SeaViewer Cameras, Inc.

Sea-Drop™ Camera

User's Manual

Please review this User's Manual carefully to ensure that you can use the device correctly and safely. The contents of this manual are subject to change without notice.
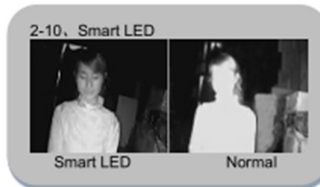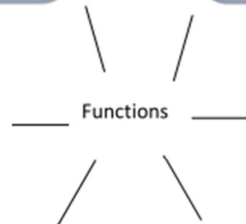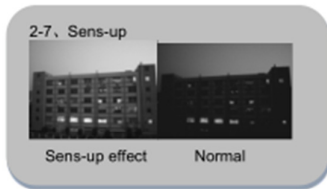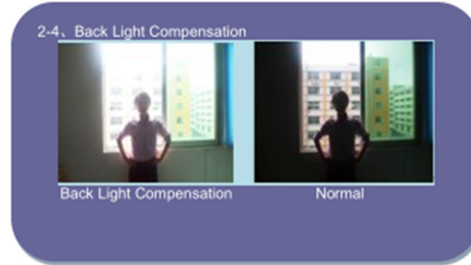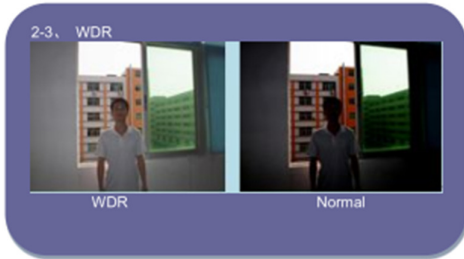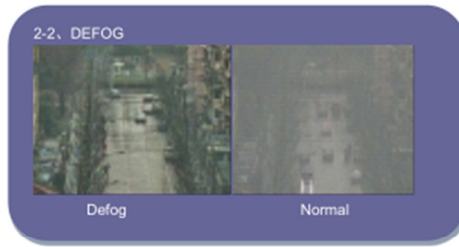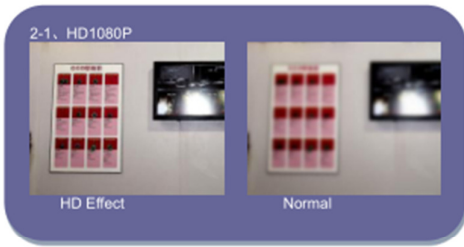
1 Feature

1-1 Characteristic

●Adopt the latest version of EN778 developed by professional R&D team of South Korea.

●Apply CMOS MN34229PL, with the size of 6.4mm (1/2.8 inch) and large pixel of 2.8μm, it possesses output capability of 1080/30pfs, which can display FULL SCREEN 1080P HD pictures. This product owns excellent color restoration due to its high resolution and strong sensitivity, hence it can offer better and clearer visual effect, even can reach 1200 TV lines as analog signal. Also it can be adjusted to a wider color temperature range. Within unique digital processing technology, it aims at improving imaging sensitivity; reduce the imbalance and defection when dealing with optical signals. Equipped with superb low-light-level imaging capacity, it can easily distinguish the appearance and color of the target object under 0.017 Lux environments.

●In order to improving its imaging capability under different weather, such as heavy fog, dust, misty rain, haze, steam and water vapor, we innovatively added defog function to this product. As a consequence, it can clearly restore the original pictures; therefore, it can be applied in monitoring the forest, rivers, sea, coast, frontier, oil field, traffic conditions and vehicles. Furthermore, it also can be used to capture the automobile licenses and to assist in building safer city.

●Format: 1080P Resolution:1920*1080, 720P Resolution: 1280*1024.

●HLI(Light inhibition): Aiming at highlight zone to proceed with compensation in order to make fine exposure.

●Intelligent OSD (Menu) operation system: With strong DSP memory function, data will not lose when come across with outages. Its display and operating method are simple and convenient for users. Besides, abundant of frequently used language are offered.

●Super solar eclipse: Compensation exposure in the light area to achieve in a particular area of the correct exposure.

●BLC(Back Light compensation):While there are bright light on the back of the subject, this product can carry out backlight compensation on the dark part of the subject result from backlighting. This aims at keeping overall brightness at balance.

●Super WDR(Wide Dynamic Range): Within a picture, the bright is under a condition of totally balance, each detail can be clearly seen.

●RS-485 Communicating Function、Motion Detection、Privacy Masking 、Mirror image 、Overturn Image、Digital zoom function, etc.

●OSD Menu offer convenient and simple operation.

●Support Auto Focus Function(UTC Coaxial Protocol Supported)

●Digital Noise Reduction, Digital Zoom and Sens-up.

●The module support 350m signal transmission, need to work with 500M DVR; If connectwith normal SDI DVR, there must be a repeater(RX) special for this module.

1-2 Comparison of Effect

1080P HD Effect

2-1、HD1080P

HD Effect | Normal

2-2、DEFOG

Defog | Normal

2-3、WDR

WDR | Normal

2-4、Back Light Compensation

Back Light Compensation | Normal

2-5、Digital zoom

Before | After

2-6、AGC Automatic Gain Control

AGC | Normal

2-7、Sens-up

Sens-up effect | Normal

2-8、AWB Auto White Balance

AWB | Normal

Functions

2-9、Motion Detection

2-10、Smart LED

Smart LED | Normal

3-2 Connector Introduction

connector	NO.	PIN Name	Description	IN/OUT
			Introduction	
CN1	1	+12VDC	Power +12VDC Input	
	2	GND	Ground	
	3	VIDEO	1VP-P composite video signal out (75ohm)	
CN2	1	GND	OSD Control key Ground	
	2	LEFT	OSD Control key (low active ,normal 3.3v	
	3	RIGHT	OSD Control key (low active ,normal 3.3v	
	4	ENTER	OSD Control key (low active, normal 3.3v	
	5	UP	OSD Control key (low active ,normal 3.3v	
	6	DOWN	OSD Control key (low active ,normal 3.3v	
CN3	1	DN-	-DC Motor day and night control signal	
	2	DN+	+ DC Motor day and night control signal	
CN4	1	GND	DC IRIS control :Gnd	
	2	DR+	DC IRIS control :drive+	
	3	DM P -	DC IRIS control :DAMP-	
	4	DM P +	DC IRIS control :DAMP+	
CN5	1	+3.3V	Power 3.3DC Output	
	2	TX	RS485(tx) COM DATA OUT PIN	
	3	RX	RS485(rx) COM DATA IN/ PIN	
	4	GND	Ground	
	5	ALARM	MOTION ALARM	
	6	DC12V	SUPPLY LED	
	7	IR-LED	Smart I R Control	
	8	GND	Ground	
	9	CDS	External day and night control signal input External day and night control signal input , L:CDSLEVE < +1.5V,H:+1.5V ≤ CDS LEVEL≤+8V (active low) (active low)	
CN6	1	FOCUS-OUT1	FOCUS B-	
	2	FOCUS-OUT2	FOCUS B+	
	3	FOCUS-OUT3	FOCUS A+	
	4	FOCUS-OUT4	FOCUS A-	
CN7	1	ZOOM-OUT1	ZOOM A-	
	2	ZOOM-OUT2	ZOOM A+	
	3	ZOOM-OUT3	ZOOM B+	
	4	ZOOM-OUT4	ZOOM B-	
CN8	1	JTMS	Program Interface	
	2	JTDO		
	3	TJDI		
	4	JTCK		
	5	GND		

3-3 Output Cable
Keystoke Introduction

DC12V

普通VEDIO(视频)

HDSDI VEDIO(视频)

485通讯
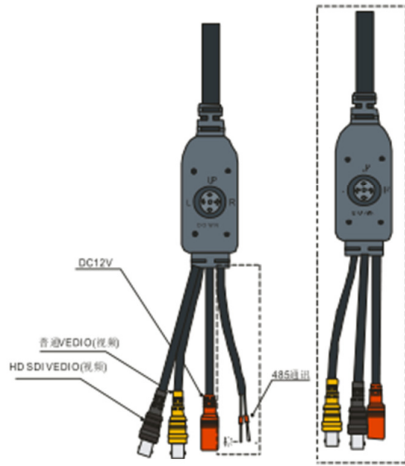
OSD Cable Appearance

HD Connector Appearance

OSD

485 COM

LED

Left —————➤ Right

Left ————➤ Right Left ————➤ Right

12v&vedio

Left ————➤ Right

1   2

1
    2   3

1   2

1   2

blue

white

yellow

black

red

blue+black

brown+black

black

red

OSD wire sequence
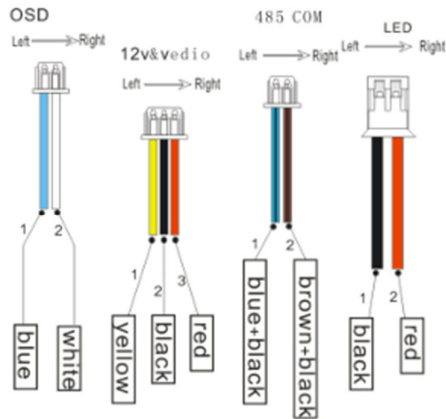
485 Connecting Diagram

RS-485 Controller Connector	Camera RS-485 Connector
(+) Joint Connector (TRX+)	485+
(−) Joint Connector (TRX −)	485−

Default RS-485 Communication Settings

4 Functions

4-1 OSD Menu

4-1-1. IRIS

DESCRIPTION

MODEL	OUTDOOR
RETURN	

IRIS	ALC
2-MOTOR	
FOCUS ADJ	OFF
EXPOSURE	
BACKLIGHT	BLC
DAY&NIGHT	
WHITE BAL	AUTO
DNR	MIDDLE
IMAGE	
MOTION	OFF
SYSTEM	
EXIT	

►**ALC MODE**: According to environment to choose mode with auto iris, OUTDOOR / INDOOR / DEBLUR

►**ELC MODE**: According to clearance of image to choose mode with fixed iris, DEBLUR / NORMAL

DESCRIPTION

DESCRIPTION

2 FOCUS ADJ

2-MOTOR	
AF MODE	AUTO
SCANNING	HALF
ONEPUFHAF	ON!
SYNC TDN	OFF
INITIAL	ON!
RETURN	

IRIS	ALC
2-MOTOR	
FOCUS ADJ	OFF
EXPOSURE	
BACKLIGHT	BLC
DAY&NIGHT	
WHITE BAL	AUTO
DNR	MIDDLE
IMAGE	
MOTION	OFF
SYSTEM	
EXIT	

►**AF MODE**: Automatically adjust the lens (AUTO & Manual)

►**SCANNING**: Lens adjustment range (ALL/HALF)

►**ONEPUSHAF**: Once manually adjust the lens

►**SYNC TDN**: Whether lens will adjust when day & night convert

►**INITIAL**: Reset to avoid error's appearance (multiple times are unavailable)

☆AF MODE

MANUAL: Press up/down/left/right to change field angle and focus length

AUTO: Press up/down to change the field angle of Lens. Then, image will become clear automatically with the help of software and sensor.

NOTE: If boards don't support motorized zoom, FOCUS ADJ will replace the position of 2-MOTOR.

3 EXPOSURE

IRIS	ALC ⏎
2-MOTOR	⏎
FOCUS ADJ	OFF
EXPOSURE	⏎
BACKLIGHT	BLC
DAY&NIGHT	⏎
WHITE BAL	AUTO
DNR	MIDDLE
IMAGE	⏎
MOTION	OFF
SYSTEM	⏎
EXIT	

BRIGHTNESS	|⸽⸽⸽⸽⸽⸽⸽⸽⸽⸽| 11
SHUTTER	AUTO ⏎
SENS-UP	X2
AGC	|⸽⸽⸽⸽⸽⸽⸽⸽⸽⸽| 11
RETUEN	

PARAMETRE

▶**BRIGHTNESS**: 0-20

▶**SHUTTER**:

AUTO/FLICKER/MANUAL(1/25、1/50、1/100、1/240、1/500、1/1000、1/2000、1/4000、1/8000、1/16000、1/30000、1/60000

▶**SENS-UP**: X2、X4、X8

▶**AGC**: 0-20

4 BACKLIGHT

IRIS	ALC ⏎
2-MOTOR	⏎
FOCUS ADJ	OFF
EXPOSURE	⏎
BACKLIGHT	OFF
DAY&NIGHT	⏎
WHITE BAL	AUTO
DNR	MIDDLE
IMAGE	⏎
MOTION	OFF
SYSTEM	⏎
EXIT	

DESCRIPTION

▶**BLC**: For back light environments

▶**HLC**: For high light environments

▶**WDR**: Long wide dynamic range for high contrast environments

5 DAY&NIGHT

MODE	AUTO
IR LED	OFF
ANTI-SAT.	|⸽⸽⸽⸽⸽⸽⸽⸽⸽| 11
EXTERN S/W	LOW
AGC THRES	|⸽⸽⸽⸽⸽⸽⸽| 11
AGC MARGIN	|⸽⸽⸽⸽⸽⸽⸽| 11
DELAY	LOW
RETURN	submenu (6

IRIS	ALC ⏎
2-MOTOR	⏎
FOCUS ADJ	OFF
EXPOSURE	⏎
BACKLIGNT	OFF
DAY&NIGHT	⏎
WHITE BAL	AUTO
DNR	MIDDLE
IMAGE	⏎
MOTION	OFF
SYSTEM	⏎
EXIT	

DESCRIPTION

▶**MODE**: AUTO / COLOR / B&W / EXTERN

▶**IR LED**: Directly turn on/off IR LEDs

▶**ANTI-SAT**: Control exposure in night mode with LED on

▶**EXTERN S/W**: Extern voltage level input, HIGH or LOW

▶**AGC THRES**:

▶**AGC MARGIN**: Long wide dynamic range for high contrast environments

▶**DELAY**: Control the switching time of Day and Night, when set EXTERN mode.

NOTE: IR LED, ANTI-SAT, AGC THRES, AGC MARGIN, these functions need those IR LED boards, which support real smart IR function.

6 WHITE BAL

AWB	AUTO ↵
COLOR GAIN	|ıııııııı| 10
REUTRE	

IRIS	ALC	↵
2-MOTOR		↵
FOCUS ADJ	OFF	
EXPOSURE		↵
BACKLIGNT	OFF	
DAY&NIGHT		↵
WHITE BAL	AUTO	
DNR	MIDDLE	
IMAGE		↵
MOTION	OFF	
SYSTEM		↵
EXIT		

DESCRIPTION

►**MODE**: AUTO / AUTO-ext / PRESET / MANUAL

☆AUTO

Automatically make adjustments depending on the reflect of sensor

☆AUTO-ext

Automatically white balance for special functions

☆PRESET

Return to factory settings

☆MANUAL

User can change the color of image, via KELVIN level, Red gain level, Blue gain level.

7 DNR

IRIS	ALC	↵
2-MOTOR		↵
FOCUS ADJ	OFF	
EXPOSURE		↵
BACKLIGNT	OFF	
DAY&NIGHT		↵
WHITE BAL	AUTO	
DNR	MIDDLE	
IMAGE		↵
MOTION	OFF	
SYSTEM		↵
EXIT		

DESCRIPTION

►**DNR**: Reducing the noise signal of output image, have three level LOW / MIDDLE / HIGH.

NOTE: DNR is digital signal processing step, which lead to smearing. The higher the level is, the more seriously the smearing is.

8 IMAGE

SHARPNESS	|ıııııııııı|ııııı| 11
GAMMA	0.55
COLOR GAIN	|ıııııııııı|ııı| 11
MIRROR	OFF
FLIP	OFF
D-ZOOM	1.0X
ACE	OFF
DEROG	OFF
SHADING	ON ↵
PRIVACY	ON ↵
RETURN	submenu（8）

IRIS	ALC	↵
2-MOTOR		↵
FOCUS ADJ	OFF	
EXPOSURE		↵
BACKLIGNT	OFF	
DAY&NIGHT		↵
WHITE BAL	AUTO	
DNR	MIDDLE	
IMAGE		↵
MOTION	OFF	
SYSTEM		↵
EXIT		

DESCRIPTION

►**SHARPNESS**: adjust the clearance of edge of the objects

►**GAMMA**: Match with monitor GAMMA

►**COLOR GAIN**:

►**MIRROR**: Reversing left and right

►**FLIP**: Reversing up and down

►**D-ZOOM**: Digital amplifying

►**ACE**: Adaptive contrast enhancing

►**DEFOG**: Removing fog function

►**SHADING**: Making compensation for objects under shadow

►**PRIVACY**: Masking the areas in the image to avoid violating personal privacy

9　MOTION

SENSITIVITY	|‖‖‖‖‖‖‖‖|‖‖‖| 1 1
WINDOW	3
DET　H-POS	0
DET　V-POS	0
DET　H-SIZE	60
DET　V-SIZE	34
MOTION　OSD	OFF
ALARM	OFF
RETURN	submenu（11）

IRIS	ALC ←
2-MOTOR	←
FOCUS ADJ	OFF
EXPOSURE	←
BACKLIGNT	OFF
DAY&NIGHT	←
WHITE BAL	AUTO
DNR	MIDDLE
IMAGE	←
MOTION	OFF
SYSTEM	←
EXIT	

►**WINDOW**: Turn on/off motion detection area

►**H-POS**: Starting horizontal position of detection area

►**V-POS**: Starting vertical position

►**H-SIZE**: Ending horizontal position

►**V-SIZE**: Ending vertical position

►**MOTION OSD**: Whether show "MOTION" words in monitor when camera detecting motion

►**ALARM**: Turn on/off alarm

10　SYSTEM

COM.	←
IMAGE RANGE	USER ←
OUTPUT MODE	1080P
MONITOR	0
FRAME RATE	30FPS
CVBS	NTSC
LANGUAGE	CHN[S]
COLORBAR	OFF
RESET	ON
RETURN	

IRIS	ALC ←
2-MOTOR	←
FOCUS ADJ	OFF
EXPOSURE	←
BACKLIGNT	OFF
DAY&NIGHT	←
WHITE BAL	AUTO
DNR	MIDDLE
IMAGE	←
MOTION	OFF
SYSTEM	←
EXIT	

DESCRIPTION

►**COMMUNICATION**: RS485 communication protocol settings

►**IMAGE RANGE**: User Screen and Full

►**OUTPUT MODE**:1080P

►**MONITOR**: 4 kinds of colour style

►**FRAME RATE**: 25FPS or 30FPS

►**SIGNAL**: PAL or NTSC

►**LANGUAGES**: 9 languages

►**SETUP**: 9 languages

►**COLOR BAR**: Back to factory settings

►**RESET**: Back to factory settings

⚠

Notes**: When you finish setting OSD functions, it will be stored when main menu exit normally. If cut off power to exit, it can't store the modifications.**

5 Function & Parameter

Function &Parameter

MODLE	EN778+MN34229PL
Image Sensor	1/2.8" Panasonic CMOS(MN34229PL)
Total Pixels	2000(H) × 1241(V)Approx. 2.48M pixels
Effective Pixels	1984(H) × 1225(V)Approx. 2.43M pixels
Scanning System	Progressive
Resolution	Digital:1080(30p),720(60p)
Min.Illumination	Color:1.0 lux ,BW: 0.5 lux , Color:DSS:0.017 lux ,BW DSS: 0.0008 lux
Video Output	HD-SDI, Analog: NTSC/PAL CVBS
S/N Ratio	More than 50Db(AGC off)
WDR	HD-SDI WDR
AEC/DWDR	CVBS DWDR
Lens	DC/Manual
Brightness	0-20
AGC	0-20 steps
Sens-up	1x-32x
Shutter Speed	AUTO/MANUAL(1/50\60 ~ 1/30,000 sec)
Digital Slow Shutter	Off/On(x4)
Defog	Off/On
Shading	Off/On
BLC	Off/BLC
HLC	Off/Hlc
Day &Night	Auto*Color/B&W
White Balance	Auto/Auto ext/Pushing/Manual
Focus ADJ	OFF/ON
MONITOR	0/1/2/3
DNR(Digit Noise Reduction)	Off/Low/Middle/High
Mirror	Off/On
H-V-REV	Off/On
Sharpness	0-10steps
Digital Zoom	X1-x10
Motion	Off/on
Privacy Mask	16Masks
Language	Chinese/English polyglot
Power(Max.) supply	DC12V ±10%<1.50W
Video Output	HD-SDI:SMA connector, CVBS :BNC connector
HD-SDI distance	SDI(ND5C-2V 75Ohm)500m
SIZE	38mm*38mm

SEA-DROP™ CAMERA DEPLOYMENT

Using with or without the Sea-Tail

If you are in relatively still water, just drop the camera in the water using the power/video cable, with or without the tail. The Sea-tail allows the camera to look forward (upstream) instead of backwards (downstream) if desired. Connect the center hole of the tail to the eyebolt at the back of the camera using the bolt, nut & lock-washer provided.

UP-DOWN Orientation

Normally the camera will look slightly downward into the water. You may change this orientation by making a loop in the cable and attaching it with a "wire-tie" to either the stainless steel eyebolt at the rear (to look downward) or the hole in the top fin (to look upward).

Getting Deeper in the Water

As speed and/or depth increases, you will have to add weight to keep the camera nearer the bottom if desired. You can hang up to 5 pounds of weight from the bottom fin of the camera, and still just deploy using the power/video cable. "Sounding" weights found at a local Marina are a good choice for adding weight.

If you need more than 5 pounds weight because of speed, you should use a tether line (such as a downrigger) to absorb the strain of the weight, instead of just the video/power cable. You can attach the downrigger cable to either the top fin of the camera or the top hole of the tail, depending on whether you want the camera pointed level, or more downward toward the bottom. Weight should then be hung from the bottom fin of the camera using a short (1-3 ft.) leader line, such as 300 lb. mono for example. This makes for a stable configuration, and allows the weight, instead of the camera, to absorb any potential impacts with the seafloor or obstructions. The SeaTail can be used to make the camera look into the current if desired, and even the grommets of the Sea-Tail can be used to orient the camera at different attitudes (angles). For example, to look more downward toward the bottom, attach the tether line (downrigger cable) to the top hole of the tail, and hang the weight from the bottom fin on the Camera.

Once the tether line and weight are attached where needed to provide the desired orientation, the 2 cables can then be secured together a foot or two from the camera with a single zip-tie (wire-tie, or such) and then clipped together every 5-10 feet with the provided *plastic clips* as they are lowered into the water. With the tether line taking the strain of the weight, the power/video cable will have a little slack in the water. The clips help avoid getting a large "bow" (too much slack) in the video cable in the water due to the current. When pulling the cables back up to the surface, the clips will easily release the power/video cable when you pull it smartly away from the downrigger cable. The clips remain on the steel cable and slide down to the bottom to be retrieved and re-used.
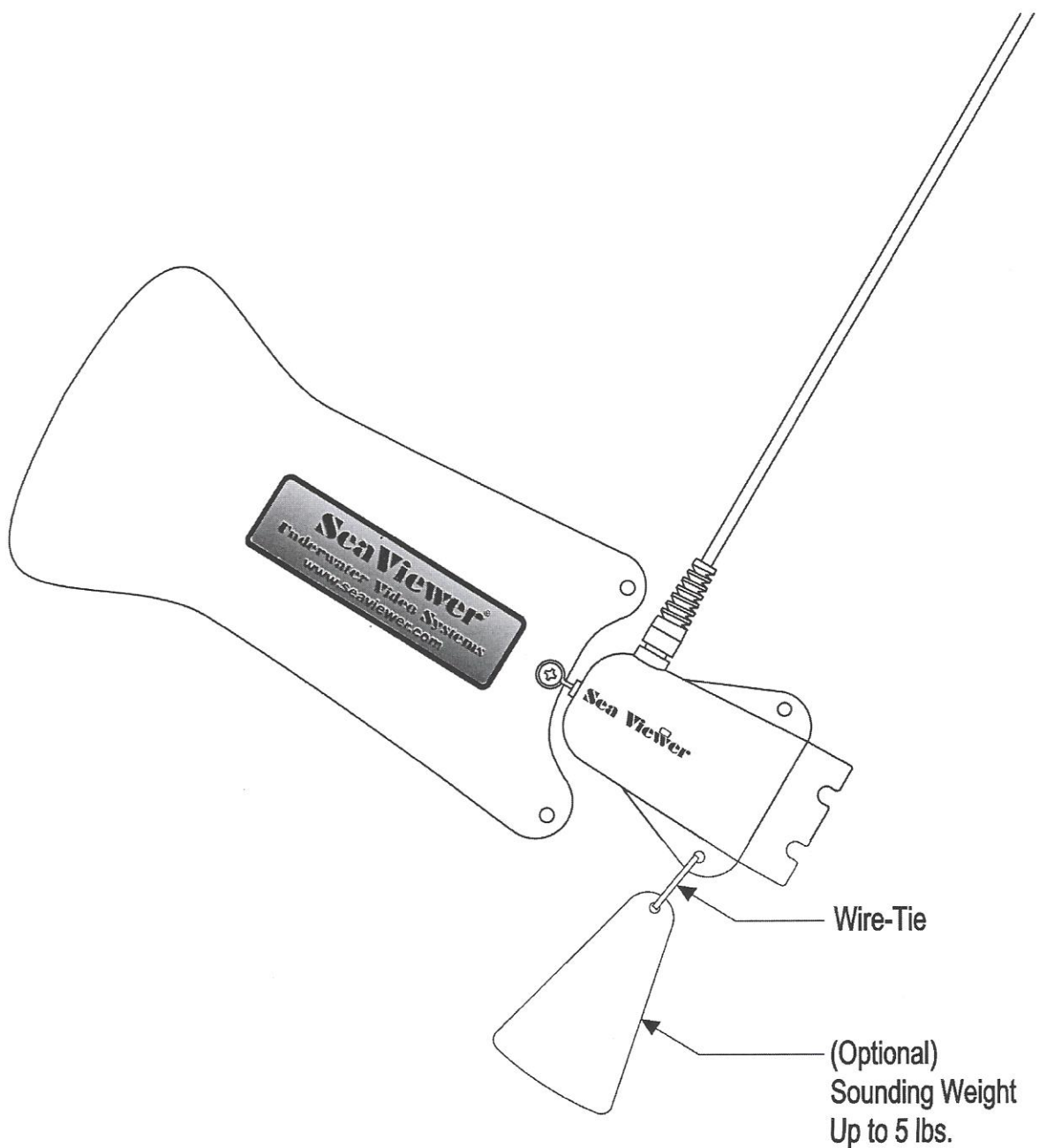
Looking back at your Bait while Trolling Deep in the Water

If you want to use the *Sea-Drop*™ as a Trolling Camera to look back at your bait, use the camera without the Sea-Tail and follow the instructions for downrigger use above. Then add a release clip (or rubber band and snap swivel) to attach your monofilament fishing line to the hole in the top fin of the camera. Do NOT run your fishing line through the hole. Instead put the release clip (or snap swivel) through the hole and let it (or a wrapped rubber band) grab the mono. This way, when a fish strikes, the fishing line will be pulled free, away from the camera cable and downrigger line.
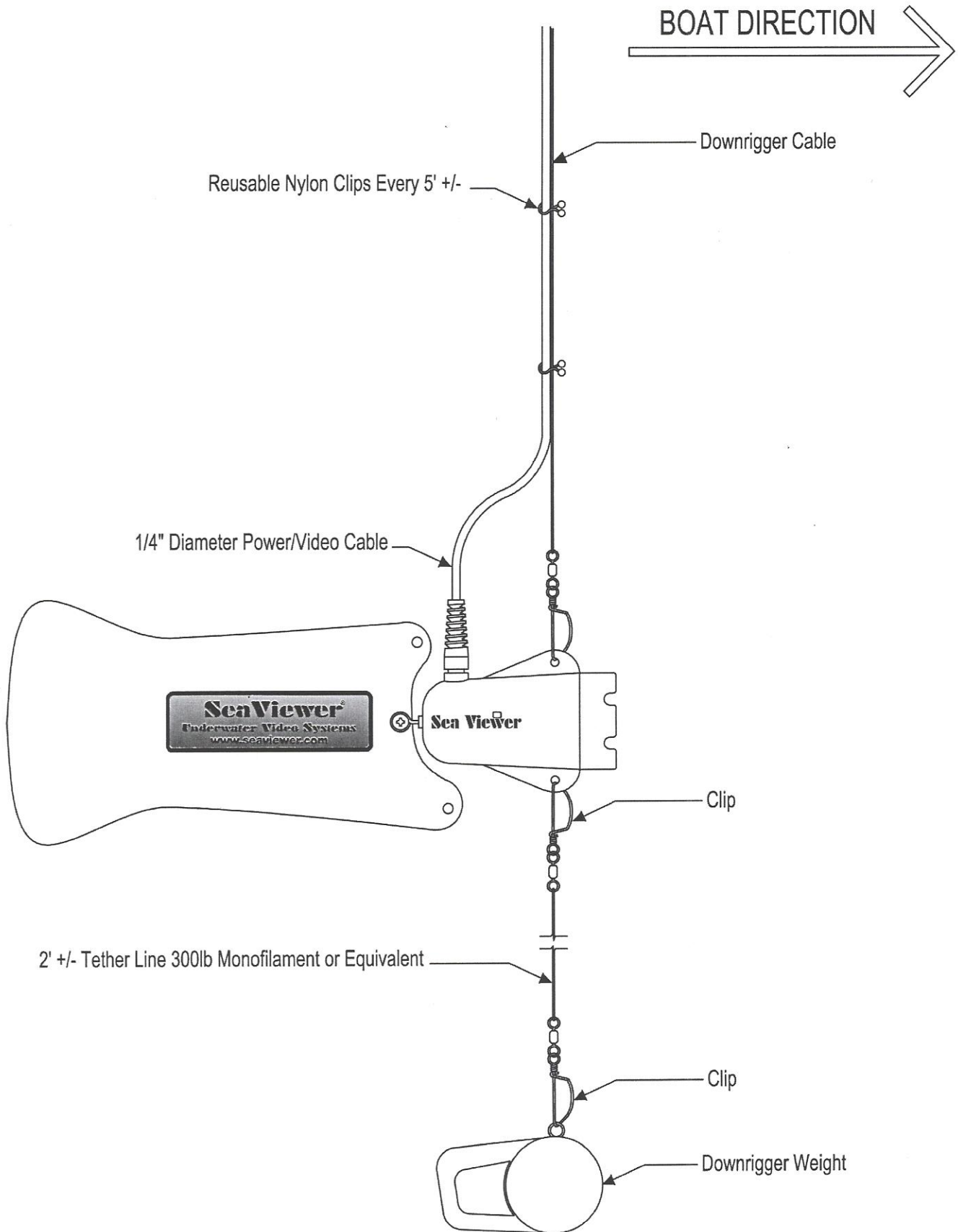
Using as a Pole-Camera

The *Sea-Drop*™ comes with a clamp which attaches to the eyebolt at the rear of the camera. It will fit around a ¾" to 1" diameter pole and allow you to swivel the camera to look upward or downward.
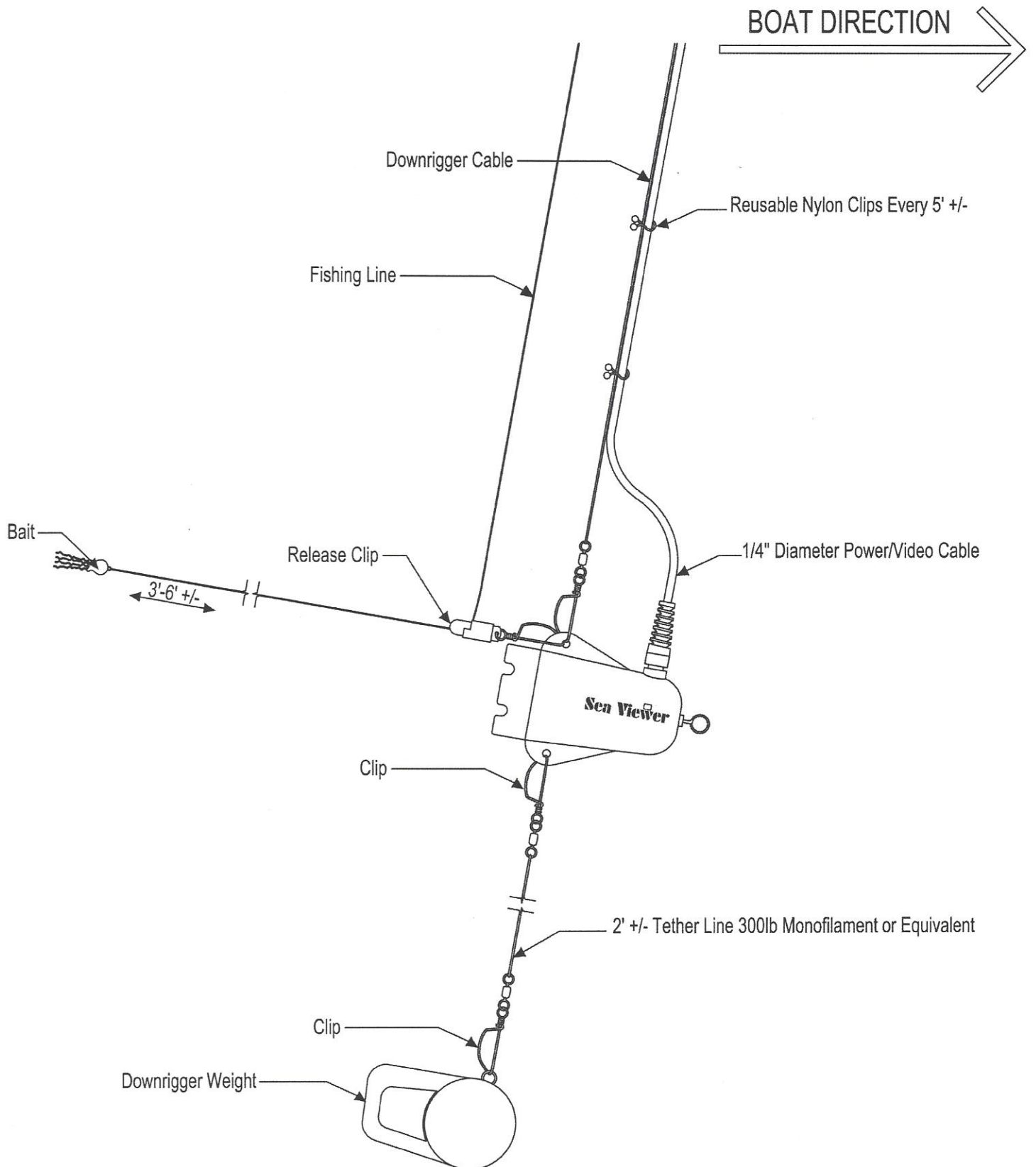
SeaViewer Sea-Drop Camera
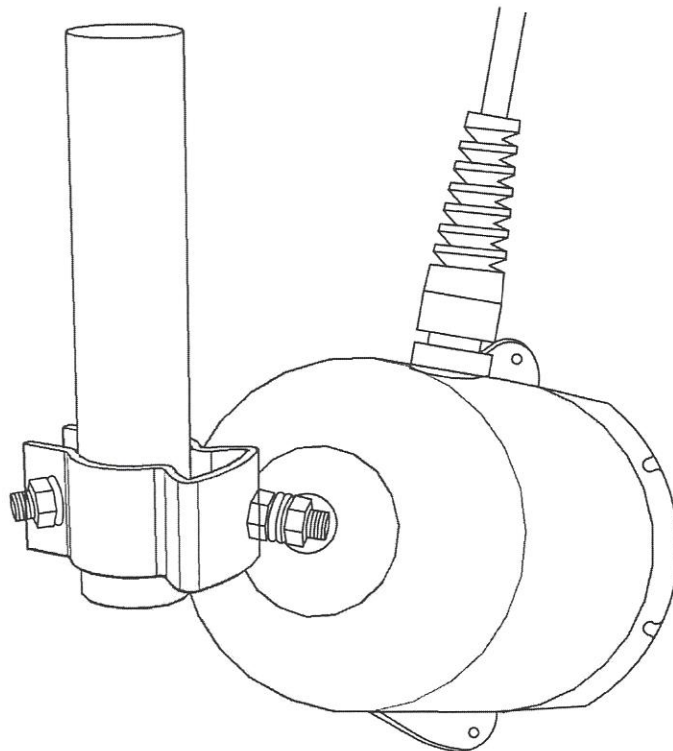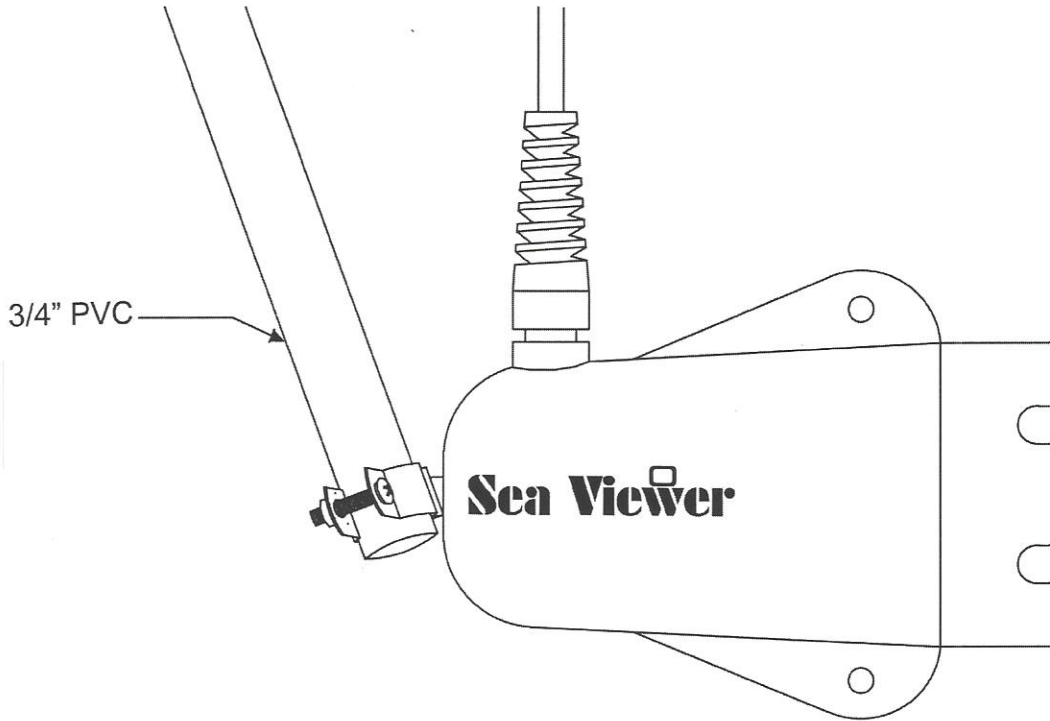## Looking Forward At Bottom While Slow Trolling
Using Only Power/Video Cable

SeaViewer
Underwater Video Systems
www.seaviewer.com

Sea Viewer

Wire-Tie

(Optional)
Sounding Weight
Up to 5 lbs.

SeaViewer Sea-Drop Camera
Downrigger Hook-up
Looking Forward At Bottom

BOAT DIRECTION

Downrigger Cable

Reusable Nylon Clips Every 5' +/-

1/4" Diameter Power/Video Cable

SeaViewer
Underwater Video Systems
www.seaviewer.com

Sea Viewer

Clip

2' +/- Tether Line 300lb Monofilament or Equivalent

Clip

Downrigger Weight

SeaViewer Sea-Drop Camera Downrigger Hook-up
Looking Backwards - Watch Bait While Trolling

BOAT DIRECTION →

Downrigger Cable

Reusable Nylon Clips Every 5' +/-

Fishing Line

Bait

Release Clip

3'-6' +/-

1/4" Diameter Power/Video Cable

Sea Viewer

Clip

2' +/- Tether Line 300lb Monofilament or Equivalent

Clip

Downrigger Weight

SeaViewer Sea-Drop Camera
Pole Mount

3/4" PVC

Sea Viewer

SeaViewer Sea-Drop Camera
A-Frame Set Up For Bottom Or Stationary Viewing

3/4" PVC - SCH. 40 - 90° Side Outlet Elbow
Fipt, Fipt, Fipt

Sea Viewer

Optional Chum Bag

3/4" PVC - SCH. 40 Male Threaded Fittings
For Ease of Storage

2' +/- 3/4" PVC - SCH. 40

SeaViewer Cable Clamp

TAIL WIRE

WEDGE

SHELL

SHIM

CABLE

Step 1

CABLE SHELL

Step 2

SHIM

Step 3

WEDGE

HIT INTO
SHELL

TAIL WIRE