

COSTAR **HD**

RISE™ Series
4220HD

Installation Manual
9994000 Rev B



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1.0 General Information

Congratulations on your purchase of a CostarHD Rugged Outdoor Camera System!

Please be sure to carefully review the Installation and Operation manuals for your product before starting the installation process.

To help ensure a smooth installation process, CostarHD has included the following items with your shipment:

- Nitrile Gloves
Should be worn while working with anti-seize compound or silicon grease to aid in easy cleanup and prevent these substances from making contact with other parts of the camera assembly.
- Anti-Seize Compound
Should be applied to the threads of the mounting hardware of the camera. For dome cameras, apply to the 1-1/2" threaded nipple. For positioner cameras, apply to the 1/4-20 bolts that thread into the base of the camera.

1.1 About This Document

This document contains information on how to install and maintain the 4220HD Series. Please read this manual carefully prior to installation to prevent any accidental damage or misuse. The manual is available from the CostarHD website at <http://www.costarhd.com/Support/Product-Documentation>.

The information in this manual is subject to change without notice. Please refer to the above website for the latest information

Note: All graphics contained within this document, including images and other displays, are for reference use only and are subject to change.

1.2 Additional Information and Documents Related to the Camera System

For information on the camera system operation, see Operation manual. The manual is available from the CostarHD website at <http://www.costarhd.com/Support/Product-Documentation>.

1.3 Copyright/Intellectual Property Rights Statement

Copyright © 2021 CostarHD, LLC. CostarHD, LLC has intellectual property rights to technology embodied in the product described in this manual.

CostarHD™, RISE™, and Command Core +™ are trademarks of CostarHD, LLC.

1.4 FCC Compliance

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. 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.

Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications to this device void the warranty.

1.5 Support Services

Please contact CostarHD Customer Service Department for technical assistance at (858) 391-1800 option 2.

2.0 Returns

2.1 Instructions

This item was thoroughly tested and carefully packed at the factory prior to shipping. Upon acceptance by the carrier, the carrier assumes responsibility for the item's safe arrival. If you receive the item in a damaged condition, apparent or concealed, a claim for damage must be made to the carrier.

If a visual inspection shows damage upon receipt of this shipment, it must be noted on the freight bill or express receipt and the notation signed by the carrier's agent. Failure to do this can result in the carrier refusing to honor the claim.

When the damage is not apparent until the unit is unpacked, a claim for concealed damage must be made. Make a mail or phone request to the carrier for inspection immediately upon discovery of the concealed damage. Keep all cartons and packing materials.

To return the product to the factory for service, please contact the Customer Service Department for a Return Material Authorization (RMA) Number.

Prominently display the RMA number on the outside of the shipping container(s) and on paperwork contained inside. Give a brief description of why the equipment is being returned and list the symptoms of any problems being experienced with the equipment.

2.2 Shipment

Important: If the camera needs to be shipped, please use the original packaging material which was designed to protect the product during transportation. If the original packaging is lost or damaged, please order a replacement from Customer Service.

3.0 Safety

3.1 Instructions

Warning: Do not remove the covers or housing. There are no user-serviceable parts inside.

Warning: The Schrader Valves on the camera head's back plate are for factory use only. Do not attempt to add any gas to the camera head.

Warning: PoE++ (Power over Ethernet) injectors used with this camera system may operate from 100-240 V. These voltages are dangerous. Use extreme care working with equipment connected to these voltages.

Note: NFPA 70 (Articles 800.30 and 830.30), National Electric Code® requires that a listed primary protector be installed on the conductors of outdoor communication circuits entering a premises, as close as possible to the point of entrance. The primary protector must be appropriate to the circuit type (PoE, PoE++, or Ethernet).

Warning: Voltages that present a shock hazard may exist on PoE circuits. Use caution to avoid direct contact with exposed, bare Ethernet circuit conductors or connector contacts.

Warning: Some models of this camera system operate from 120 Vac or 24 V. Use care working with equipment connected to 120 Vac or 24 V.

Warning: The camera system is operated via remote computer control and may move rapidly and unexpectedly. Remove power from the camera system before servicing and whenever working near the camera system.

Warning: Do not use y-cables or other non-standard wiring schemes.

Caution: In order to prevent damage or deterioration of the optical system avoid pointing the camera system directly toward the sun.

- Installation must be done by qualified installers, and conform to all local codes and regulations.
- All servicing must be performed by qualified service personnel. Procedures in this manual do not require entry into the housing of the camera system. The unit contains sensitive devices that can be damaged by static discharge. To reduce the risk of electric shock and damage to the unit by static discharge do not perform any servicing other than described in these instructions. If the unit is defective, please contact the Customer Service Department for technical assistance.
- It is the user's responsibility to ensure that the mounting methods are safe and adequate for the location.
- Use only stainless steel (SS) hardware to fasten the mount to an outdoor surface.

3.2 Grounding

- To provide protection against electrical surges induced by lightning, static charges, or any other cause, the camera must be properly grounded to earth. For installation on a building, the camera must be bonded (that is, provided with a low impedance connection) to the building's structural earth ground system. For installation on a metal pole with a proper ground system at the base, the camera must be bonded to the pole. For installation on a non-grounded or insulated support, the camera must be grounded with an adequate ground strap or wire between the camera and a nearby ground system, or to a ground system installed at the base of the support. Failure to adequately ground the camera may lead to failure of the camera. This applies to low voltage (24 V and PoE cameras) as well as to 120 Vac cameras. **Failures due to surges are not covered by the warranty, as they are not due to defects in material or workmanship, and it is the installer's responsibility to meet these grounding requirements.**
- The grounding screw on the camera's base must be connected to earth ground using minimum 16 AWG wire and bonded to earth as close to the camera as possible.

Note: Refer to Installation Manual ["Best Practices" on page 26](#): Surge Protection Devices for additional information on grounding and surge protection concepts.

4.0 Package Contents

Upon opening of the products shipping package, please verify you have received the following items:

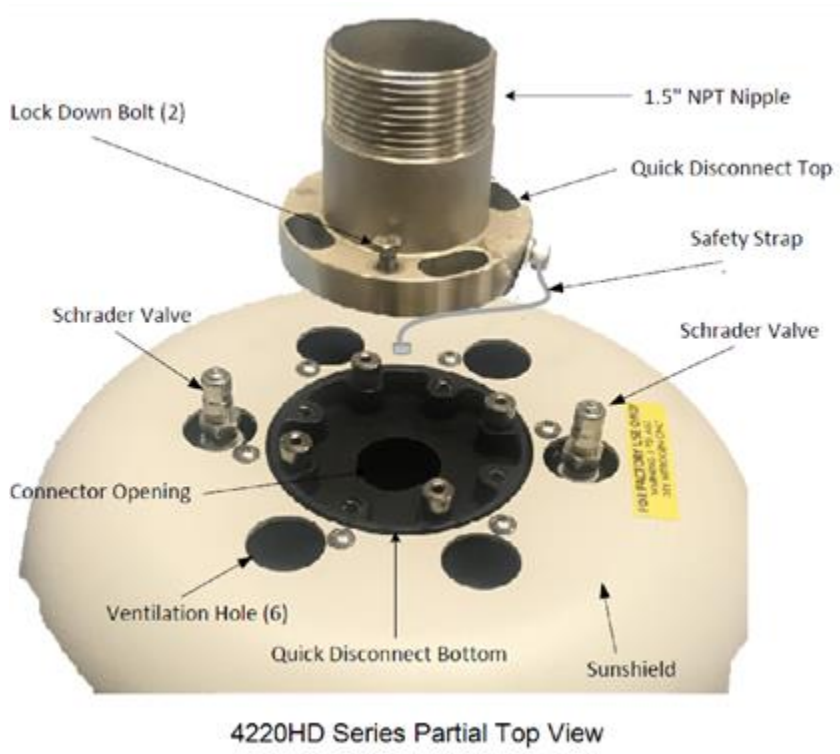
1. CostarHD 4220HD Camera System
2. Pigtail Cable, MS to RJ45, 3ft (1) *
3. RISE Accessory Kit:
 - Nitrile Gloves (2)
 - Anti-Seize Compound(1)
4. Documents:
 - Thank You Letter
 - Quality Control Checklist (QCL)
 - IP67 RJ45 Coupler Assembly Instructions (Optional)
 - Quick Start Guide

If you are missing any items, please refer to section [1.5 Support Services](#) for assistance.

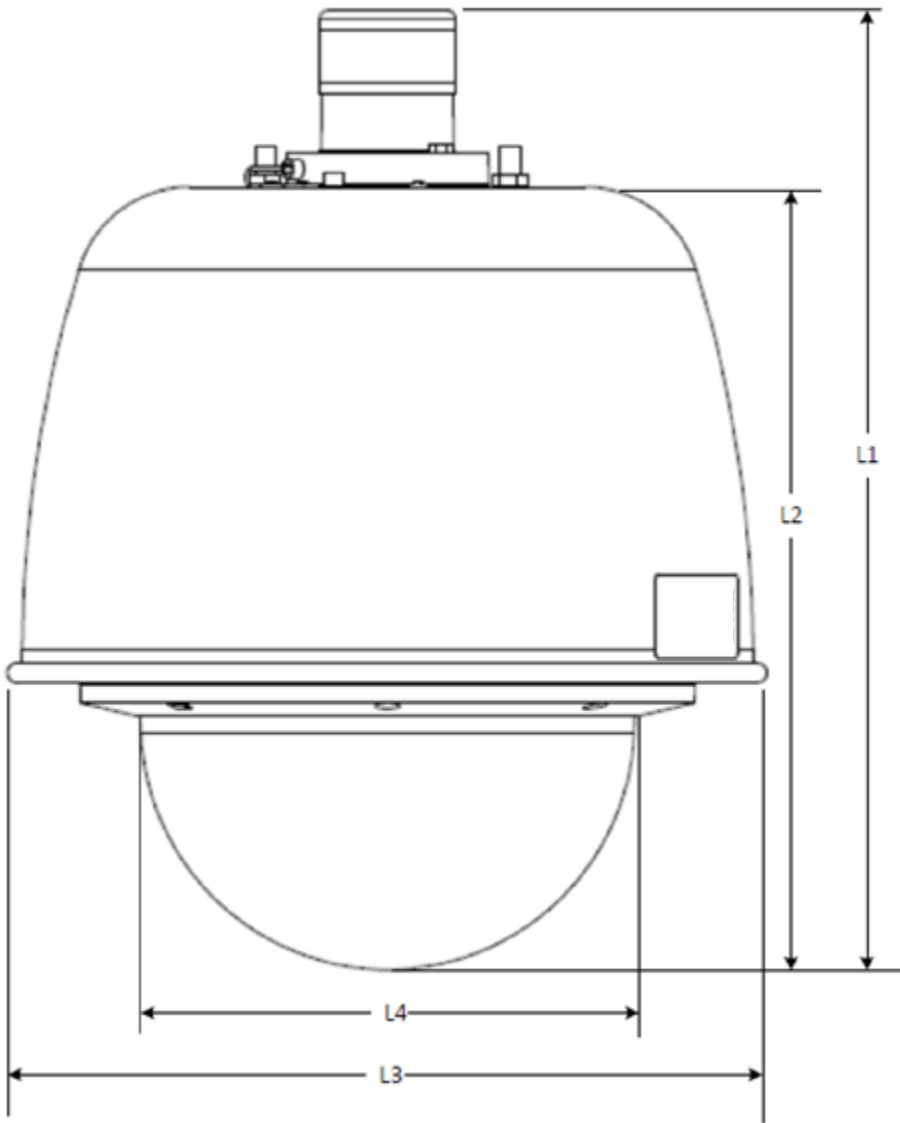
5.0 Product Overview

The 4220HD Series Camera System is an IP camera system inside an environmentally sealed and pressurized dome enclosure.

The camera system provides IP video streams with H.264 and MJPEG compression. The positioning system provides continuous 360° pan (azimuth) motion range with 210° of tilt (elevation).



5.1 Overall Dimensions



All dimensions in inches (mm).

Models	L1	L2	L3	L4
4220HD Series	14.3" (363.2 mm)	11.7" (297.2 mm)	11.4" (289.6 mm)	7.0" (177.8 mm)

6.0 Factory Defaults

6.1 Factory Default IP Address and Settings

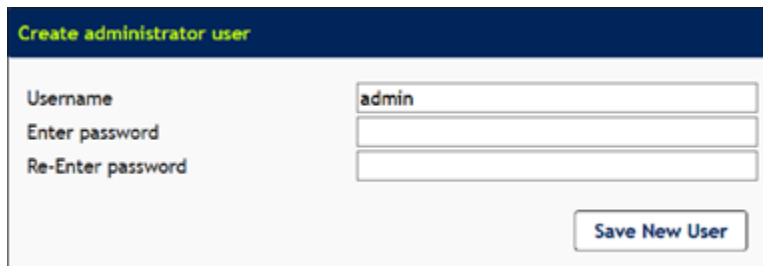
The camera is shipped with the following network settings:

- IP Address: 192.168.2.150
- Subnet mask: 255.255.255.0
- Gateway: 192.168.2.1

6.2 User Names and Passwords

Note: The camera is no longer shipped with a username and password. The first user is admin who has to create a password and then login. Admin is responsible to create/distribute the subsequent user accounts.

Upon logging in for the first time as admin, you are asked to create a password. Enter and re-enter a desired password and click **Save New User**. You are then asked to login using your password.



The screenshot shows a web form titled "Create administrator user" with a dark blue header. Below the header, there are three input fields: "Username" with the value "admin", "Enter password", and "Re-Enter password". A "Save New User" button is located at the bottom right of the form.

Note: Usernames and Passwords are both case-sensitive.
The admin changes user passwords after the first login

7.0 Camera URLs

7.1 Camera Default Passwords

- User = admin
- Password = admin

7.2 Network Video Ports Required for RTSP

- 554 - RTSP uses TCP or UDP as its transport protocol.
- Unicast Video - Starting at 30000 up to 31000
- Multicast Video - User configurable port through web interface

7.3 Video Stream Connection URL's

Note: Do not include brackets < > in connection URL strings.

RTSP/RTP Unicast and RTSP Interleaved

Connection String: rtsp://<ipaddress>/<Presentation Name>

Presentation Names: <Stream0 up to Stream7>

HTTP Tunneling

Connection String: http://<ipaddress>/streaming/<PresentationName>

VLC Connection String: rtsp://<ipaddress>/streaming/<PresentationName>

Presentation Names: <Stream0 up to Stream7>

RTP Multi-Cast

Connection String: rtsp://<ipaddress>/multicast/<PresentationName>

Presentation Names: <Stream0 up to Stream7>

-OR-

Connection String: http://<ipaddress>/sdp/<PresentationName>.sdp

Presentation Names: <Stream0 up to Stream7>

MJPEG Pull Using HTTP

Connection String: http://<ipaddress>/jpegpull/<Presentation Name>

Presentation Names: <Stream0 up to Stream7>

Note: A JPEG encoder must be configured for stream

-OR-

Connection String: http://<ipaddress>/jpegpull/snapshot

Note: Not dependent on JPEG encoder configured in camera

7.4 Network Ports

- 80 Web Server
- 123 Time Server
- 554 RTSP Server
- 3244 CostarHD Log Server
- 3702 Onvif Discovery
- 4222 Secure Shell
- 16568 Rise Discovery
- 65532 CostarHD Diagnostic

7.5 Camera Control Ports

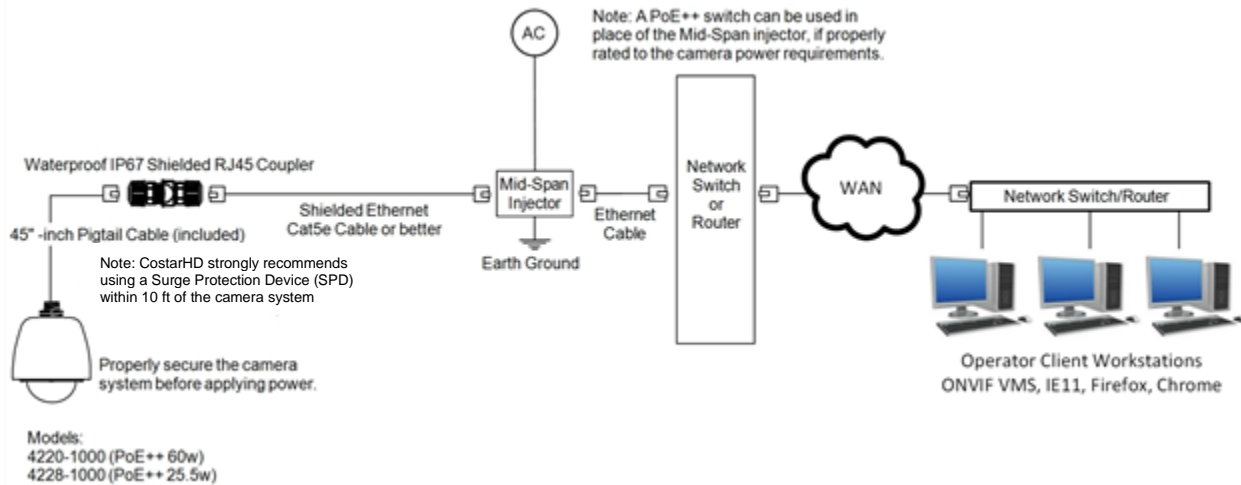
- 1233 CohuHD Legacy CameraControl Protocol
- 1234 CohuHD Legacy with 4 Byte Message Length Header Camera Protocol
- 1237 CohuHD T Camera Control
- 1238 F.A.S.T. Camera ControlProtocol
- 1239 Pelco D Camera Control Protocol
- 3001 NTCIP 1205TCP
- 3000 NTCIP 1205UDP

8.0 Connections

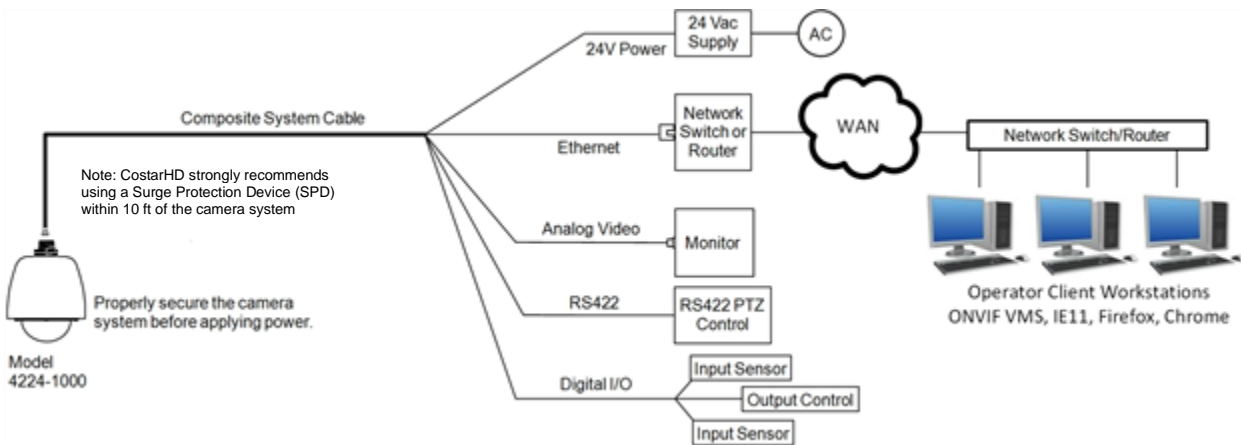
8.1 Interconnections

The following are interconnection diagrams for the 4220HD Series camera system:

8.1.1 Interconnection Diagram for 4220-1000 and 4228-1000



8.1.2 Interconnection Diagram for 4224-1000



CostarHD provides a wide selection of factory built and tested Ethernet and system cables providing high quality and reliable interconnection of CostarHD cameras and system control products.

Cables can be ordered in various lengths and connector configurations accommodating many installation requirements for CostarHD camera system products.

It is highly recommended that installations utilize CostarHD cable systems to minimize system installation and integration issues due to faulty and degraded cable connections.

8.2 Manufactured Cables Available

Models 4220-1000 and 4228-1000 are shipped with a 45-inch Cat5e pigtail cable (CostarHD p/n 8196402-001) and a coupler (CostarHD p/n 7610203-002).

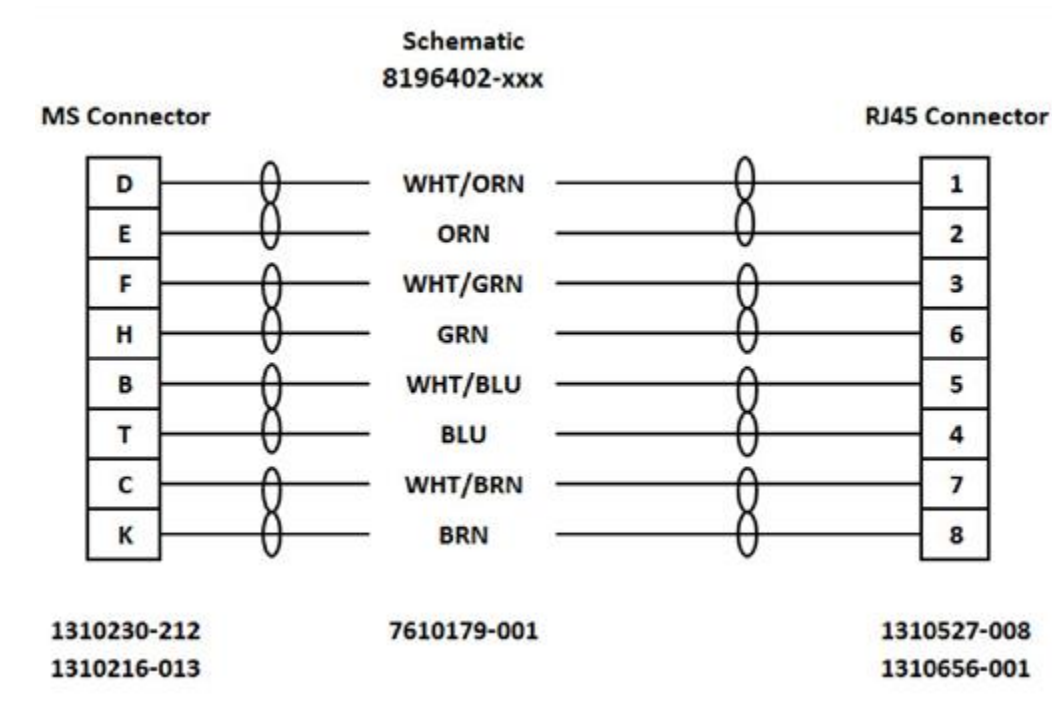
Important: For proper sealing, the diameter of the ethernet cable jacket must be 6 mm or 8 mm.

Note: Typically, Unshielded cable is used for most projects unless Shielded cable is specified.



8196402 Cables - MS to RJ45		
CostarHD p/n	Cable Length	
	Feet	Meters
8196402-001	3	1
8196402-005	5	2
8196402-010	10	3
8196402-025	25	8
8196402-055	55	17
8196402-100	100	30
8196402-150	150	46
8196402-200	200	61
8196402-250	250	76
8196402-300	300	91
8196402-328	328	100

8.3 Schematics

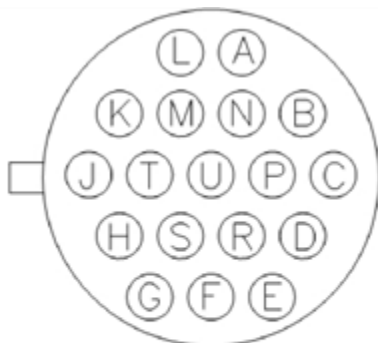


8.4 18-pin MS Connector and its Mating System Cable Connector

All system electrical connections for the 4220HD Series route through an MS-type metal connector installed in the dome housing.

Integral Camera connector: CostarHD p/n 1310225-212.

Field Cable Mating connector: CostarHD p/n 1310230-212 (supplied, if ordered).



1310230-212

Viewed from the Wiring End

8.4.1 MS Connector Pinouts

MS Connector	422[0, 8]-xxxx-02	4224-xxxx-02
Pin	Function	
J	DIO 1	
P	DIO 2	
U	I/O Common	
M	RS422 RX+	
N	RS422 RX-	
S	RS422 TX+	
R	RS422 TX-	
L	Analog Video Output	
A	Analog Video Shield	
G	Chasis Ground/Common	
D	Ethernet TX+ / PoE++[-]	
E	Ethernet TX- / PoE++[-]	
F	Ethernet RX+ / PoE++[+]	
H	Ethernet RX- / PoE++[+]	
B	PoE++[+]	24 V
T	PoE++[+]	n/c
C	PoE++[-]	24 V
K	PoE++[-]	n/c

8.5 Digital Inputs/Outputs (DIO)

8.5.1 DIO Inputs

The 4220HD series DIO's can be user defined as either input or output circuits. The default settings are DIO 1 and 2 are configured as inputs, but each DIO can be configured as an output if required for installation requirements.

Caution: Do not connect a power source to the inputs.

8.5.2 DIO Outputs

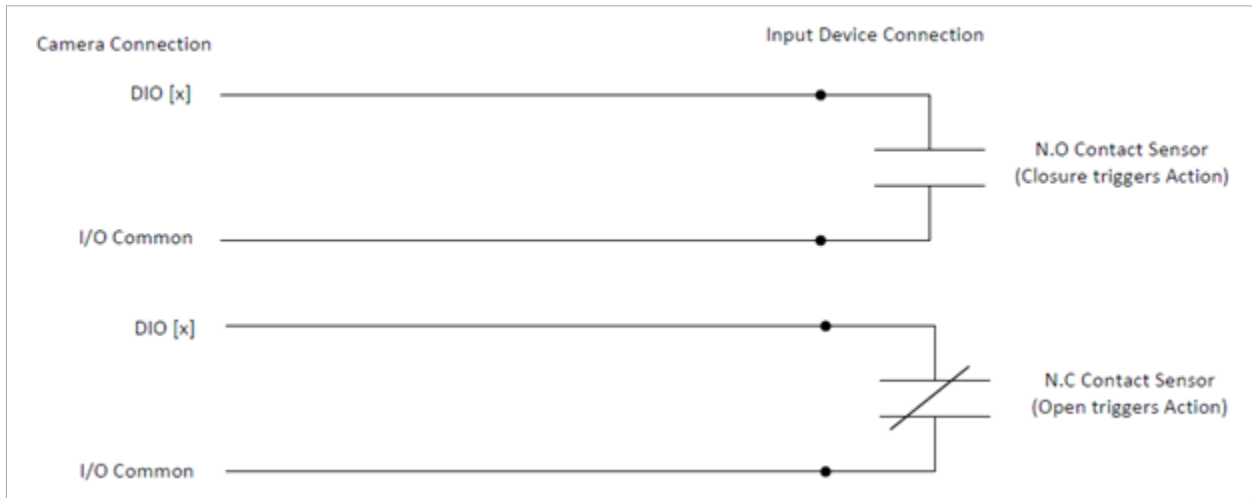
The Outputs can be set up to be latched or momentary with programmable momentary duration. When an event is generated by the 4220HD's Command Core + software the Output acts as a switch to I/O Common to control external components (the controlled device ground must be referenced to the camera's I/O Common).

Caution: The source voltage for any Output must not exceed 50 V, and the maximum sink current must not exceed 250mA.

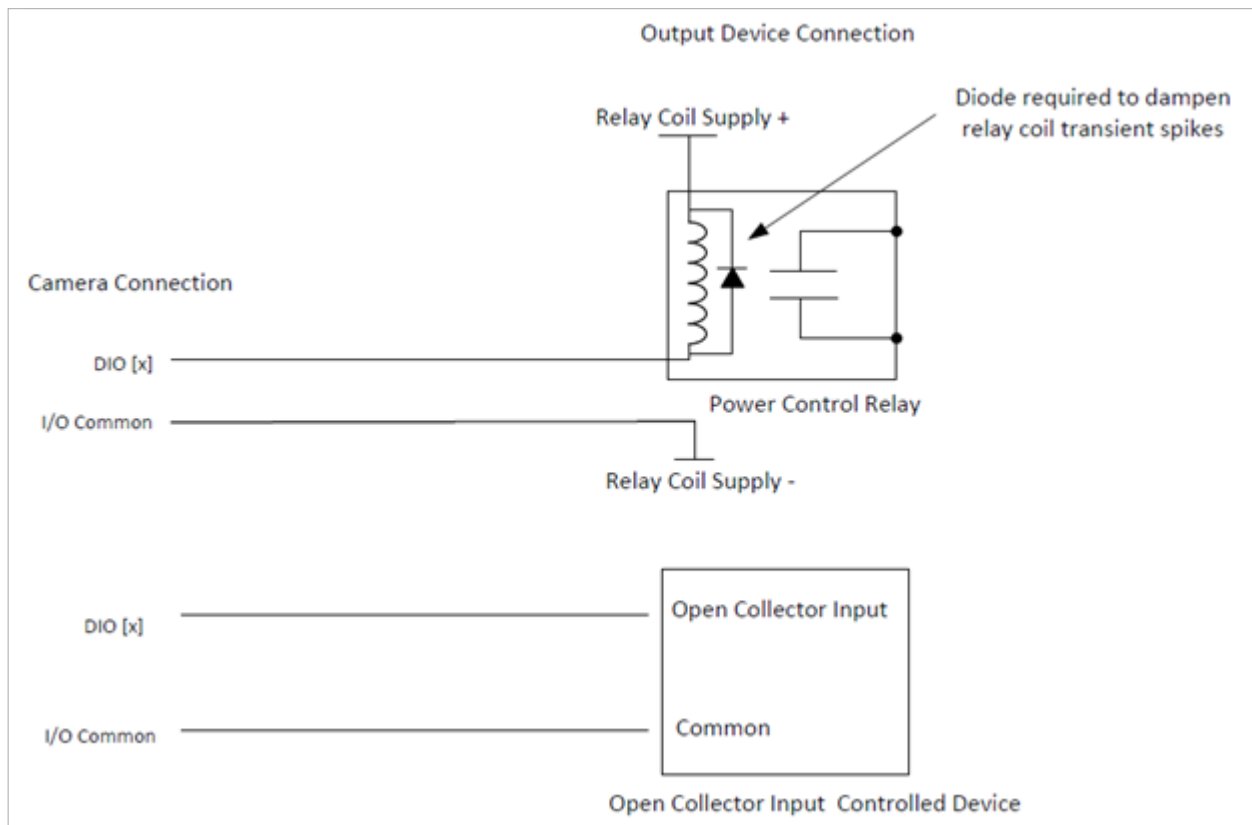
8.5.3 Wiring Digital Inputs/Outputs (DIO)

The following are interconnection diagrams for the DIO circuits of the 4220HD Series camera system for input and output device applications. Refer to appropriate 4220HD model number connector pinout diagram for pin number.

Digital Input Wiring Example



Digital Output Wiring Example



8.6 Field Cables

- All Ethernet wiring must be done in accordance with TIA/EIA 568-C standards.
- To connect two outdoor Cat5e cables together use a waterproof coupler. For proper sealing, the diameter of the network cable jacket must be 6 or 8 mm.

To build the camera system cables, CostarHD recommends:

- **For Ethernet/PoE++:** CostarHD p/n 7610179-001 or equal.

Note: The maximum cable length for Ethernet is 100 m (328'). However, other factors may reduce the distance Ethernet can be successfully used, such as EMI from other sources. Use an Ethernet extender to extend an Ethernet cable beyond its distance limitation.



When wiring to the Ethernet pins, consider whether they are to be wired for the NIC (Network Interface Card) in a PC or for system connections to a hub, switch, router, or similar device.

Ethernet Cable Wiring to a Hub, Switch, or Router (Straight Wiring)

Ethernet Function	Camera Connector	Corresponding RJ-45 Ethernet Pins
TX+	D	1
TX-	E	2
RX+	F	3
RX-	H	6

This Ethernet wiring is intended to connect directly to a hub, switch, or router. For connection directly to a PC, it will be necessary to use either a crossover cable or a crossover adapter. Note: For clarity, only signal lines are shown.

Ethernet Cable Wiring to a PC (Crossover Wiring)

Ethernet Function	Camera Connector	Corresponding RJ-45 Ethernet Pins
TX+	D	3
TX-	E	6
RX+	F	1
RX-	H	2

This Ethernet wiring is intended to connect a camera to the NIC card in a PC. Note: For clarity, only signal lines are shown.

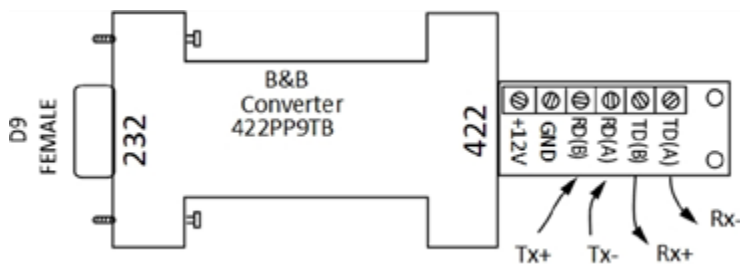
Wiring to the PoE pins is the same for the NIC in a PC as for system connections to a hub, switch, router or similar device.

- **For 24 V Power:** Two wires, insulated for 300 V minimum, 18 AWG cord for power. Use for distances up to 80 feet (29 m) for 24 V cables.

Note: Long cable lengths and/or low mains voltages can cause the 24 V power at the camera power pins to drop below the minimum input voltage of 21.6 V (24 V -10%) resulting in unreliable operation. Maximum input voltage at the camera power pins is 26.4 V (24 V + 10%).

- **For I/O:** 24 AWG insulated for 300 V minimum. Use for distances up to 250 feet (76.2 m).
- **For Analog Video:** The coax cable for analog video must be rated at 75 ohms, and must not exceed a maximum attenuation of 6 dB at 10 MHz for the length of cable required.
- **For Data:** A shielded two twisted pair data cable is recommended. For lower baud rates (9,600 or less), the Belden 8723 shielded cable is usually suitable for distances up to 750 feet.
- **If the RS422 interface** is used for sending and receiving serial data, an RS232/422 converter is used between the camera system and a computer.

Typical RS232/422 Converter



RS422 Cable Wiring to B&B Converter

Camera Side		Converter Side
RS422 Camera	Camera Connector Pins	RS422 Device
RS422 RX+	M	TD(B)
RS422 RX-	N	TD(A)
RS422 TX+	S	RD(B)
RS422 TX-	R	RD(A)

8.7 4220HD Series CostarHD-Manufactured System Cables

CostarHD-manufactured cables are available for 4220HD Series camera systems:

- CA279x series for 4224-1000-02Series
- 8194602-xxx for 4220-1000-02 and 4228-1000-02

Cables are made with prepared leads and/or with combinations of connectors. “Prepared”, indicates that the wire leads are stripped and pre-tinned with solder for attachment to a terminal strip or similar device.

Maximum cable length for camera systems with operating power of 24 V is 80 feet (29 meters). Maximum cable length for camera system with operating power of PoE++ is 328 feet (100 meters).

For detailed information, download cable drawings from the CostarHD website:

<http://www.costarhd.com/Support/Product-Documentation>.

9.0 Waterproof Coupler Assembly

9.1 Parts

The coupler comes assembled with extra two large diameter cable seals for thicker cables.



The coupler package consists of the following parts:



1. Sealing Nut (2pcs)
2. Seal
 - a. a. Small diameter cable (2 pcs) – already inserted
 - b. b. Large diameter cable (2 pcs) – extra separately
3. Coupler Body
4. Washer for Coupler Body
5. Two-Way RJ45 Port for Coupler Body
6. Sealing Collar

Note: If you are missing any items, please contact CostarHD Customer Service Department for technical assistance at (858) 391-1800 option 2.

Note: Installation Manuals are available at CostarHD website at: <http://www.costarhd.com/Support/Product-Documentation>

9.2 Assembly

Warning: Do not use tools. All parts must be hand assembled.

1. Using the head of a pencil or another non-sharp object, push the Seal (2) out of the Sealing Collar (3).



2. If the RJ45 plug has a strain-relief boot, push it away from the RJ45 plug. The strain-relief boot will not be used.



3. Pass the cable through the Sealing Nuts (1)



4. Pass the cable through the Sealing Collar (3).



5. Insert the Washer and the Two-Way RJ45 Port (5) in the Coupler Body (3) (if disassembled).
6. Insert the RJ45 plug into the Coupler Body (3).



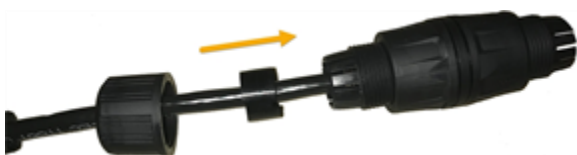
7. Attach the Sealing Collar (6) to the Coupler Body (3). Make sure it is tightened completely.



8. Select the desired Seal (2) and press to open notch.



9. Insert the Seal (2) onto the cable with the recessed surface facing the Sealing Collar (6), then push the Seal (2) all the way into the Sealing Collar (6).



The Seal (2) should sit completely flushed inside the fingers of the Sealing Collar with edge not protruding.



10. Now attached the Sealing Nut (1) to the connected Sealing Collar (6).



Warning: Tighten by hand and do not over-tighten. Using tools and over-tightening may split the Seal's notch, which compromises the waterproof assembly.

The Seal's notch should join without a flaw.



11. Repeat the steps to connect the network cable to the other side of the coupler.

10.0 Best Practices

The purpose of this section is to provide recommendations regarding the proper selection and use of Surge Protection Devices (SPDs) in CCTV systems. This document is not meant to provide guidance for SPDs selection, placement, and use on incoming utility power. Always follow local and national electric code and refer to licensed electricians or other trained professionals for guidance.

Surge Protection Devices are designed to prevent damage to equipment caused by transient voltages from a number of possible sources. Due to their exposure to the environment, when planning the installation of a CostarHD camera system, SPDs must be appropriately installed.

Depending on the exact equipment being installed, one or more SPD types must be used to properly protect from damage caused by electrical surge. There are several types of SPDs:

- AC PowerSPDs
- EthernetSPDs
- Power over Ethernet (PoE) SPDs
- AnalogVideoSPDs
- LowVoltageDC(SerialData)SPDs

Each SPD type is designed for a specific application and is only rated to work within the nominal voltage levels of that application. To provide protection, it is critical that the SPD for your application be of the appropriate type and ratings. Refer to the SPD manufacturer for proper device selection for your application.

Placement of SPDs is critical. Per IEEE, NEMA, and industry guidelines, an SPD should be installed within four feet of the equipment it is protecting. Additionally, SPDs should be installed at each end of all cables greater than thirty feet in length. In most CCTV applications, this means that a minimum of two SPDs must be used: one near the camera, and one in the control cabinet that provides network connectivity and power.

Proper orientation is key on many SPDs as they often have PROTECTED and UNPROTECTED terminals, or DEVICE and LINE terminals. For a typical CCTV application, the UNPROTECTED or LINE terminals should be used to connect the upper and lower SPDs, while the PROTECTED or DEVICE terminals should connect to the camera and network switch (or PoE injector). An incorrectly oriented SPD will appear to function as voltage will still pass through it, however when installed backwards, the device will not provide full protection. Always verify the orientation of each SPD and contact the manufacturer for assistance.

Lastly, an SPD can only function if it is properly grounded. Unless a lower value is required to meet your local or project-specific specifications, the grounding array that the SPD is connected to should be no more than 10Ω. All wiring from the ground connection of the SPD should be as short and straight as possible, and all connections should be properly crimped and securely fastened.

11.0 Installation

11.1 Camera System Mounts

The 4220HD Series is designed for outdoor installation.

For installation:

- Use stainless steel (SS) hardware to fasten the camera system to the mounting bracket and mounting brackets to surfaces.
- Use anti-seize compound in order to prevent galling on the threads. CostarHD recommends Never Seez[®] from Bostick.
- Use gasket materials, if needed.
- Use a sealant wrap on the camera system waterproof connectors and their mating system cable plugs for additional protection against moisture in severe conditions. CostarHD recommends Coax-Seal[®].
- Mounts, poles, and metallic conduits must be bonded to earth ground.

11.2 Mounts

The following mounts are recommended by CostarHD and can be purchased with the 4220HD Series camera system:

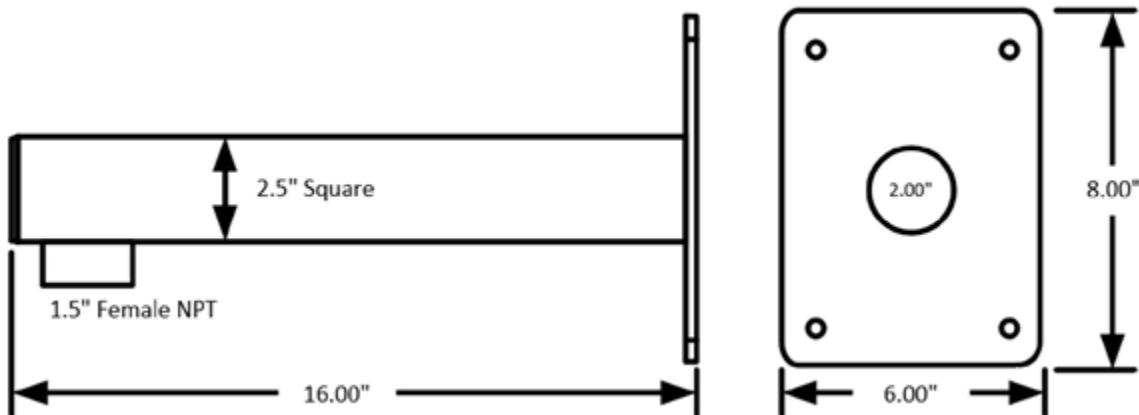
- Wall: CostarHD p/n 7411420-001
- Pole: CostarHD p/n 8518-

2 The 8518-2 kit Includes:

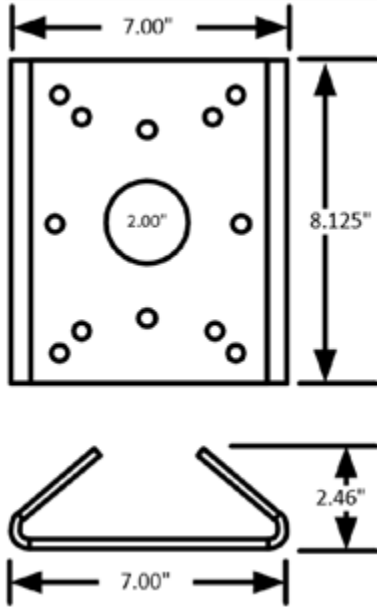
- Wall mount: CostarHD p/n 7411420-001
- Pole Mount: CostarHD p/n 7411421-001

11.2.1 Mounting Brackets Dimensions

11.2.1.1 Wall Mount

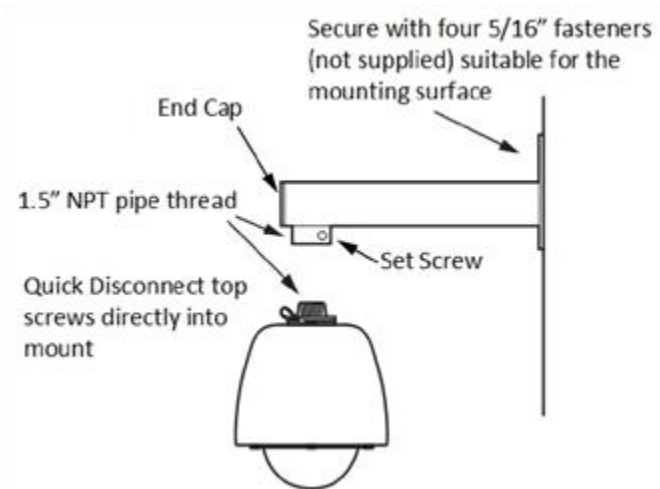


11.2.1.2 Pole Mount Adapter



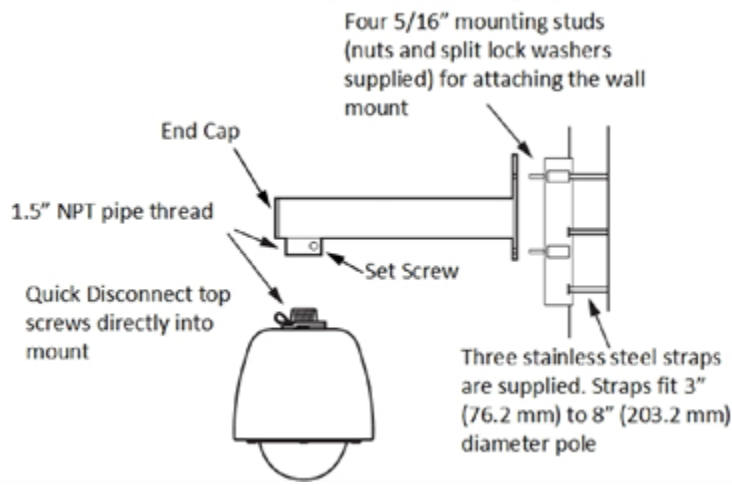
11.2.2 Wall Mount Installation

Use the wall mount for installation to a wall.



11.2.3 Pole Mount Installation

Use the mount adapter, wall mount, and large pole mount for installation to a pole.



11.3 Installation Procedure

Caution: Do not use the cable to support the weight of the camera.

Provisions must be made for routing the system cable up to the camera system location:

- Pole: If the cable routes up through the pole, support the cable inside the pole to strain relieve the camera connector.

The sequence of installation can vary from site to site:

- Verify that the system cable is accessible for connection to the camera system connector at the mounting location.
- If installing the dome to:
 - The wall: Use the mount as a template. Mark and drill holes in the mounting surface. Drill a hole for the cable if required. Position the wall mount over the mounting holes. Secure with four 5/16" fasteners (not supplied).
 - The pole: Position the pole mount on the pole and secure with the stainless steel mounting straps (supplied). Use a flat blade screw driver or 5/16" socket (not supplied) to tighten strap screws. Attach the wall mount to the studs on the pole mount and secure with the 5/16-inch nuts and washers (supplied).
- Install the dome (**Instructions on the Quick Disconnect disassembling/reassembling**):
 - Remove the safety strap from the top half of the Quick Disconnect (the half with the threaded nipple attached). Use 5/32" hex key.
 - Loosen two lock bolts on the Quick Disconnect with a 5/16" socket approximately 1/4". Do not remove lock bolts. Separate the two parts of the Quick Disconnect by rotating approximately 1/16 turn CCW.
 - Apply anti-seize compound on Quick Disconnect nipple threads.
 - Thread the Quick Disconnect nipple into the mounting arm and tighten with a strap wrench (not supplied).
 - Tighten the set screw on the mounting arm securely.

- Route the pigtail cable down through the nipple and attach the pigtail cable plug to the dome connector.
- Route the system cable down through the nipple and attach the system cable plug to the dome connector.
- Orient the dome properly and attach it to the Quick Disconnect mounted to the arm by engaging the pins and rotating approximately 1/16 turn CW. Ensure that safety strap bolts are aligned after rotation. See picture.
- Reattach the safety strap.

Note: The top part of the Quick Disconnect is intended to remain in place after installation. If you need to remove the camera, reverse the above process.

12.0 System Requirements

12.1 Requirements

In order to test the camera system you need the following items:

Laptop or desktop computer

- 100/1000BASE-T network card installed in the computer
- Microsoft Internet Explorer, version 11 or later web browser
- 100/1000BASE-T network switch or hub
- Cat5e or Cat 6 cable

12.2 Recommended Computer Specifications

The following are recommended computer specifications to run and operate a camera system:

- CPU: Intel® i7-860S 2.53 GHz or better
- Operating system: Microsoft® Windows® 7 or later
- Memory: 4GB DDR3 @ 1066MHz or better
- Hard Drive: 7200 rpm – minimum speed with sufficient free space
- Video card: NVIDIA® GeForce® 9800 GTX+ with 512 MB RAM or better, or high-end AMD® Radeon® HD series
- Monitor: LCD monitor with 1920x1080 or better resolution

13.0 Optional Accessories

The following optional accessories are recommended by CostarHD and can be purchased with the camera system.

Mounts

- Wall: CostarHD p/n 7411420-001
- Pole: CostarHD p/n 8518-2

Cables

- Refer to [4220HD CostarHD-Manufactured System Cables](#).

Mid-Span PoE++ Injectors

- 100 V - 240 V: p/n 7412007-003

Field Connector

- Mating Connector: CostarHD p/n 1310230-212. See [18-pin MS Connector and its Mating System Cable Connector](#).

Waterproof RJ45 Coupler

- Waterproof RJ45 Coupler: CostarHD p/n 7610203-002.

24 Vac Power Transformer

- AC Outdoor Power Supply: CostarHD p/n 7411543-010.

Surge Protective Device for Ethernet and PoE++

The following requirements are the recommended specifications for additional surge protection of the 4220HD series Ethernet and PoE+(+) signal lines.

- Transmission Speeds: 100BaseT or better
- Operating Voltage: 0-57V
- Clamping Voltage: 68V
- Operating Current: 0.75 Amp Per Pin
- Peak Surge Current: 10 kA (8 x 20 μ s) Per Pair
- Insertion Loss: < 0.1 dB
- Modes of Protection: All Lines (1-8) Protected (L-L) and (L-G), Signal High-Low; High-Ground; Low-Ground

For additional information, refer to the Surge Protection Recommendations in ["Best Practices" on page 26](#) in this manual.

14.0 Service

The 4220HD series is designed for long-term unattended use and contains no user-serviceable parts. In the event of product failure, the system should be removed from the site and returned to an authorized service center for repair.

Contact CostarHD field service department at (858) 391-1800 option 2 for service assistance or go to <http://www.costarhd.com/Contact/Return-Authorization-Request> for obtaining a Return Authorization Number.

14.1 Maintenance

The 4220HD series maintenance requirements are minimal, requiring only occasional exterior cleaning as described below:

- **Non-Optical Surfaces**

Clean the exterior dome enclosure as deemed necessary (likely for aesthetic, not operational purposes). Use a soft cloth and commercially available foaming cleaner for metal/painted surfaces.

- **Optical Surfaces**

Clean the dome systems spherical window as needed. Use a soft non-abrasive cloth, such as terry cloth or microfiber cloth, and a foaming glass cleaner.

14.2 Troubleshooting

The table below identifies possible issues that could occur with the camera, and corrective actions on how to resolve them. If the issue persists after following the corrective actions, contact CostarHD field service department at (858) 391-1800 option 2 for additional assistance.

Problem/Symptom	Possible Cause	Correction
Camera doesn't Power up	No camera power available	Insure power is on
	Camera is not connected	Insure cable is connected to power source
	Power Cable length is to long	Verify the power cable distance does not exceed the maximum distance allowed.
	Cable is wired wrong	Insure wiring is per installation manual
Cannot Ping	The product is located on a different subnet	Contact your Network Administrator for valid IP address for your network
	Ethernet cable length	Verify the Ethernet cable distance does not exceed 100m.
	No valid communication path to camera over network cloud	If you can ping directly at camera site, contact your Network Administrator for assistance
No link lights on switch	No camera power available	Insure power is on
	Ethernet cable length	Verify the Ethernet cable distance does not exceed 100m
	Camera is not connected	Insure cable is connected to power source
	Cable is wired wrong	Insure wiring is per installation manual
Don't know cameras IP Address	Address was changed	Use CostarHD RISE discovery tool available at http://www.costarhd.com/Support/Software-Downloads
	New Camera Installation	RISE Default IP's are 192.168.2.150, or use RISE discovery tool above to identify IP address
No Video	Web browser version	Verify the version of your browser supports HTML5
	Firewall Setting	Disable your firewall, or open ports 30,000 up to 31,000
Presets are off original position	Mechanical shock uncalibrated pan/tilt system	Recalibrate camera system
	Presets have been overwritten	Reprogram presets and enforce user accesslevels to prevent unwanted reprogramming
Cannot Log in	Access credentials have been changed	Contact your Camera Administrator for current login credentials
	Time/Date setting incorrect	The date and time settings in should be synchronized with an NTP server.
	Forgot Admin account credentials	Contact CostarHD Field Support for assistance in resetting the Admin credentials
Poor Video Quality	Video macroblocks - Insufficient bandwidth	Lower stream data rate, image resolution and/or frame rate until acceptable quality is achieved
	Moving object smearing - Lost video packets	Lower stream data rate, image resolution and/or frame rate until acceptable quality is achieved
	Streaming interruptions - no buffering on cellular modem	Use constrained mode, Lower stream data rate, image resolution and/or frame rate until acceptable quality is achieved
	Brightlight blooming- Car Headlights	Use intensity reduction mode, lower gain or turn use WDR mode
No camera PTZ control	Camera PTZ settings not configured properly	Verify camera is setup for the PTZ protocol being used. Refer to user manual for proper port configurations, protocol, wiring, baud rates etc.
	Firewall Setting	Verify the port used for PTZ protocol is open on firewall
	Internal PTZ service is not functioning	Reset camera system from browser

15.0 Warranty

Please refer to the CostarHD website for product warranty information:

<http://www.costarhd.com/Support/Warranty>.

For more information please visit us at:

www.CostarHD.com