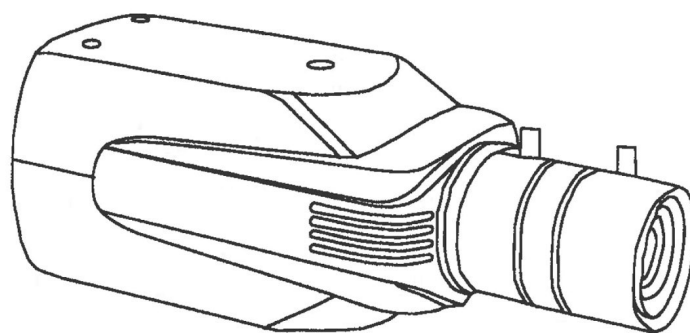


Box Cameras



Color High Resolution CAM 468CH
True Day/Night CAM 468DN
Wide Dynamic Range CAM 586WD

IMPORTANT SAFEGUARDS

1. Read Instructions - All the safety and operating instructions should be read before the unit is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the unit and in the operating instructions should be adhered to.
4. Follow Instructions - All operating and use instructions should be followed.
5. Cleaning - Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
7. Accessories - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only with a stand, tripod, bracket, or mount recommended by the manufacturer, or sold with the product. Any mounting of the unit should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.



An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

8. Ventilation - Openings in the enclosure, if any, are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating. These openings must not be blocked or covered. This unit should not be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
9. Power Sources - This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
10. Grounding or Polarization - This unit may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
Alternately, this unit may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
11. Power-Cord Protection - Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience

receptacles, and the point where they exit from the appliance.

12. Power Lines - An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal. U.S.A. models only - refer to the National Electrical Code Article 820 regarding installation of CATV systems.
13. Overloading - Do not overload outlets and extension cords as this can result in a risk of fire or electric shock.
14. Object and Liquid Entry - Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.
15. Servicing - Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
16. Damage Requiring Service - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If liquid has been spilled, or objects have fallen into the unit.
 - c. If the unit has been exposed to rain or water.
 - d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
 - e. If the unit has been dropped or the cabinet has been damaged.
 - f. When the unit exhibits a distinct change in performance--this indicates a need for service.
17. Replacement Parts - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
18. Safety Check - Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
19. Coax Grounding - If an outside cable system is connected to the unit, be sure the cable system is grounded. U.S.A. models only--Section 810 of the National Electrical Code, ANSI/NFPA No.70-1981, provides information with respect to proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
20. Lightning - For added protection of this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power-line surges.

FCC & ICES INFORMATION

(U.S.A. and Canadian Models Only)

WARNING - This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules and ICES-003 of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Intentional or unintentional changes or modifications not expressly approved by the party responsible for compliance shall not be made. Any such changes or modifications could void the user's authority to operate the equipment.

If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No.004-000-00345-4.

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Components & Specifications

Product ID	Camera Type	Resolution / Imager	Input Voltage	Max Power
CAM 468CH	Color Hi-Res	540TVL, 1/3" CCD	12VDC / 24VAC \pm 10%, 60Hz	< 3W
CAM 468DN	Day/Night	540TVL, 1/3" CCD	12VDC / 24VAC \pm 10%, 60Hz	< 3.5W
CAM 586WD	Wide Dynamic	540TVL, 1/3" DPS	12VDC / 24VAC \pm 10%, 60Hz	< 4W

Accessories

- C/CS mount adapter
- 1/16" Allen wrench
- 4-pin auto-iris connector jack
(see diagram at right)

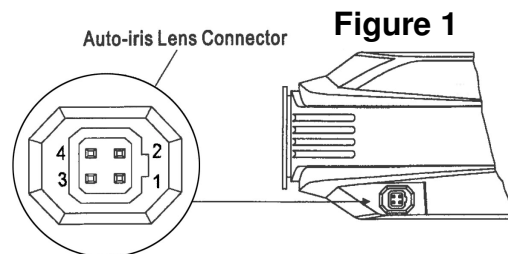


Figure 1

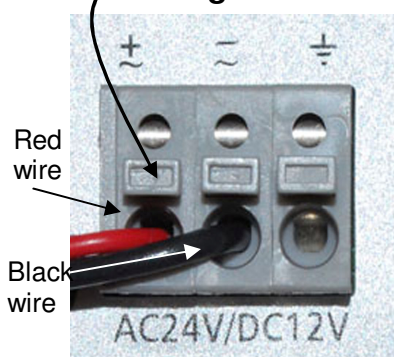
General Camera Setup Procedure

1. Remove the unit from its packaging. Remove the cover cap from the front of the camera.
2. The camera is equipped with a standard CS-mount. Optional C-Mount adapter included.
3. Screw the lens firmly onto the lens mount.
4. Attach the 4-pin plug connector from the lens into the 4-pin jack in the body of the camera.
 - a. An unwired 4-pin is included in the hardware kit. Use this connector if the lens wires terminate as flying leads. Refer to the chart below Figure 1 and the lens installation manual for wiring information.
5. Mount the camera in the desired location using either of the 1/4-20 tapped holes on the top and bottom of the camera (see Figure 4).
6. Once mounted and oriented as desired, power the unit as follows:
 - a. If powering the camera with 12VDC, connect the +12v wire (typically red) into the leftmost contact and -12v wire (typically black) into the middle contact (see Figure 2).
 - b. If powering the camera with 24VAC, the two power wires are interchangeable. Connect one to the leftmost contact and one to the center contact (see Figure 3).
7. Once the unit is powered, a red LED will begin glowing below the power connector.
8. The BNC jack on the rear of the camera provides the video output feed. Connect a test monitor (or any monitor that accepts BNC video input) to this jack to adjust the zoom and focus settings.

Pin	Video Iris Lens	DC Iris Lens
1	Power	Damp -
2	Null	Damp +
3	Video	Drive +
4	Ground	Drive -

Depress the central button to insert the power

Figure 2



Wired for 12 VDC
Red = +12vdc (hot)
Black = -12vdc (ground)

Figure 3



Wired for 24 VAC
Wires are interchangeable
when powering the unit with
24VAC.

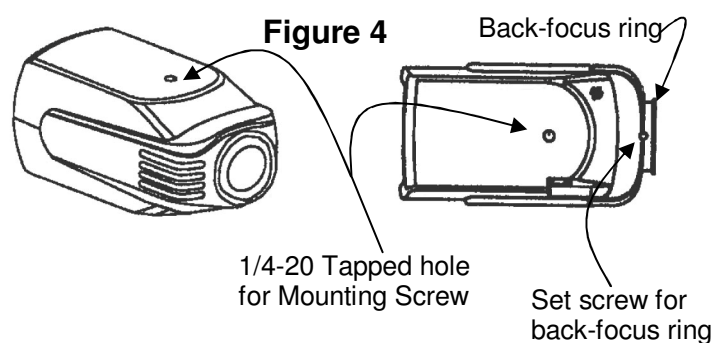


Figure 4

General Camera Setup Procedures, Cont'd

9. Remove the lens cap, then adjust the zoom and focus knobs on the side of the lens as needed; tighten the knobs once complete.
10. If the image will not come into focus, make the following adjustments:
 - a. Adjust the focus all the way to Far (or infinity).
 - b. Point the camera at an image at least 5-inches away.
 - c. Loosen the set screw which holds the silver back-focus ring in place using the provided 1/16" Allen wrench (see Figure 4).
 - d. Turn the lens and ring together in a counter-clockwise direction until the image comes into focus.
 - e. Tighten the set screw and ensure the back-focus ring is held firmly in place.
11. If any additional adjustments to the image are necessary, review the camera functions in the section corresponding to the type of camera purchased.
12. Disconnect the test monitor and connect the camera to the BNC cable leading back to the monitoring station or recording device.

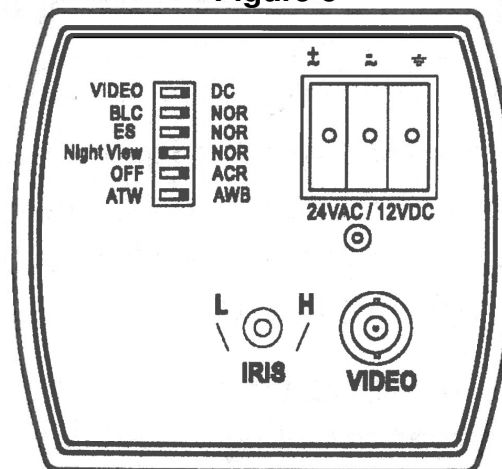
Additional Camera Functions and Settings

CAM 468CH – Color High-Resolution Camera

A set of 6 dip switches is used to adjust the features of this camera. Number 1 refers to the topmost switch, number 6 the bottommost.

1. Iris Switch
 - a. Set to Video when using a Video Iris lens and DC when using a DC Iris lens.
 - b. Note: Set switch 3 to 'NOR' when using any Auto-Iris lens.
2. Back Light Compensation
 - a. Set switch to BLC when the image involves a bright background. Camera will attempt to optimize the image based on the conditions in the center of the image.
 - b. Note: BLC should not be used in normal lighting conditions.
3. Electronic Shutter
 - a. Set switch to ES to automatically adjust the shutter speed between 1/60 to 1/100,000 seconds to compensate for the lighting conditions of the scene.
 - b. Set switch to NOR when using an auto-iris lens or when flickering occurs under a bright fluorescent light. Shutter speed will remain constant at 1/60 seconds.
4. NightView (AGC)
 - a. Set switch to NightView to extend the low-light performance of the camera. The camera will automatically switch to high sensitivity black & white mode under low light conditions.
 - b. When switch is set to NOR, the camera will remain in color mode at all times.
5. Anti-Color Rolling (ACR)
 - a. Serious color rolling may appear over the image if the electricity frequency differs greatly from the standard frequency. Enabling ACR can remove or reduce color rolling in these situations.
 - b. Note: Set switch to Off if no color rolling occurs.
6. White Balance
 - a. ATW (Auto Tracking White balance) setting allows camera to automatically adjust for optimal color reproduction.
 - b. AWB (Automatic White Balance) setting causes the camera to select a value between 2700K and 10,000K and remains constant.

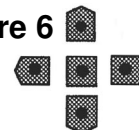
Figure 5



CAM 468DN – Day / Night Camera

Press the center button of directional pad (See Figure 6) to access the camera's On Screen Display (OSD) menu and to step back one screen. Press up or down to navigate between settings, press left or right to change values or enter a sub-menu.

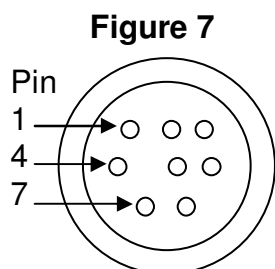
Figure 6



Setting Name	Setting Values	Default Setting	Description
General		Press left or right to enter sub-menu	
Camera ID.....	ID Off, or Set 0 - 255.....	Off.....	Displays camera ID in top-right corner of video
Color.....	On / Off.....	On.....	Toggle between color and black and white (B/W) mode
Mirror.....	On / Off.....	Off.....	Flips the video output horizontally when set to On
Hi-Resolution.....	On / Off.....	On.....	Set to On to enable 540 TVL resolution
Sharpness.....	Off, Low, Mid, High.....	Off.....	Increases crispness of image
Color Suppress.....	On / Off.....	Off.....	When On, camera switches to B/W mode in low light
Aperture Suppress..	On / Off.....	Off.....	Reduces overlap of images in low light
Backlight		Press left or right to enter sub-menu	
Off.....	n/a.....	n/a.....	Shutter speed adjust to light levels to provide brighter image.
Sens.....	0 – 255.....	40.....	When "SENS" is highlighted on-screen, press down, then left or right to adjust values. Enter value for gain level to control brightness of image. Shutter speed to remains constant at 1/60sec
Area 1	0 – 15.....	15	<div> <ul style="list-style-type: none"> - Select the desired Area (1-5), see diagram at left for layout - The light levels of the entire screen will be adjusted according to the light levels seen in the selected area (i.e. if Area 3 is selected, and Area 3 is dark on the screen, the entire screen will be brightened until Area 3 is visible) - The Unweighted Level can be set from 0 – 15, with zero being the minimum and 15 being the maximum (50dB) </div>
Area 2	0 – 15.....	15	
Area 3	0 – 15.....	15	
Area 4	0 – 15.....	15	
Area 5	0 – 15.....	15	
Day and Night	Auto/Day/Night/Ext.....	Auto.....	Enter sub-menu to select by pressing left or right
Auto.....			Automatically switch between color and B/W depending on lighting
Day to Night.....	0 – 255.....	235.....	Adjust the threshold value of color to B/W transition
Night to Day.....	0 – 255.....	160.....	Adjust the threshold value of B/W to color transition
Day.....	n/a.....	n/a.....	Camera stays in color mode at all times
Night.....	n/a.....	n/a.....	Camera stays in B/W mode at all times
External.....	n/a.....	n/a.....	Remotely switch camera from color to B/W modes (see next page)
Privacy	On / Off.....	Off.....	Selecting On launches sub-menu to configure masking zones
Mask Number.....	1-8.....	1.....	8 mask zones are available - each must be defined as it is turned on
Mask Set.....	On / Off.....	On.....	Turn each mask zone on or off
H. Start Position...	0 – 255.....	117.....	Adjusts the left side of the mask zone horizontally
H. End Position.....	0 – 255.....	141.....	Adjusts the right side of the mask zone horizontally
V. Start Position.....	0 – 255.....	080.....	Adjusts the top side of the mask zone vertically
V. End Position.....	0 – 255.....	103.....	Adjusts the bottom of the mask zone vertically
Mask Color.....	Multiple Color Options....	Grey.....	Choose the color of the mask zone. Multiple colors available.
WBC Mode			White Balance Control Mode, press left or right to enter sub-menu
Anti-Color Rolling...	On / Off.....	Off.....	Reduces color rolling when AC frequency is less than 49.9Hz
Auto Trace WB.....	On / Off.....	On.....	Adjust white balance automatically (color temp 2,600 – 6,000K)
Push.....	On / Off.....	Off.....	Adjusts white balance when color temp is between 2,300 – 10,000K
Indoor.....	On / Off.....	Off.....	May provide better white balance indoors depending on lighting
Fluorescent Light...	On / Off.....	Off.....	Improves images in environments with fluorescent lighting
Outdoor.....	On / Off.....	Off.....	May provide better white balance outdoors depending on sunlight
Manual WB.....	Adjust.....	n/a.....	Press left or right to manually adjust the white balance
AE Mode			Auto Exposure Mode, press to left or right enter submenu
Flickerless.....	Off/Norm/LLFL/FIXS.....	Off.....	Change settings to reduce flickering if present in video output
AE.....	On / Off.....	On.....	Note: Flickerless must be set to Off when adjusting AE Shutter
AI.....	On / Off.....	Off.....	Shutter speed auto-adjusts to allow acceptable amt. of light
AE Shutter.....	On / Off.....	Off.....	Set to On when using an auto-iris lens
Shutter.....	Shutter speed.....	1/50.....	Sets the shutter speed to a constant, user-selected speed
Manual.....	On / Off.....	Off.....	Range of speeds, 1/50 allows most light, 1/10K allows least light
Shutter.....	Shutter Speed.....	1/50.....	Allows adjustment of both shutter speed and gain control
AGC.....	Gain.....	5dB.....	Range of speeds, 1/50 allows most light, 1/10K allows least light
Initial			Increase gain to compensate for dark images
			Restores camera to its factory default settings. Press left or right to restore defaults. Camera will automatically reset.

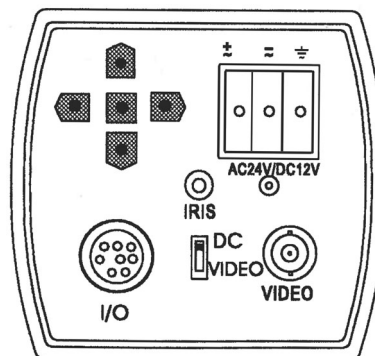
CAM 468DN – Day / Night Camera Functions and Settings Cont'd

Pin Designation of the I/O Port on the rear of the camera



Pin	Utilization	Color
1	RS232 Tx	Black
2	RS232 Rx	Brown
3	RS232 Ground	Orange
4	Not Connected	Blue
5	Not Connected	Green
6	Ground	Yellow
7	External Trigger	White
8	+5 V	Red

Figure 8



Note: A second black wire can be found in the cable harness included with the camera. The larger gauge (larger diameter) black wire is connected to the outer shield of the plug. The smaller gauge (smaller diameter) black wire is connected to Pin 1.

CAM 586WD – Wide Dynamic Range Camera Settings & Functions

Press the center button of directional pad (See Figure 6) to access the camera's On Screen Display (OSD) menu and to step back one screen. Press up or down to navigate between settings, press left or right to change values or enter a sub-menu.

Setting Name	Setting Values	Default Setting	Description
Language	English, Chinese.....	English.....	Select the language to be displayed on-screen
WDR Setup	Auto, High, Low, Custom...Auto.....		Select a preset level, or custom to manually set Bias and Limit
Basic Setup			Press the center button to enter sublevel
Video Signal.....			Press the center button to enter sublevel
Video Format.....	NTSC, PAL.....	NTSC.....	Select the appropriate type of electrical system
Video Level.....	80 min 150 max.....	100.....	Increases / decreases the sensitivity of the imager
Mirror.....	Off / Hor. / Vert. / Both... Off.....		Press left or right to select the type of mirror
Image Adjust.....			Press the center button to enter sublevel
Gamma Mode...	Auto / Manual.....	Auto.....	Press the center button when Manual is highlighted to adjust
Gamma.....	25 min to 100 max	45.....	Controls the overall brightness of the image (100 = darkest)
Sharpness.....	-8 min to +8 max.....	0.....	Softens or sharpens the image. Noise may become apparent
Saturation.....	-8 min to +8 max.....	0.....	Lower value reduces the color level (saturation) of the image
Title.....			Press the center button to enter sublevel
Display.....	Off / On.....	Off.....	On setting causes title to be overlaid over image
Title.....	8 alphanumeric.....	Camera_1.....	Press the center button when "Title" is highlighted. Cursor will move over the first letter. Left / right button changes letter, center button moves to next letter. Up to 8 letters and/or numbers can be entered.
Position.....	UL/UC/UR/LL/LR.....	Up-Left.....	Select upper-right, upper-center, etc. 5 Presets available
Lens Select.....	DC / Video / Manual.....	DC.....	Match this setting to the type of lens attached to the camera
Sync.....	Int 1 / Int 2 / LL.....	Int 1	Determines the type of synchronization to be used. Press the center button when LL (Line Lock) is highlighted to manually select a phase value from zero to 624. This would permit you to setup all cameras on the same system with the same parameter to eliminate rolling which switching video sources. INT 1 is locked to the internal clock at 59.94 Hz. INT 2 is locked to the internal clock at 60.01 Hz.

CAM 586WD – Wide Dynamic Range Camera Settings & Functions, Cont'd

Setting Name	Setting Values	Default Setting	Description
Exposure			Press the center button to enter sublevel
White Balance.....	Multiple – see below.....	ATW.....	Multiple selections available, described below
	ATW.....		Continuously adjusts the white balance of the video automatically
	ATW Extend.....		Camera performs like in ATW mode, but desaturation begins when the calculated color temperature goes below 2800K or above 7500K (for sodium lighting).
	AWG.....		Manually set the white level by pointing the camera at a white surface (wall, paper) and selecting the Save option. The color temperature will be written to ROM (memory) and will remain constant until the user saves over that value.
	Manual.....		Allows the user to adjust the red/blue color composition of the image. Move the red/blue sliders left and right to increase or decrease the red or blue elements in the image. Red default = -18, Blue default = 13.
AE PREFs.....	Highlight / Shadow.....	Highlight.....	Optimize the exposure when high dynamic range light is detected.
	Highlight.....		Optimizes scene for highlights. Bright parts of the image are most visible, and dark parts of the image appear darkest.
	Shadow.....		Optimizes scene for shadows. Dark parts of the image are most visible. Light parts of the image may saturate.
Gain Setup.....	High / Med / Low / Cust....	Medium.....	Higher Gain values provide brighter images. Custom details below.
	Custom.....		Manually set Bias (increase or decrease in brightness) and Limit (bias only increases to a certain value).
Low Light.....	Gain / Slow Shutter.....	Slow Shutter....	Sets how the camera reacts to low light conditions. Details below.
	Gain Mode.....		Gain increases as light decreases up to the value defined by Limit in the Gain Setup submenu. The dynamic range is not decreased as gain increases, the signal and noise are both amplified. The higher the gain, the noisier the image. In Gain Mode there is no motion blurring.
	Slow Shutter Mode.....		The camera uses a combination of increasing Gain and slowing the shutter speed to compensate for decreased light levels. Set the Shutter Speed limit to x2, x4, x8, x16, x32. "x2" means the shutter speed is half the normal rate. For example, if the shutter speed is 1/60, the x2 setting will reduce the shutter speed to 1/30. Slowing the shutter speed can improve the image, but motion blurring can occur.
Advanced Setup			
Zone Exposure.....			Many installations include multiple light sources or unusual lighting conditions. The camera can use meter zones to manage the image. A light or color reference can be set which forces the camera to adjust the rest of the image based on that reference.
Meter Mode.....	Foreground / Background.....		Selects either the Foreground or Background for metering exposure, white balance, and dynamic range. In foreground mode, the camera analyzes both brightness and color elements in the meter zone, then it adjusts these elements throughout the entire image. In background mode, the camera analyzes the light levels in the meter zone, then it enhances the detail for backlight objects that would otherwise appear as silhouettes.
F.G. Presets.....	Multiple.....	Full Screen.....	Select Full Screen, Most_Screen, Center Spot, or Lower 1/3
F.G. Zones.....			Enable and modify Foreground Zones 1-4
	Enable Zones.. Only 1/2/3/4.....	Only 1.....	Select which Foreground Zone to enable (only 1 active at a time)
	Adjust Zones.....		See below for adjustment procedures.
B.G. Zones.....			Enable and modify Background Zones 1-4
	Enable Zones.. Only 1/2/3/4.....	Only 1.....	Select which Background Zone to enable (only 1 active at a time)
	Adjust Zones.....		See below for adjustment procedures.

CAM 586WD – Wide Dynamic Range Camera Settings & Functions, Cont'd

Setting Name	Setting Values	Default Setting	Description
Zone Adjustment Procedures.....			Highlight the enabled zone and press the center key to adjust it. When the zone is White it can be moved around the image. Press the center button to turn the zone Green. When it is Green the zone can only be expanded. Press the center button again to turn the zone Red. When it is Red the zone can only be shrunk. Press the center button again to return to White. Press and hold the center button for 2 seconds to return to the previous menu. Note: Zone 4 will appear invisible at first because it takes up the whole screen. Press the center button twice to turn it Red, at which point the zone can be shrunk back into view.
Privacy Mask Setup.....			Block out a portion (or multiple portions) of the output image. Press center button to enter submenu.
Privacy Mask..... On / Off.....Off.....			Select On and press center button to adjust masks 1-6
Masks 1 through 6.....			To enable a mask and modify it, highlight the desired mask and press Right to adjust the setting to On. Press the center button once to begin modifying it. A gray area will appear on the screen (on initial setup the box is small. While the box is gray it can be moved around the screen. Press the center button causes the gray area to turn blue, at which point the size of the mask zone can be adjusted. Press left, right, up, and down to create the desired mask zone. Pressing the center button again will turn the zone gray. Move the zone if needed, or press and hold the center button to return to the previous menu. Up to 6 mask zones can be enabled at the same time.
Mask Color..... Red / White / Black.....	Red.....		Select the color of the mask zone as it will appear on the video.
Save/Default..... Save / Default.....	Save.....		Select Save to write the current settings to memory, or Default to reset the settings to the factory defaults.
Exit Menu.....			Removes the On Screen Display from the video output.



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