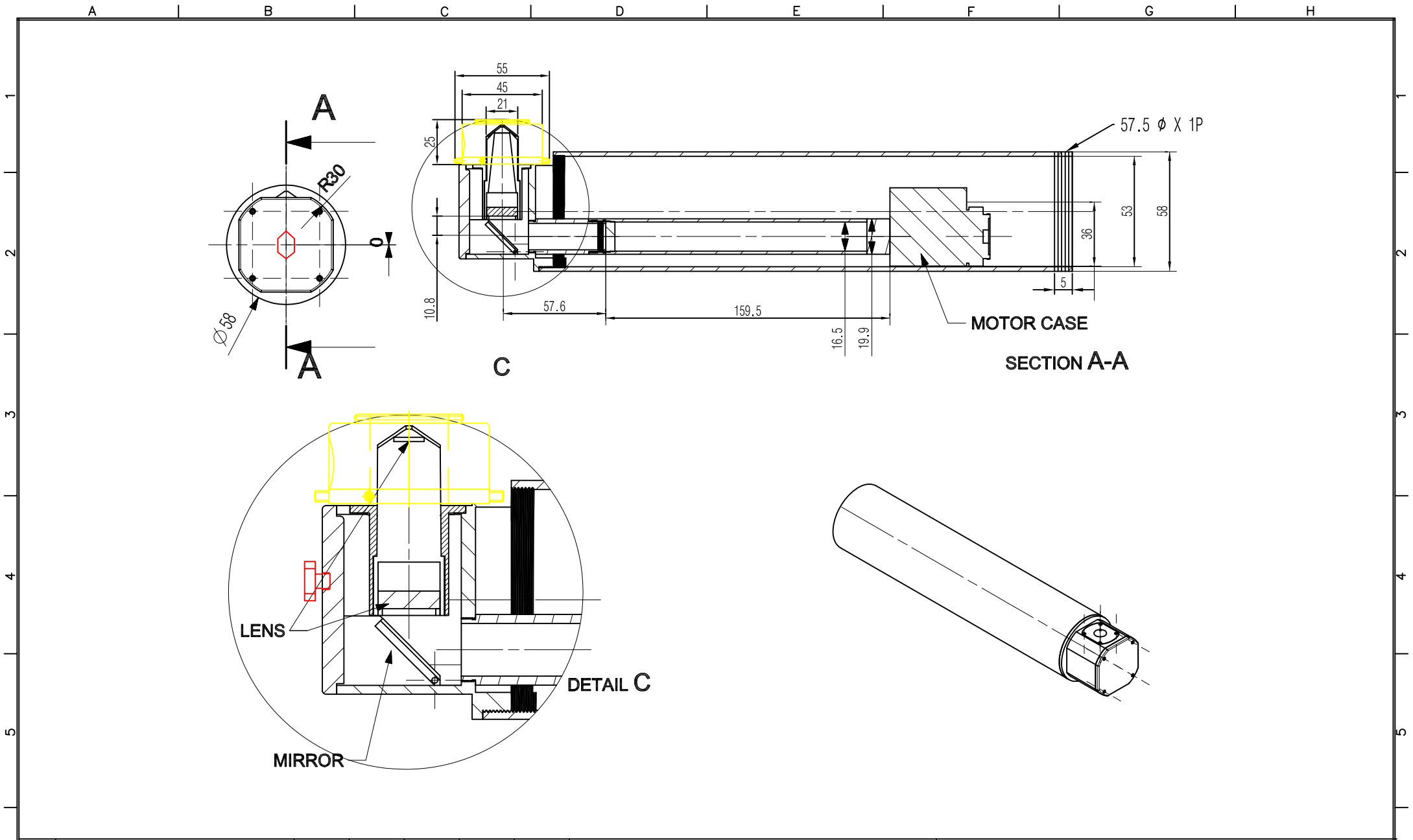


ISSUE	REVISIONS	DRAW.BY	DESI.BY	CHKE.BY	CHKE.BY	APPR.BY


PROJCT	PINHOLE LENS
TITLE	90 DEG ASSEMBLY

		(주) 호원아이엔씨 HOWON Instrument & control Co.,Ltd.	
SCALE	N / S	JOB NO	- -
DIMENSION	MM	DWG NO	HWIC-PH-CM-001
			SEET.NO



REVISIONS	②						
	①						
	①						
ISSUE	REVISIONS	DRAW.BY	DESI.BY	CHKE.BY	CHKE.BY	APPR.BY	

PROJECT	PINHOLE LENS	
TITLE	LENS TUBE ASSEMBLY	

 (주) 호원아이엔씨 HOWON Instrument & control Co.,Ltd.		JOB NO — —	SEET.NO /
SCALE	N S	DWG NO HWIC-PH-CM-002	
DIMENSION	MM		

6

6

A B C D E F G H

HIGH TEMPERATURE UP TO 1000° C
HARSH ENVIRONMENT ZOOM PINHOLE LENSES
323mm OVERALL LENGTH MODELS

The New 323mm overall length V-ZPL-HITEMP models are designed for industrial process high temperature environments where observation windows are structurally recessed. 323mm lens length provides ability to position lens pinhole near or at the surface of observation window and the CS-Mount camera is > 300mm distance from the higher temperature window surface area for robust longer term camera survivability. Enables ease of installation for additional camera cooling equipment.



* Amazing technology, the V-ZPL-HITEMP pinhole lens series feature stainless steel housing for extreme durability in harsh environments. High temperature operation, up to 10 minutes at 1000° C with sapphire and quartz front elements. Will withstand impact from scatter sand at high temps. Extreme durability from gravel impact. These lenses are used in extreme harsh industrial and hostile environments.

Part No.	Focal Length	Aperature	FOV	Image	Mount	Pinhole	Remark
						Diameter	
V-ZPL-HITEMP-A	3.6mm - 18.0mm	F1.8 - F9.0	80° ~ 19°	1/3"	CS	1.2mm	
V-ZPL-HITEMP-A-323							
V-ZPL-HITEMP-B	3.6mm - 18.0mm	F1.8 - F9.1	80° ~ 19°	1/3"	CS	3.8mm	
V-ZPL-HITEMP-B-323							

Construction	Housing	Optical elements	Dimensions	Max op temp
A model	stainless steel	quartz front elements	95mm x ø 20mm	Up to 10 min at 1000c
A-323 model			323mm x ø 20mm	
B model		sapphire front first element	95mm x ø 20mm	
B-323 model		quartz second element	323mm x ø 20mm	

V-ZPT2 (*Lens and Camera not included)

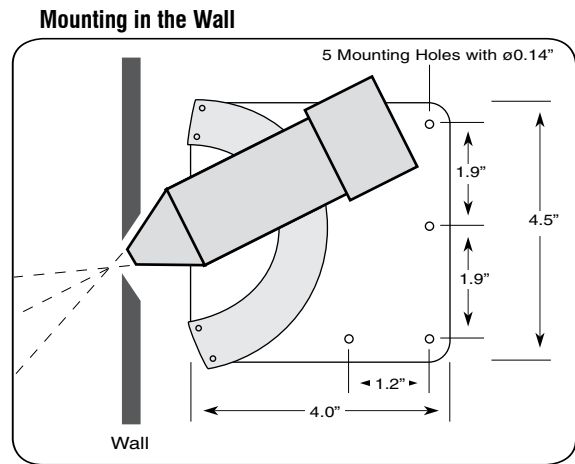


V-ZPT4 (*Lens and Camera not included)



- 2-way - V-ZPT2 (Pan only)
- 4-way - V-ZPT4 (Pan and Tilt)
- Quiet Sounding Motors, 9-12VDC operation
- 120 Degree Axis

These unique motorized pan and tilt mechanisms are specially designed by Marshall Electronics for our line of motorized zoom pinhole lenses. They pan either back and forth, up and down (V-ZPT2), or both (V-ZPT4) at approximately 120 degree angle each axis. Recommended lenses are the motorized pinhole lenses (V-ZPL06MZ and V-ZPL1050MZ). With these lenses plus this unique mechanism, you can pan and tilt your camera and zoom in and out to a particular subject at 4-20mm (V-ZPL06MZ) or 10-50mm (V-ZPL1050MZ) range. Operates with 9-12VDC of power @ 500mA (not included) and are capable of lifting up to a 100g camera. Ideal cameras to use are C/CS-Mount B/W, color board cameras, or enclosed cameras such as the V-1055-BNC. The V-ZPT2 has 2-way movement, while the V-ZPT4 has 4-way pan and tilt. Each comes with the necessary motors with leads ready to be wired to a control source (control source not included or available). Some of its unique features are very low motor noise, compact size, and easy to install. Power supply not included.



V-ZPL06 / V-ZPL12 / V-ZPL1050

High Tech Zoom Pinhole Lenses

- Available in 4-20mm Zoom or 10-50mm Zoom
- 6" and 12" Long
- Manual or Motorized Control
- Used for Industrial and Security Applications
- High Quality Glass Elements
- For 1/3" CCD with CS-Mount
- 7-12VDC operation
- Removable push-on cap also acts as mounting support

These lenses are ideal for those tough situations where the camera must be hidden and provide any angle of view between 4-20mm or 10-50mm. Although designed for the new 1/3" electronic iris cameras, these lenses are also useful on 1/2" cameras where they can provide up to a 120 degree horizontal field of view at 4mm. The tip of the pinhole is built-in to a removable push-on cap that also acts as a mounting support and protects the main optical system from damage. The motorized MZ series requires 7-12VDC to power the zoom motor. Recommended voltage is 9VDC.

* f-stop = focal length / 1.6

Part No	Range	Control	F-Stop	O.D. x L
V-ZPL-06	4-20mm	Manual	f2.5@4mm*	0.787" x 4"
V-ZPL-06MZ	4-20mm	Motorized	f2.5@4mm*	0.787" x 4"
V-ZPL-12	4-20mm	Manual	f2.5@4mm*	0.787" x 13"
V-ZPL-12MZ	4-20mm	Motorized	f2.5@4mm*	0.787" x 13"
V-ZPL-1050	10-50mm	Manual	f2.5@10mm*	0.787" x 4.50"
V-ZPL-1050MZ	10-50mm	Motorized	f2.5@10mm*	0.787" x 4.50"

V-ZPL06 / V-ZPL06-MZ



V-ZPL1050 / V-ZPL1050-MZ



V-ZPL12 / V-ZPL12-MZ



V-ZCAM4

Changes Camcorders to Covert Operation

- Installs directly to front of camcorder zoom lens with quick mount tip sleeve
- 70° angle of view (allows you to observe the motion of a nearby person)
- Expands the view angle of camcorders
- High resolution image
- High quality optics
- Compatible with most camcorders using four included lens adapter rings

The V-ZCAM4 pinhole lens adapts to most camcorders with 37mm, 30.5mm, 30mm, or 27mm filter thread for covert applications. It can operate inside a bag or suitcase or even behind a curtain or wall. The pinhole lens has specially designed optics that inverts the image allowing controls to be accessed through a bag or suitcase. Four lens adapter rings included for most camcorders.



Included in Package



V-ZCAM4 Lens Quick Mount Tip Sleeve 3 Viewing Tips

4 Adapter Rings Included



Sony Analog 37mm x 0.75 Sony Digital 30mm x 0.75 Panasonic 30.5mm x 0.5 JVC 27mm x 0.5

- V-ZPL-05-01 Mini zoom pinhole lens with removable pinhole cap
- V-ZPL-05-02 Mini zoom pinhole lens with fixed pinhole cap



V-ZPL-05-01 / V-ZPL-05-02
Mini Zoom Pinhole Lenses

Specifications - Mini Zoom Pinhole Lenses					
Part No.	Focal Length	Image Sensor Format	Mount	Diagonal FOV	Dimensions
V-ZPL-05-01	2.5mm - 10.0mm	1/4"	CS	84° ~ 25°	19 x 52mm
V-ZPL-05-02	2.5mm - 10.0mm	1/4"	CS	84° ~ 25°	19 x 52mm

New Product

HIGH TEMPERATURE UP TO 1000° HARSH ENVIRONMENT ZOOM PINHOLE LENSES

These amazing lenses feature stainless steel housing for extreme durability in harsh environments. High temperature operation, up to 10 minutes at 1000° C with sapphire and quartz front elements. Will withstand impact from scatter sand at high temps. Extreme durability from gravel impact. These lenses are used in extreme and harsh industrial or hostile environments.



A model pinhole

B model pinhole

Specifications - Zoom Pinhole Lenses						
Part No	Focal Length	Aperature	FOV	Image Sensor Format	Mount	Pinhole Diameter
V-ZPL-HITEMP-A	3.6mm - 18.0mm	F1.8 - F9.0	80° ~ 19°	1/3"	CS	1.2mm
V-ZPL-HITEMP-B	3.6mm - 18.0mm	F1.8 - F9.1	80° ~ 19°	1/3"	CS	3.8mm
Construction	Housing		Optical Elements		Max Op Temp	
A model	stainless steel		quartz front elements		Up to 10 min at 1000° C	
B model	stainless steel		sapphire front first element, quartz second element		Up to 10 min at 1000° C	



V-LPL8 on a V-1056 B&W CCD Camera

High Tech Pinhole Laparoscopic Lenses

- High Tech Optical Design
- 0.31" O.D.
- High Quality Glass Elements

Measuring only 0.31" in diameter, the V-LPL can be hidden behind walls or ceilings for covert applications. Using the most advanced optical design, the tube of the pinhole lens contains several lenses to provide clear images. The V-LPL8 and V-LPL5 can be used on 1/3" CCD B&W cameras where they provide 81° angle of view at 4.4mm focal length.

Specifications - High Tech Pinhole Laparoscopic Lenses						
Part No	Length	Focal	F-stop	Angle of View	Format	Mount
V-LPL8	9.4"	4.4mm	f5.0	81°	1/3" CCD	CS
V-LPL5	4.65"	4.4mm	f5.0	81°	1/3" CCD	CS

High Resolution, Low Light Pinhole Lenses

These manual iris pinhole lenses are designed for 1/3" format CCD cameras. State of the art optical design for color or B&W cameras in low light conditions. New push-on cap with built-in mounting clamp for convenient installation. The push-on cap protects optics from damage.

Specifications - High Resolution, Low Light Pinhole Lenses					
Part No	V-PL28CS	V-PL35C	V-PL35CS	V-PL45CS	V-PL60CS
Focal Length	2.8mm	3.5mm	3.5mm	4.5mm	6.0mm
Aperture	f1.0	f1.4	f1.4	f1.8	f1.8
Angular *(H)	98°	85°	85°	71°	56°
Field *(V)	81°	69°	69°	56°	44°
of View *(D)	110°	88°	88°	83°	67°
Dimensions	30 x 100mm	28 x 104mm	28 x 109mm	20 x 97mm	18 x 79mm
Mount	CS	C	CS	CS	CS
Pinhole Size	3mm	3mm	3mm	2.5mm	3mm
Cone Depth	13mm	13mm	13mm	9.5mm	11mm



* V-PL28CS World's Fastest Pinhole Lens!

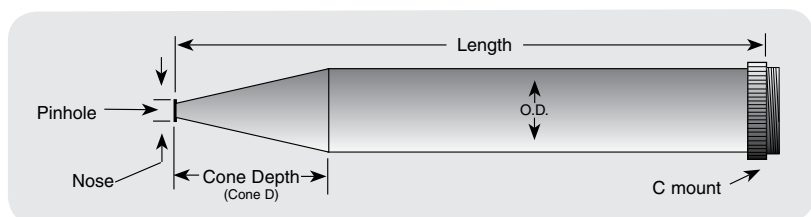


Long Focus Pinhole Lenses

- High Tech Optical Design
- 150, 200, and 300mm
- High Quality Glass Optics

These Long Focus lenses are designed for covert operations where it is necessary to have pinhole features while keeping the camera well away from the viewing tip. These can be used when looking through bushes or walls up to 14.81" thick.

Specifications - Long Focus Pinhole Lenses									
Part No	Focal Length	f-stop	Format	Mount	Field of View (HxVxD)	Nose	Pinhole ϕ	Cone D	O.D x L
V-PL150C	150mm	f20-C	2/3" CCD	C	3.25° x 2.45° x 4.10°	0.4" ϕ	0.1"	1.57"	0.98" x 8.0"
V-PL200C	200mm	f20-C	2/3" CCD	C	2.50° x 1.78° x 3.20°	0.4" ϕ	0.1"	1.95"	0.98" x 10.81"
V-PL300C	300mm	f30-C	2/3" CCD	C	1.68° x 1.25° x 2.30°	0.52" ϕ	0.17"	2.50"	0.98" x 14.81"



Wide Angle and Long Focal Length Pinhole Lenses

V-PL26-CS / V-PL26-CS-R

These lenses are the latest generation pinhole CCTV lens technology. They provide high resolution and high fidelity images with very little distortion. They can see an entire room through a hole less than 0.15 inch. These lenses are designed to work with 1/3", 1/4", and 1/5" format CCD cameras. Most of these pinhole lenses work with either 12mm or CS-Mount to accommodate miniature and standard CCTV applications. Focal lengths range from 2.5mm to 70mm for any covert surveillance application.

*Angle of view reflects 1/3" chip. For 1/4" chip, multiply values by 0.75

Specifications - Wide Angle & Long Focal Length Pinhole Lenses							
Part No.	Focal Length	Aperture	Angular *(H)	Field *(V)	of View *(D)	Dimensions	Mount
V-PL26-CS	2.6mm	f 2.8	85°	69°	98°	15 x 100mm	CS
V-PL26CS-R	2.6mm	f 2.8	85°	69°	98°	58 x 77.3mm	CS



V-PL26-CS
Long barrel
2.6mm pinhole lens



V-PL26-CS-R
Amazing technology
right angle pinhole lens



2.5mm - V-PL25CS-12



6.0mm - V-PL60CS-12



10mm - V-PL100CS-12



15mm - V-PL150CS-12



30mm - V-PL300CS-12



45mm - V-PL450CS-22



70mm - V-PL700CS-22

*Angle of view reflects 1/3" chip. For 1/4" chip, multiply values by 0.75

Specifications - Wide Angle & Long Focal Length Pinhole Lenses							
Part No.	V-PL25CS-12	V-PL60CS-12	V-PL100CS-12	V-PL150CS-12	V-PL300CS-12	V-PL450CS-22	V-PL700CS-22
Focal Length	2.5mm	6.0mm	10mm	15mm	30mm	45mm	70mm
Aperture	f 2.8	f 4.0	f 4.0	f 5.6	f 11	f 8.0	f 12
Angular *(H)	88°	44°	27°	18°	9°	6°	4°
Field *(V)	71°	33°	20°	14°	7°	5°	3°
of View *(D)	100°	53°	33°	22°	11°	7.6°	5°
Dimensions	13 x 46.5mm	12 x 18.5mm	12 x 21.5mm	12 x 25.5mm	12 x 38.5mm	22 x 56mm	22 x 78.5mm
Mount	CS or 12mm	CS or 12mm	CS or 12mm	CS or 12mm	CS or 12mm	CS only	CS only