

Honeywell

**Day/Night
Ultra Wide Dynamic
Fixed Dome Camera**

NTSC / PAL

HD4U

HD4UX

User Guide

Revisions

Issue	Date	Revisions
A	04/08	New document.

Warnings

Installation and servicing should be performed only by qualified and experienced technicians to conform to all local codes and to maintain your warranty.

WARNING! 12 VDC/24 VAC models require the use of CSA Certified/UL Listed Class 2 power adapters to ensure compliance with electrical safety standards.



WEEE (Waste Electrical and Electronic Equipment). Correct disposal of this product (applicable in the European Union and other European countries with separate collection systems). This product should be disposed of, at the end of its useful life, as per applicable local laws, regulations, and procedures.

Explanation of Graphical Symbols

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN		 THIS SYMBOL INDICATES THAT DANGEROUS VOLTAGE CONSTITUTING A RISK OF ELECTRIC SHOCK IS PRESENT WITHIN THE UNIT.
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL			 THIS SYMBOL INDICATES THAT IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS ACCOMPANY THIS UNIT.

FCC Compliance Statement

Information to the User: This equipment has been tested and found to comply with the limits for a Class B digital device. Pursuant to Part 15 of the FCC Rules, these limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference. For example, try reorienting or relocating the receiving antenna, increasing the separation between the equipment and receiver, or connecting the equipment to an outlet on a different circuit.

Caution Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This Class B digital apparatus complies with Canadian ICES-003.

Manufacturer's Declaration of Conformance

The manufacturer declares that the equipment supplied with this guide is compliant with the essential protection requirements of the EMC directive 2004/108/EC and the Low Voltage Directive LVD 2006/95/EC, conforming to the requirements of standards EN 55013 for emissions, EN 50130-4 for immunity, and EN 60065 for Electrical Equipment safety.

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Introduction

The unobtrusive, low-profile design of the HD4U/X CCTV Camera is ideal for indoor and outdoor installations in commercial and residential venues.

Before You Begin

Please read this guide carefully before you install the HD4U/X CCTV Camera. Keep this guide for future reference.

Unpack Everything

Check that the items received match those listed on the order form and packing slip. The HD4U/X packing box should include, in addition to this User Guide:

- One fully-assembled HD4U/X camera, including factory-installed pigtail power and video connectors
- One service monitor cable
- One wall mount adapter plate
- One HD4U/X hardware kit
- One bag containing mounting screws
- One Product warranty

If any parts are missing or damaged, contact the dealer you purchased the camera from or call Honeywell Customer Service (see *Warranty and Service*).

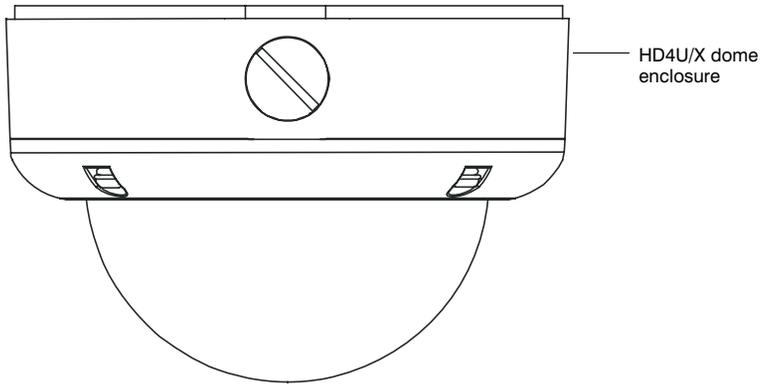
Equipment Required

You will require the following tools to complete the installation:

- Phillips screwdriver
- Tools supplied in the hardware kit (three Allen keys: one each for the security screw on the lid, the conduit plug locking screw, and the lens locking screw)
- Side-cutters

Installation

The HD4U/X is weather-sealed for indoor or outdoor locations. The HD4U/X is a fully-integrated enclosure with camera and lens. The wiring can be completely concealed to reduce the risk of tampering.



Mounting the Camera

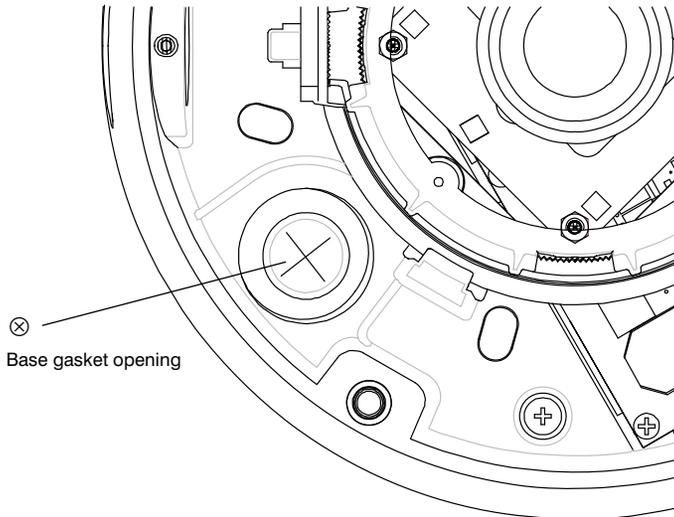
The HD4U/X Camera is designed to be surface mounted on a wall or ceiling. Before you mount the camera, use the mounting template provided to mark and pre-drill the holes.

Connecting Cables Through the Housing Base

For installations that require pulling cables through the grommet located in the bottom of the base:

1. Use a sharp knife to cut an ⊗ opening in the base gasket (see *Figure 1*). Be careful. The opening should be only big enough to feed the cable assembly through.
2. Pull the cabling through the opening.
3. Apply appropriate sealant around the opening to prevent moisture from entering the housing.

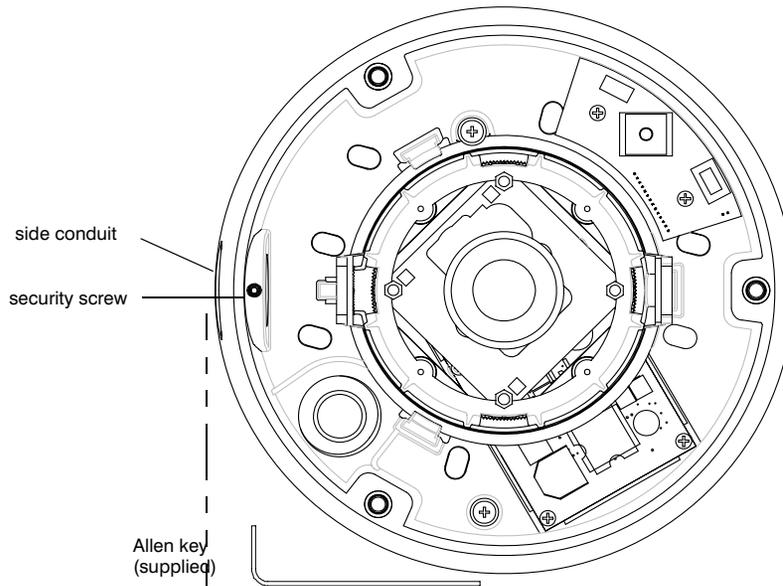
Figure 1 Cable Connection Through Grommet



Connecting Cables Through the Side Conduit

1. Peel back the bottom flat gasket below the side conduit just enough to expose the security screw.
2. Use the supplied Allen key to loosen and remove the security screw (see *Figure 2*).
3. Use a flat screwdriver to unscrew the conduit plug.
4. Pull the cables through the hole.
5. Apply appropriate sealant around the opening to prevent moisture from entering the housing.

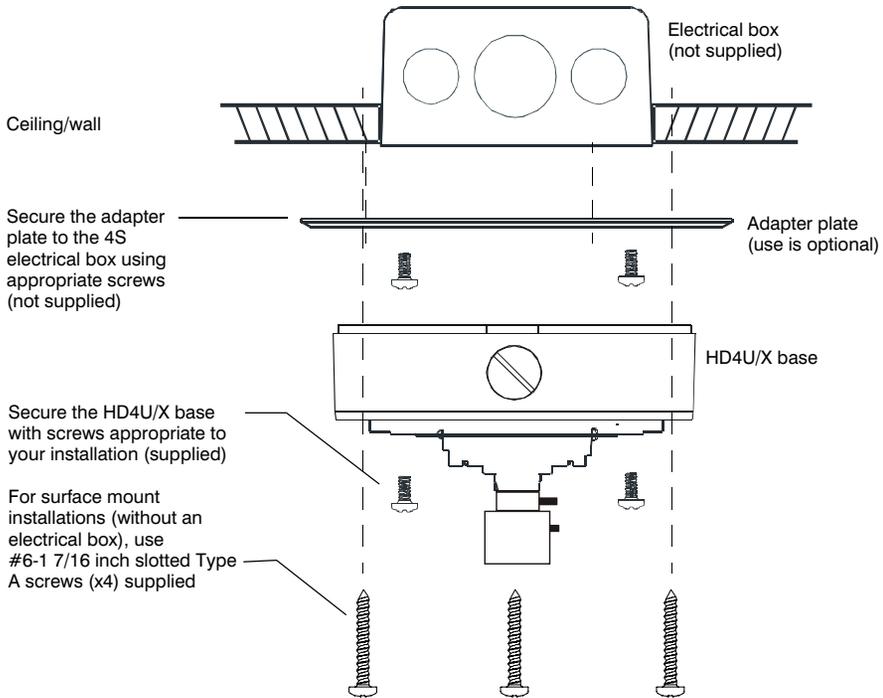
Figure 2 Cable Connection Through Side Conduit



Electrical Box Installations

Figure 3 illustrates how to mount the HD4U/X directly to a 4S electrical box or directly to wall or ceiling. For 4S electrical box installations, you can use the supplied adapter plate to cover ceiling or wall imperfections around the electrical box opening.

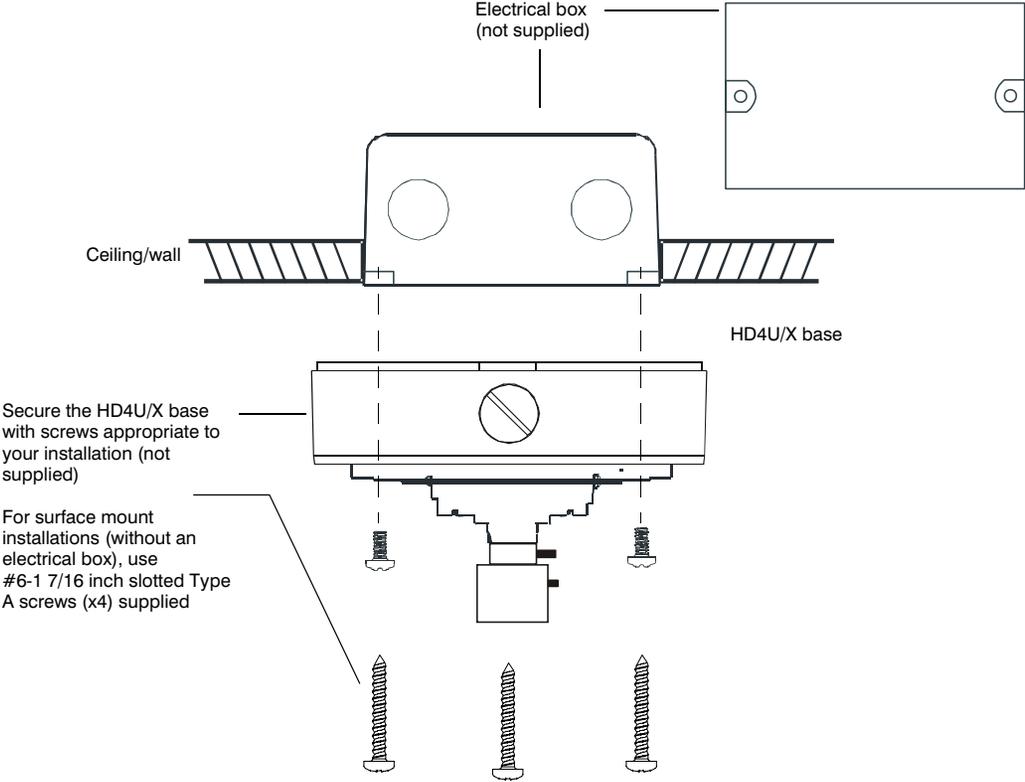
Figure 3 4S Electrical Box Installation



Note Honeywell recommends that you orient the conduit plug facing downwards (wall mount installations) to prevent moisture from entering the housing.

Figure 4 illustrates how to mount the HD4U/X directly to a double gang or single gang electrical box.

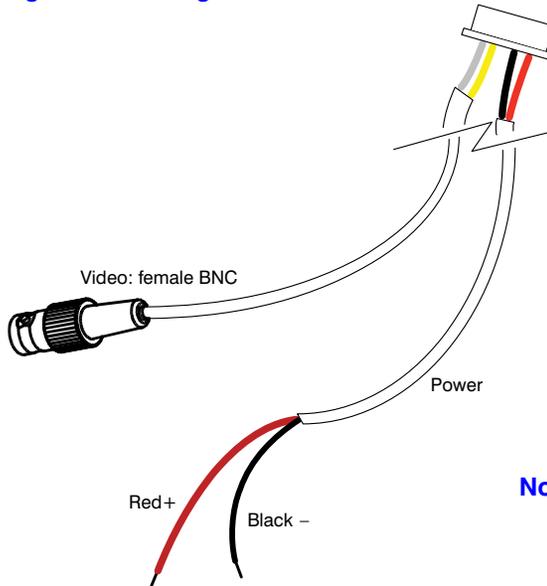
Figure 4 Double Gang/Single Gang Electrical Box Installation (Single Gang Shown)



Connecting the Wiring

Follow *Figure 5* to connect the video and power wires.

Figure 5 Wiring Connection



Note For secure installations, surface-mounted cables should be protected by plastic or metal cable covers.

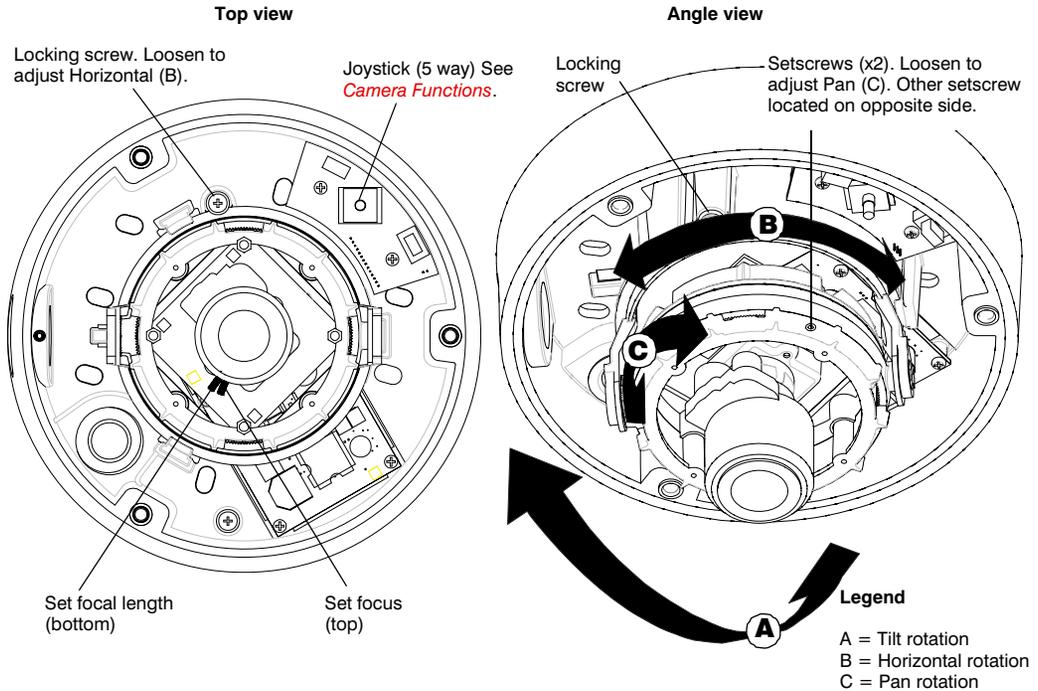
Adjusting the Camera

To adjust the HD4U/X Camera:

1. Apply 12 VDC or 24 VAC power to the camera and monitor the video signal.
2. Loosen the screws that lock the gimbal assembly in place (see *Figure 6*).
3. Adjust the camera carrier to the desired view.
4. Tighten the screws to lock the gimbal assembly in place.

Note Orient the camera as shown in *Figure 6* to maintain the correct picture orientation.

Figure 6 Gimbal Adjustment



Adjusting the Lens Focus

Lenses are pre-focused at the factory but may require a final adjustment after installation because the optical effect of the dome may cause a slight defocusing of the lens.

TECH TIP! To check the focus, hold the dome over the lens while making any adjustments. To adjust the camera direction, view angle and focus, connect the service monitor cable (supplied) to the video monitor output.

Camera Setup

Camera Functions

Joystick control (5 way)

- Press down on the joystick and hold two seconds to access the MAIN MENU.
- Press down to enter a screen or select a menu option.
- ◀, ▶ Move horizontally to and between menus and options
- ▲, ▼ Move vertically to and between menus and options
- "..." indicates submenus

Select a menu, then press down the joystick to enter the submenu.

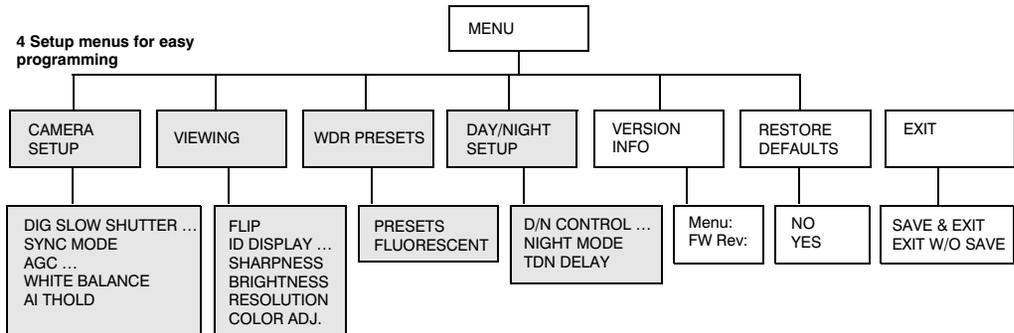
MENU
CAMERA SETUP ..
VIEWING ..
WDR PRESETS ..
DAY/NIGHT SETUP ..
VERSION INFO ..
>RESTORE DEFAULTS <NO>
EXIT EXIT W/O SAVE.

Move the joystick ◀, ▶ to change the status.

To leave the screen and return to the previous menu, select **PREVIOUS PAGE**, and then press down on the joystick.

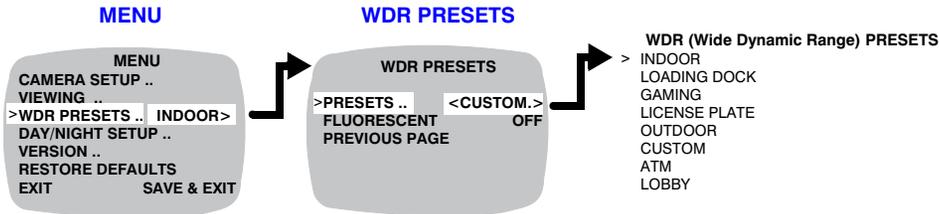
To save your changes, select **SAVE & EXIT**, and then press down on the joystick. Your settings remain in effect when power is turned off, then on again.

OSD Menu Structure



Configuring the WDR Presets

Select the appropriate camera mode for the lighting conditions.



The table below explains the Preset options on the **WDR PRESETS** menu. Double-click a Preset to display a read-only screen showing the factory settings. INDOOR is the default.

WDR Preset	Area of Interest	WDR	Exposure
INDOOR	Full scene	Wide	Highlights
LOADING DOCK	Center scene	Wide	Highlights
GAMING	Full scene spot glare	Medium	Highlights
LICENSE PLATE	Full scene spot glare	Medium	Shadows
OUTDOOR	Full scene	Ultrawide	Highlights
ATM	Center scene	Ultrawide	Shadows
LOBBY	Center scene	Wide	Shadows

<CUSTOM>

Opens the **CUSTOM** screen where you can adjust the limits of the wide dynamic range by moving the cursor.



Note Watch the changes on the video monitor for the best results.

>WDR LIMIT

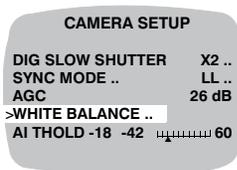
Adjust the dynamic range to change the camera's light optimization. Reduce the level to lower the dynamic range. Adjust the slider from **0** to **36** (default is 20).

<AES>	The AES (Automatic Electronic Shutter) feature compensates for excessive light levels by automatically adjusting the shutter speed of the camera. Select from: HIGHLIGHTS for optimum exposure of bright areas of the scene. SHADOWS for optimum exposure of dark areas of the scene.
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Optimizing the Camera Setup

Note This menu is for advanced users only.

The table below explains the options on the **CAMERA SETUP** menu. Each selection on this menu takes you to a separate screen (see description below).



DIG SLOW SHUTTER

Digital Slow Shutter. Select a shutter speed, from **x2** to **x32**. Notice that the **AGC** value changes accordingly. (For more about AGC, see page 18.)

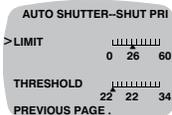
> CUSTOM.

Opens the **SLOW SHUTTER SETUP** menu where you select the optimum exposure adjustment. Shutter mode options are:



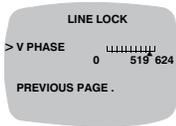
SHUT PRI (Priority) to select the sensitivity **LIMIT** from **0** to **60** (26 is the default), or the sensitivity **THRESHOLD** from **22** to **34** (22 is the default). See figure on left.

GAIN PRI (Priority) to adjust the noise **LIMIT** in the image, from **0** to **60** (26 is the default), or adjust the gain **THRESHOLD** from **28** to **42** (28 is the default).



MANUAL to manually set the sensitivity **LIMIT** from **0** to **60** (26 is the default).

>SYNC



Synchronize the vertical interval sync pulse of your camera with other equipment to reduce the effect of picture roll on the monitor. Select either:

<**INTERNAL**> (default) for cameras using DC power or when line lock is not required, or

<**LINE LOCK**> to open the Line Lock screen where you can adjust the Vertical Phase (V PHASE) from **0** to **624** (519 is the default).

>AGC

Automatic Gain Control. This setting affects the day/night threshold. A higher AGC value results in the camera switching from day to night mode at lower levels. While observing a video monitor, adjust the noise in the image, from **0 dB** to **36 dB**.

>WHITE BALANCE

Opens the **WHITE BALANCE** menu where you set how the camera tracks to accept different lighting conditions within the color range of 2000K to 11000K.

<**ATW Normal**>

<**ATW Desat**>

The **ATW Normal** (default) and **ATW Desat** (Desaturation) options open the **WHITE BALANCE LIMITS** screen where you set the Low and High white balance limits (**2100K** to **8800K**) while observing the video monitor.



ATW Desat is useful for low light conditions.

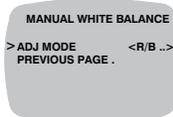
<**AWB**>

Opens the **PUSH AWB CONFIRM** screen where you **save** your AWB settings to have them take effect, or select **CANCEL**. Auto white balance ensures that color integrity is maintained.

Caution Selecting **Save** will overwrite all previous settings.

<**MANUAL ...**>

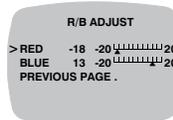
Opens the **MANUAL WHITE BALANCE** menu where you adjust the color settings while observing the scene in the video monitor. Options are:



<**KELVIN**> Move the cursor to set the TINT, from **2K** to **11K** (2900 is the default).

<**R/B**> Adjust the RED and BLUE settings, from **-20** to **20**. The default red is -18 and the default blue is 13.

Use this feature when:



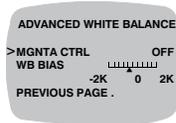
- Non-standard lighting exists or color lighting temperature exceeds the range of the camera.
- A significant part of the scene contains a single color or a completely red or blue background.

<ATW Xtnd>

Automatic Tracking White Balance (Extended Range). Continuously monitors the color temperature while an internal micro controller sets the white balance. Select this mode when the scene illumination varies between indoor scenes and outdoor scene lighting. Operating color temperature range is 2000K to 11000K.

>ADVANCED
WHITE BAL ..

Opens the **ADVANCED WHITE BALANCE** menu where you can adjust the magenta or the white balance bias. Options are:



<MGNTA CTRL>. Select

<OFF>, <ON>, or

<CUSTOM> to open the **MAGENTA CONTROL** screen and, while observing the video monitor, adjust the level, from **0** to **100** (5 is the default).

<WB BIAS> to adjust the level from **-2K** to **2K** (0 is the default).

>AI THOLD

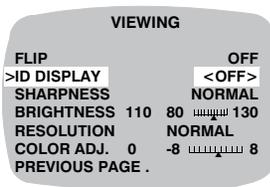
Adjust the Automatic Iris (AI) threshold, from **-42** to **60** (-18 is the default).

Note When using a manual iris lens, set the AI threshold to **-42** (recommended).

The AI threshold is factory set to -18 for all WDR presets.

Setting the Camera Image Properties

The table below explains the options on the **VIEWING** menu.



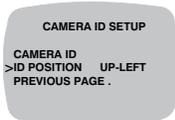
>**FLIP**

Select either:

<**ON**> to reverse the image horizontally on the video monitor, or
<**OFF**> (default)

> **ID DISPLAY.**

Select **ON** to open the **CAMERA ID SETUP** screen where you can add a **CAMERA ID** (title) of up to 8 characters.



Move the cursor (>) to **CAMERA ID**, then press down on the joystick. The first character appears. Press ◀, or ▶ to change the character, then press down on the joystick to move to the next character.

When you are satisfied, press ▲, or ▼ and move the cursor to another item.

> **ID POSITION**

Select where you want the Camera ID to appear on the monitor screen Select from the list:

<**UP-LEFT**>, <**UP-CENTER**>, <**UP-RIGHT**>, <**DOWN-LEFT**>, <**DOWN-RIGHT**>

> **SHARPNESS**

Select the level of sharpness of the image. Choices are:

<**NORMAL**> (default)
<**SHARP**>
<**SOFT**>

> **BRIGHTNESS**

While observing the video monitor, move the cursor to adjust the overall brightness level, from **80** to **130** (110 is the default).

> **RESOLUTION**

Select the camera resolution. Choices are:

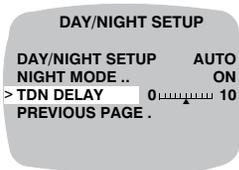
<**NORMAL**> (default)
<**HIGH**>

> **COLOR ADJ**

While observing the video monitor, move the cursor to adjust the color saturation, from **-8** to **8** (0 is the default).

Setting the Day/Night Control

The table below explains the options on the **DAY/NIGHT SETUP** menu.



Note This setting is dependent on the AGC setting (See **>AGC** on page 18).

>DAY/NIGHT SETUP Select either:

<AUTO> (default) depending on light level, the camera automatically switches from color to black and white.

<OFF> the camera stays color mode regardless of light level.

<ON> the camera stays in black and white mode regardless of light level.

>CLR BURST

The **CLR BURST** screen determines the video signal type used when the camera switches from color to black and white mode. The options are:

<ON> (default) B/W with color burst.

<OFF> B/W without color burst.

>TDN DELAY

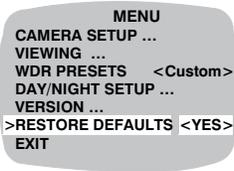
Sets the time period in seconds that the camera waits before switching modes. This prevents unnecessary switching (for example, when an object passes briefly in front of the camera.)

Note Certain video recorders require color carrier/burst to operate.

Restoring Settings

On the main **MENU**, select **RESTORE DEFAULTS**, then **YES** followed by **ENTER** (middle button). This reloads the factory default camera settings.

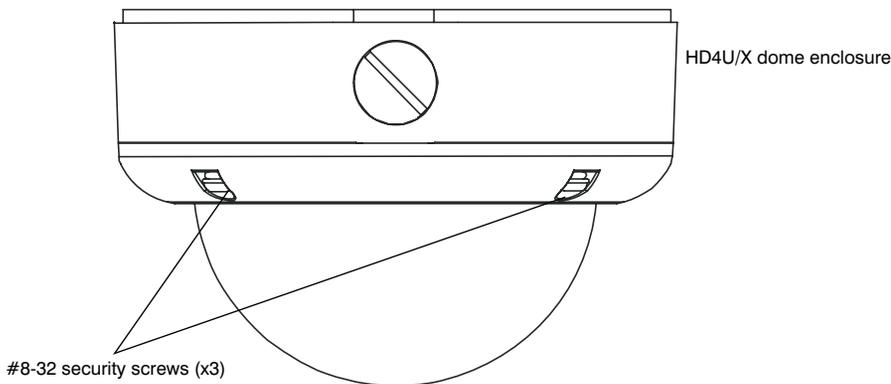
Caution This action replaces all custom settings.



Installing the Enclosure Cover

To install the enclosure cover, use the Allen key (supplied) to secure the HD4U/X dome enclosure to the base with four #8-32 security screws.

Figure 7 Enclosure Cover Installation



Routine Maintenance

Use regular liquid cleaners to remove dirt and grime from the HD4U/X dome.

Caution Do not use harsh or abrasive cleaners which can scratch the polycarbonate dome and reduce visibility for the camera.

If the camera view is obstructed by scratches, remove the front plate and rotate to find an unscratched part of the dome.

Solving Common Technical Issues

- No Video**
- Check that the power supply voltage is within the operating specifications for your camera model. See *Specifications* for details.
 - Check the video signal connections are correct.
 - Check for a loose connection.
- Fuzzy Video**
- Check that the video ground connections.
 - Check for ground loops.
- Image has a white cast**
- Select the Wide Dynamic Preset that gives you the best picture for your scene. If you still have the problem, go to the CUSTOM menu and reduce the dynamic range slider to a lower value. Using the VIEWING menu, set the resolution to High and Sharpness to Normal or to Sharp.
- Which preset is right?**
- The WDR presets consist of 3 main types—center-weighted scene, full scene, and full scene with spot glare. Depending on the scene, you can narrow down your choice to the presets within each of these groups. Most applications can use the full scene presets—INDOOR or OUTDOOR—as these are optimized for general lighting conditions.

If the area of interest is primarily in the center of the scene, use the ATM, LOADING DOCK, or LOBBY presets.

For scenes in which there are hot spots of illumination and angle of view, the GAMING and LICENSE PLATE presets will offer the best picture quality for seeing the objects of interest.
- Changing AGC value affects WDR preset**
- The WDR presets set the dynamic range, the exposure, sharpness, and the AGC level. Changing any of these changes the WDR preset to Custom. The preset that you selected was still loaded, except that the AGC had changed, thus customizing your setup. Custom allows you to modify the dynamic range and exposure of the preset.

Call Honeywell Technical Support for additional assistance (see *Warranty and Service*).

Warranty and Service

Subject to the terms and conditions listed on the Product warranty, during the warranty period Honeywell will repair or replace, at its sole option, free of charge, any defective products returned prepaid.

In the event you have a problem with any Honeywell product, please call Customer Service at 1.800.796.CCTV for assistance or to request a **Return Merchandise Authorization (RMA)** number.

Be sure to have the model number, serial number, and the nature of the problem available for the technical service representative.

Prior authorization must be obtained for all returns, exchanges, or credits. **Items shipped to Honeywell without a clearly identified Return Merchandise Authorization (RMA) number may be refused.**

Specifications

Video Signal Specifications	NTSC	PAL
Video Standard:	525 lines, 2:1 interface	625 lines, 2:1 interface
Scanning System:	Progressive	
Image Sensor:	1/3 in. WDR digital image device	
Number of Pixels (H x V):	720 (H) x 540 (V)	
Dynamic Range:	102dB typical, 120dB max	
Day/Night Operation:	Day:	Infrared (IR) cut filter
	Night:	No filter
Minimum Illumination:	0.4 lux @ F1.4	
Horizontal Resolution:	520 TV lines	
Lens Type:	2.8 – 10 mm @ F1.4 (IR corrected)	
Video Output:	1 V p-p composite @ 75 Ohms	
Sync System:	12 VDC: Internal	
	24 VAC: Line lock	
Signal to Noise Ratio:	50 dB typical	
Auto Gain Control (AGC):	Auto (0–36 dB maximum)	
Automatic Electronic Shutter (AES):	1/60–1/100,000 sec	1/50–1/100,000 sec
Lens Iris Control:	DC drive	
White Balance:	ATW/AWB/ATW Xtn/Manual	
Line Lock Phase Adjust:	Adjustable line lock vertical phase, $\pm 180^\circ$	
Electrical Specifications		
Input Voltage:	12 VDC / 24 VAC	
Input Range:	11–16 VDC / 17– 28 VAC	
Surge Suppression:	1.5 kW transient	
Power Consumption:	3.0 W	

Temperature:

Operating: -13°F to +122°F (-25°C to +50°C)

Storage: -4°F to +140°F (-20°C to +60°C)

Mechanical Specifications

Dimensions (D) x (H):

5.5 in. x 3.6 in. (140.2 mm x 91.5 mm)

Weight:

2.5 lb. (1.1 kg) max

Housing Construction:

Diecast aluminum

Housing Finish:

Powder coated

Video Output:

BNC connector

Power Input:

12-inch tinned leads

Regulatory

Emissions:

FCC, CE (EN55013)

Immunity:

CE (EN50130-4)

Safety:

EU: 73/23/EEC LVD)

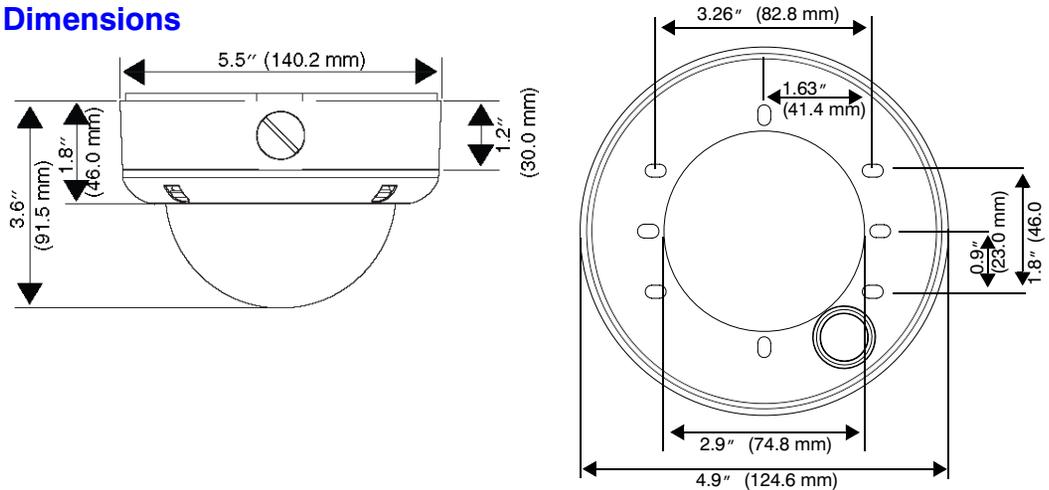
Environmental:

Meets IP66

UL:

CAN/UL60065

Dimensions



Cable Guidelines

Maximum Power Supply Cable Length (feet/meters) Cameras With AC/DC Power Supplies

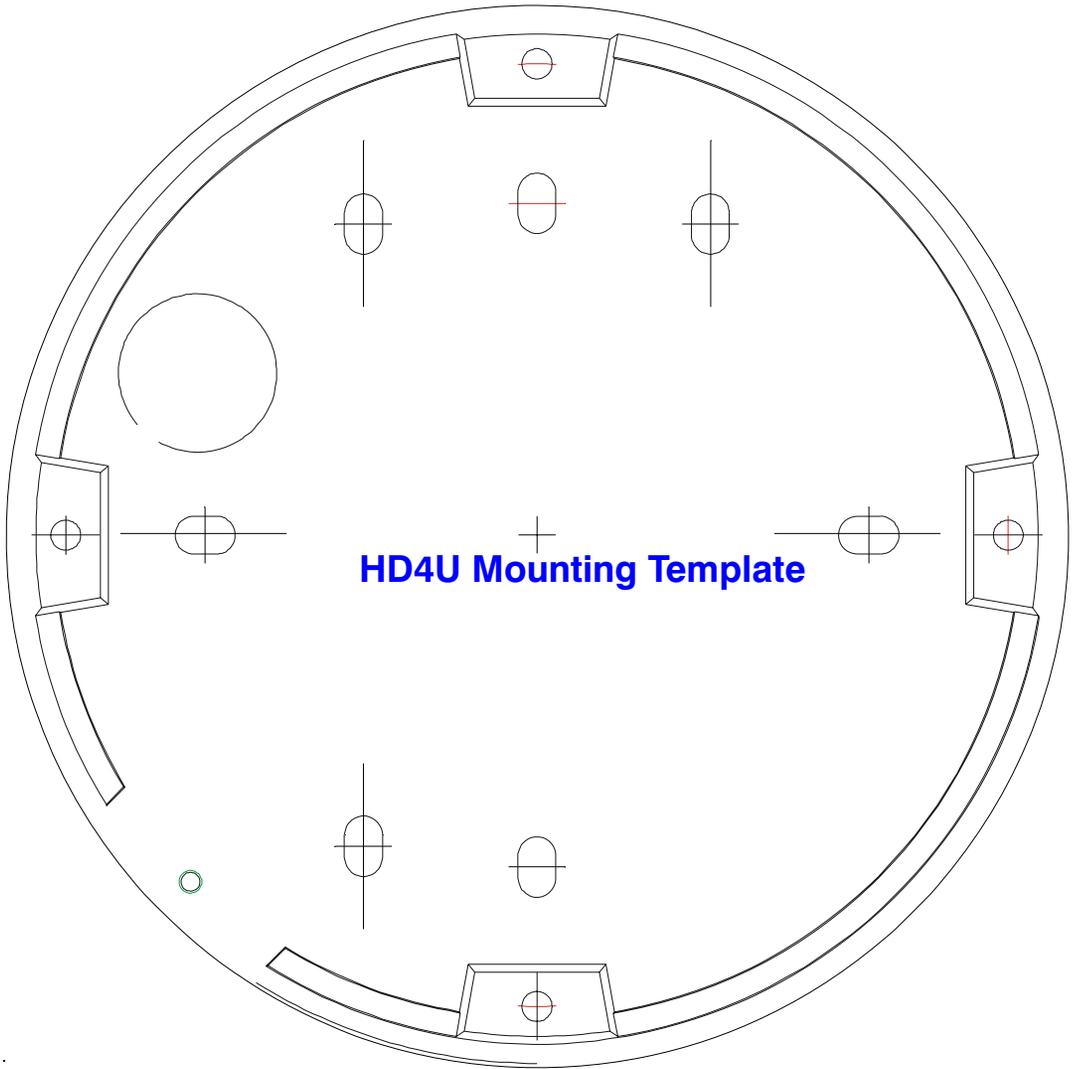
Total load	Power supply	Wire gauge			
		24 AWG	22 AWG	18 AWG	16 AWG
3.5 W	15 VDC	200/61	325/99	826/252	1315/401
3.5 W	24 VAC	771/235	1512/461	3835/1169	6187/1886

Note Calculations are based on an unregulated linear power supply, which would be the worst case. Using a regulated or switching power supply can increase the cable distance. Honeywell recommends using a **CSA Certified/UL listed Class 2** power adapter to ensure compliance with electrical safety standards.

Maximum Video Coaxial Cable Length (feet/meters)

Cable type	RG-59	RG-6	RG-11
Wire gauge	23 AWG*	18 AWG*	14 AWG*
Maximum length (feet/meters)	750/229	1500/457	2000/610

* Copper clad steel core, 95% braided shield



Honeywell Video Systems (Head Office)

2700 Blankenbaker Pkwy, Suite 150
Louisville, KY 40299, USA
www.honeywellvideo.com
☎ +1.800.796.2288

Honeywell Security Australia Pty Ltd.

Unit 5, Riverside Centre, 24-28 River Road West
Parramatta, NSW 2150, Australia
www.honeywellwsecurity.com/au
☎ +61.2.8837.9300

Honeywell Security Asia Pacific

33/F Tower A, City Center, 100 Zun Yi Road
Shanghai 200051, China
www.asia.security.honeywell.com
☎ +86 21.2527.4568

Honeywell Security Asia

Flat A, 16/F, CDW Building, 388 Castle Peak Road
Tsuen Wan, N.T., Hong Kong
www.asia.security.honeywell.com
☎ +852.2405.2323

Honeywell Security France

Parc Gutenberg, 8, Voie La Cardon
91120, Palaiseau, France
www.honeywell.com/security/fr
☎ +33.01.64.53.80.40

Honeywell Security Italia SpA

Via della Resistenza 53/59
20090 Buccinasco
Milan, Italy
www.honeywell.com/security/it
☎ + +39.02.48880551

Honeywell Security España

Miñancas 1. 3ª Planta
P. Ind. Las Mercedes
28022 Madrid, Spain
www.security.honeywell.com/es
☎ +34.902.667.800

Honeywell Video Systems Northern Europe

Netwerk 121
1446 WV Purmerend, The Netherlands
www.honeywell.com/security/nl
☎ +31.299.410.200

Honeywell Systems Group

Aston Fields Road, Whitehouse Ind Est
Runcorn, Cheshire, WA7 3DL, UK
www.honeywell.com/security/uk
☎ +44 (0)1928 756999

Honeywell Security South Africa

Unit 6 Galaxy Park, 17 Galaxy Avenue
Linbro Park, P.O. Box 59904
2100 Kengray, Johannesburg, South Africa
www.honeywell.co.za
☎ +27.11.574.2500

Honeywell Security Deutschland

Johannes-Mauthe-Straße 14
D-72458 Albstadt, Germany
www.honeywell.com/security/de
☎ +49.74 31.8 01.0

Honeywell Security Poland

Chmielewskiego 22a, 70-028
Szczecin, Polska
www.ultrak.pl
☎ +48.91.485.40.60

Honeywell Security Czech Republic

Havránkova 33, Brno
Dolní Heršpice, 619 00, Czech Republic
www.olympo.cz
☎ +420.543.558.111

Honeywell Security Slovakia Republic

Vajnorská 142, 83104 Bratislava
Slovakia
www.olympo.sk
☎ +421.2.444.54.660

Honeywell

www.honeywellvideo.com
+1.800.796.CCTV (North America only)
HVSsupport@honeywell.com

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