

## xWatch® Explosion-Proof Camera with X-Series Flame Detectors

### DESCRIPTION

The xWatch® Explosion-Proof Camera is available as a factory installed option with any of the Det-Tronics X-Series line of flame detectors. With this arrangement, the camera and detector share the same field of view. This option is available with X3301 and X3302 Multispectrum IR, X5200 UVIR, X2200 UV, and X9800 IR Flame Detectors.

The xWatch Surveillance Camera produces a high resolution color video picture using a camera module that is mounted inside an explosion-proof NEMA 4X rated housing. The device's explosion-proof rating makes it suitable for Class I, Div. 1, Groups B, C, and D locations.

In the event of a fire or gas alarm, the operator can immediately view the monitored area to determine whether personnel are present and safe. An accurate evaluation of the hazard's size, nature, location, and severity can be determined quickly and safely.

The use of a digital video recorder (DVR) to capture the event provides a permanent record for future analysis of what occurred.

### GENERAL APPLICATION INFORMATION

The xWatch has a balanced differential video output for driving a long distance twisted pair signal to a remote site for monitoring and/or recording. The video output format can be either NTSC (National Television Systems Committee) or PAL (Phase Alternating Line).



The xWatch video driver is designed for use with twisted pair cable of 100 ohm impedance. The best video performance in terms of distance, video quality, and cost is attained using 22 AWG to 16 AWG, twisted pair cable of 100 ohm impedance. The monitor end must terminate the video cable with 100 ohms. Since most monitors have a built-in termination resistor of 75 ohms instead of 100 ohms, a balun or other matching network (video converter) must be used.

A variety of matrix control systems or DVRs can be suitable for viewing or recording the video signal, depending on the requirements of the individual application. The detector's auxiliary relay contacts are typically used to signal the video system of an alarm event.

Refer to Figure 1 for a schematic of a typical system.

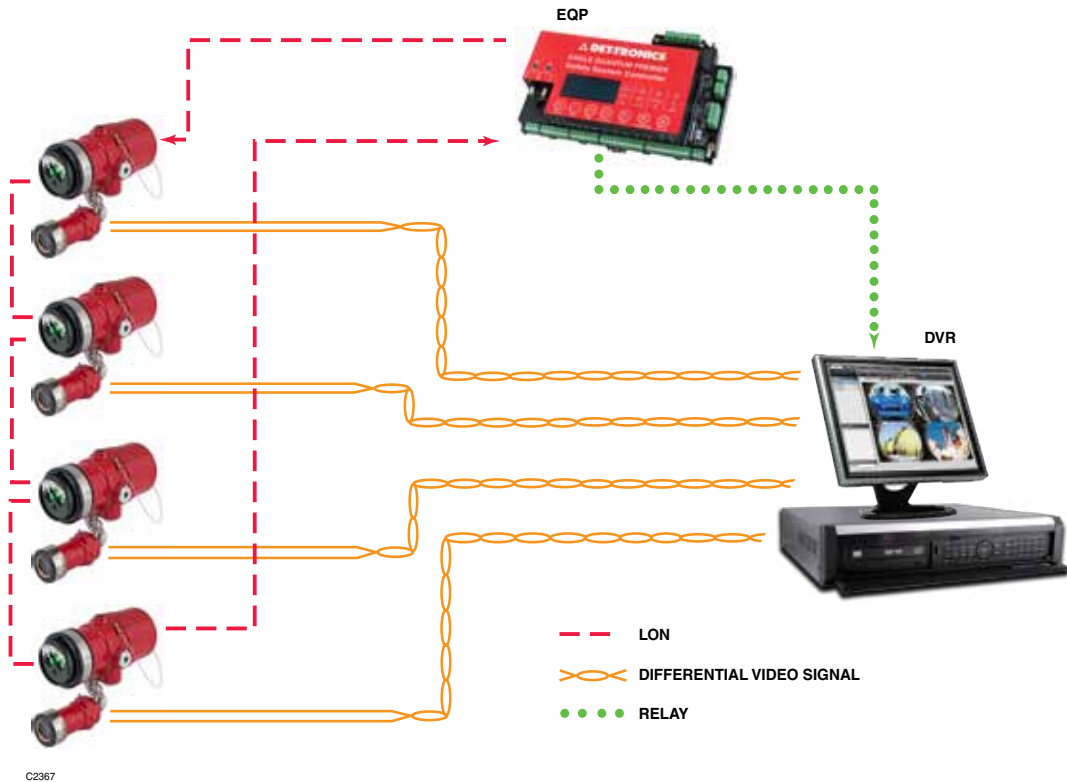


Figure 1—Schematic of a Typical System

## SPECIFICATIONS

**OPERATING TEMPERATURE—**  
 -20°C to +70°C (-4°F to +158°F)

**HAZARDOUS LOCATION RATING—**  
 -40°C to +75°C (-40°F to +167°F)  
 (-55°C to +75°C CSA)

**STORAGE TEMPERATURE—**  
 -30°C to +80°C

**RELATIVE HUMIDITY—**  
 5 to 95%, non-condensing

**INGRESS PROTECTION—**  
 NEMA/Type 4X

**SENSOR—**  
 Color low light CCD

**RESOLUTION—**  
 NTSC: 768 by 494 pixels, 570 lines of resolution  
 PAL: 752 by 582 pixels, 570 lines of resolution

**VIDEO OUTPUT—**  
 NTSC or PAL two wire twisted pair

**SHUTTER—**  
 Electronic shutter, 1/60 – 1/100,000 second

**OPERATING VOLTAGE—**  
 24 Vdc nominal, 18 to 30 Vdc

**POWER CONSUMPTION—**  
 2.8 watts (Camera only)

**FIELD OF VIEW—**  
 90 degrees

**USER INTERFACE—**  
 Conventional off-the-shelf video switchers and controllers can be used for the interface.

**HOUSING MATERIAL—**  
 Aluminum or 316 Stainless Steel

**PERFORMANCE AND POWER CONSUMPTION (Detector only)—**  
 Refer to Instruction Manual for specific detector model:

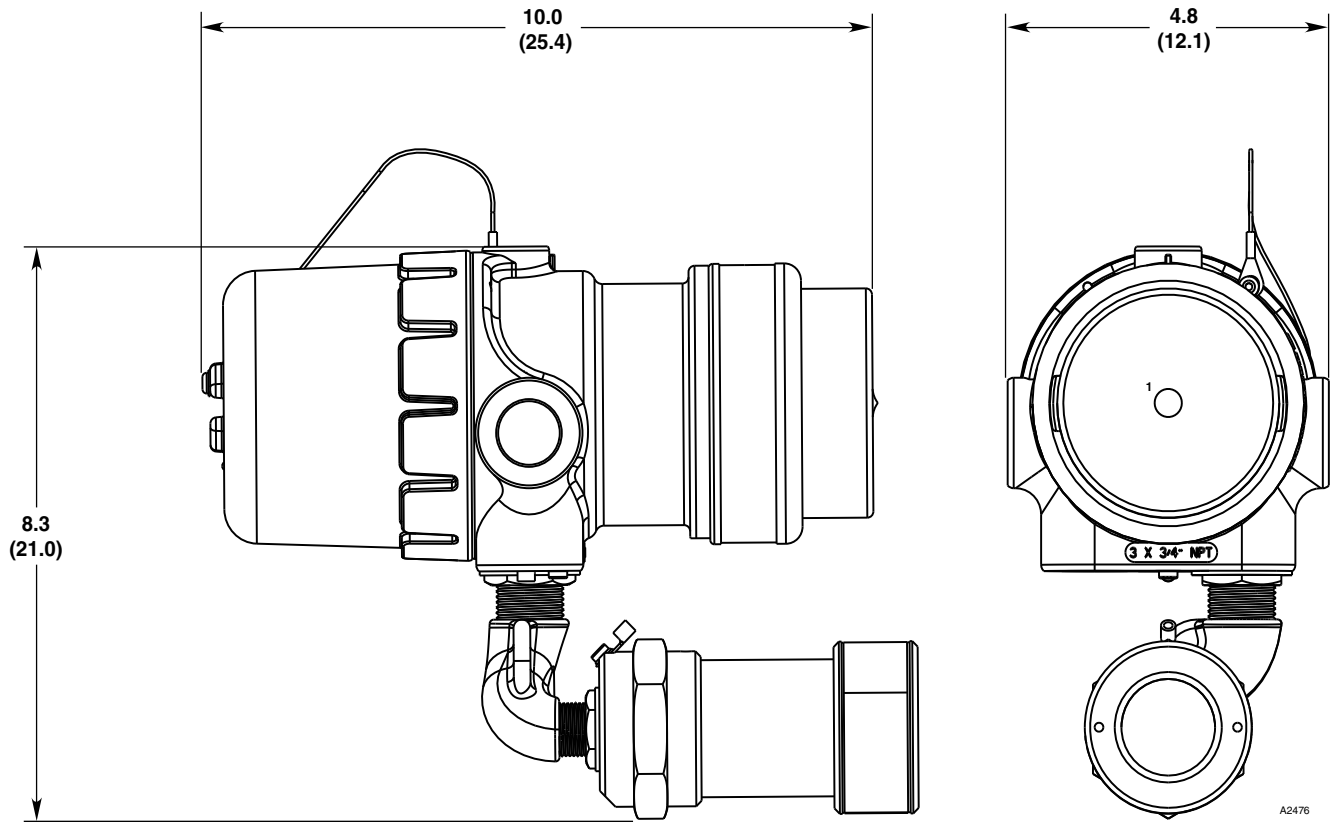
Detector	Instruction Manual
X3301	95-8527 or 95-8704
X3302	95-8576
X5200	95-8546
X2200	95-8549
X9800	95-8554

**SHIPPING WEIGHT—**  
 Aluminum: 7 pounds (3.2 kg)  
 Stainless Steel: 12 pounds (5.5 kg)

**DIMENSIONS**  
 See Figures 2 and 3

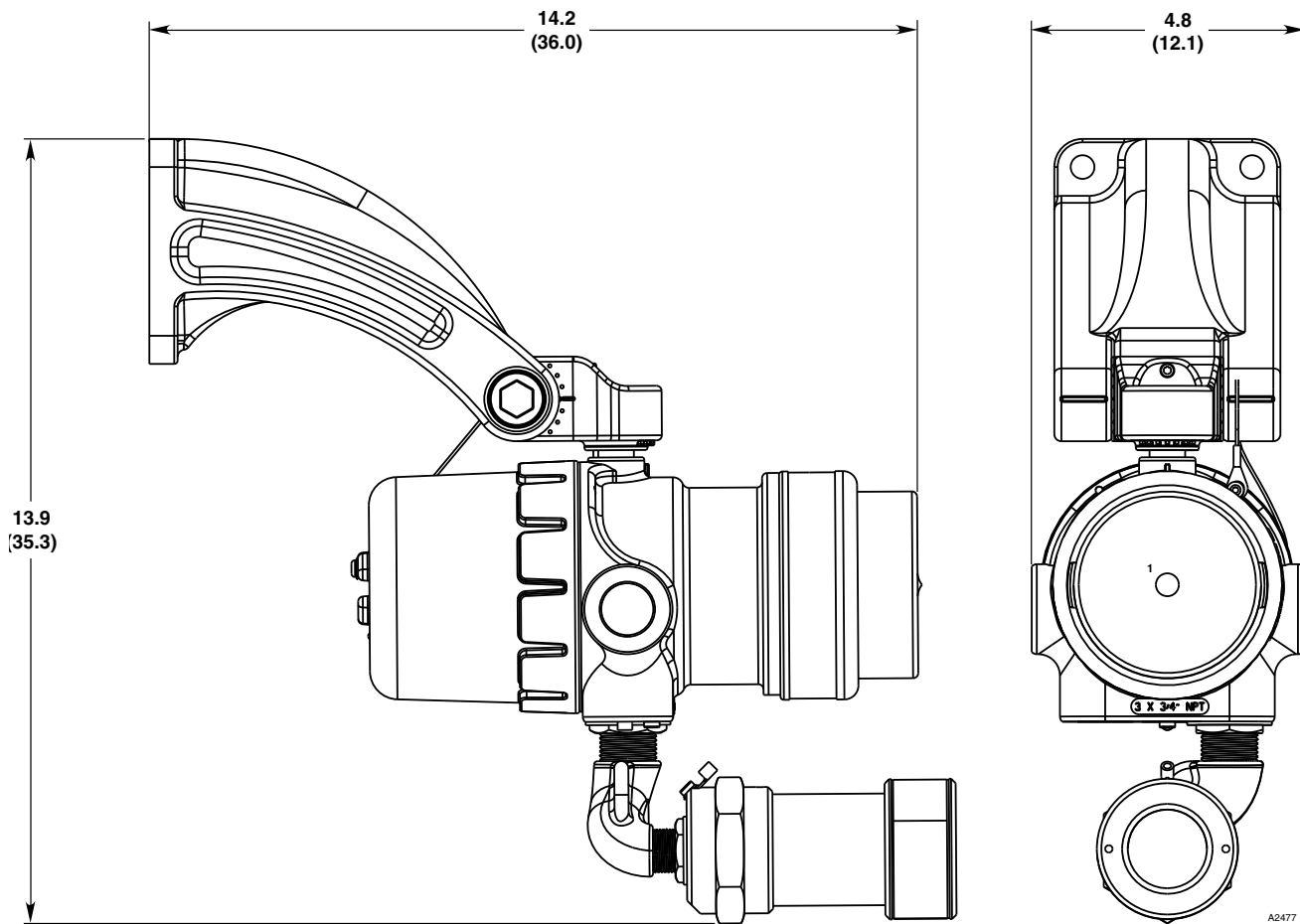
### CERTIFICATIONS—

FM/CSA: Class I, Div. 1, Groups B, C and D (T5).  
 Class II/III, Div. 1, Groups E, F, and G (T5).  
 NEMA/Type 4X.  
 Note: X3301 (with camera) Temperature Class is T4A.



<sup>1</sup>NOTE: DETECTOR SHOWN WITH WINDOW COVER.  
 REMOVE THE WINDOW COVER BEFORE  
 OPERATING THE SYSTEM.

Figure 2—Dimensions of xWatch with X-Series Flame Detector in Inches (Centimeters)



<sup>1</sup>NOTE: DETECTOR SHOWN WITH WINDOW COVER.  
REMOVE THE WINDOW COVER BEFORE  
OPERATING THE SYSTEM.

Figure 3—Dimensions of xWatch with X-Series Flame Detector with Mounting Arm in Inches (Centimeters)

# INSTALLATION

## CAUTION

Installation and wiring of the flame detection system should be performed only by qualified personnel. Refer to the flame detector instruction manual for general installation instructions.

## VIDEO CABLE CONSIDERATIONS

Proper video cable will ensure that the best quality video is displayed on a remote monitor. Because composite video frequencies span the range of 25 Hz to 6 MHz, most cables will display transmission line characteristics. Ensure that the same cable type (impedance) is used throughout the entire length. For example, do not mix twisted pair cable and coaxial cable without using a balun for matching. In addition, the monitor end must be properly terminated. Failure to properly implement the video cabling system may result in smearing (loss of detail) and/or loss of color and/or loss of picture sync.

The xWatch employs a balanced differential video driver designed to drive twisted pair cable of 100 ohm impedance. The best video performance in terms of distance, video quality, and cost is attained using a 22 AWG to 16 AWG unshielded twisted pair cable of 100 ohm impedance. The wiring can be Category 2 or better, stranded or solid.

The monitor end must terminate the video cable with 100 ohms. Most monitors have a built in termination resistor. If the monitor uses 75 ohms instead of 100, a balun or other matching network must be used.

Galvanic isolation of the video may also be necessary to avoid horizontal bars caused by line frequency interference. This may be accomplished using isolating active transceiving systems or passive video isolation transformers/baluns. Specify a baseband video isolation system with a frequency response of at least 25 Hz to 6 MHz. Small cable TV transformers will generally not work as their frequency response is not low enough.

## WIRING PROCEDURE

### CAUTION

Power must not be applied to the device while the housing is open.

### ATTENTION

Observe precautions for handling electrostatic sensitive devices.

1. With the housing cover removed, wire the flame detector as shown in the detector manual.
2. Connect the external wiring for the xWatch to the appropriate screw connectors on the terminal block. See Figures 4 and 5.

### IMPORTANT

Do not test any wiring connected to the xWatch with a meg-ohmmeter. Disconnect wiring at the camera before checking system wiring for continuity.

3. Complete installation and commissioning of the system as described in the detector instruction manual.

9	mA +	19	mA -	29	VIDEO +
8	mA + REF	18	mA - REF	28	VIDEO -
7	COM FIRE	17	COM FIRE	27	COM AUX
6	NO FIRE	16	NO FIRE	26	NO AUX
5	NC FIRE	15	NC FIRE	25	NC AUX
4	COM FAULT	14	COM FAULT	24	RS485 A
3	NO FAULT	13	NO FAULT	23	RS485 B
2	+Vin	12	+Vin	22	MAN O <sub>i</sub>
1	-Vin	11	-Vin	21	-Vin

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Figure 4—Terminal Wiring Block for Standard Flame Detectors

SHIELD	6	18	SHIELD
COM 1 A	5	17	COM 2 A
COM 1 B	4	16	COM 2 B
PWR SHIELD	3	15	PWR SHIELD
+Vin	2	14	+Vin
-Vin	1	13	-Vin
		12	VIDEO +
		11	VIDEO -

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Figure 5—Terminal Wiring Block for EQP Models

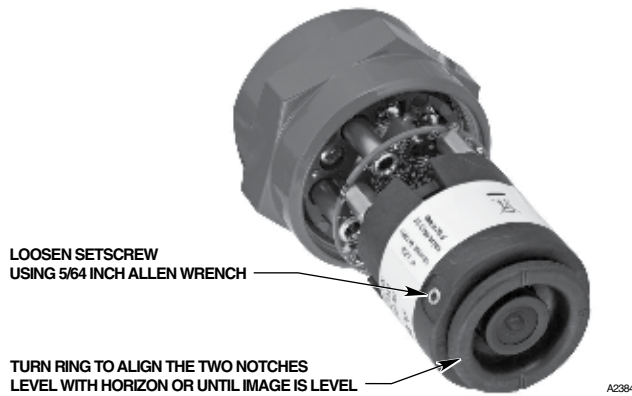


Figure 6—xWatch Camera Module

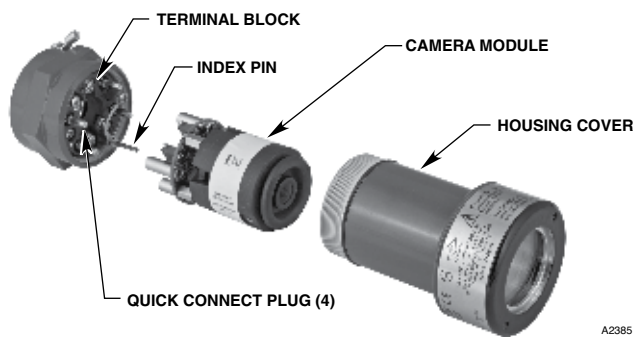


Figure 7—Exploded View of xWatch

## LEVELING THE CAMERA

If the image on the monitor does not appear to be level, this can be corrected by rotating the camera module.

1. Remove the housing cover from the xWatch.
2. Loosen the setscrew on the side of the xWatch module. See Figure 6.
3. Align the two notches on the face of the module so that they are level with the horizon or until the image on the monitor looks level.
4. When proper orientation has been achieved, carefully tighten the setscrew. Do not overtighten.

## TROUBLESHOOTING

The xWatch camera is not designed to be repaired in the field. If it is determined that the problem is caused by an electronic defect, the device must be returned to the factory for repair.

## REPLACING THE xWATCH CAMERA MODULE

### CAUTION

*Power must not be applied to the device while opening the housing or while plugging in or removing the module.*

1. Disassemble the enclosure by turning the housing cover counterclockwise. See Figure 7 for an illustration of the xWatch assembly.
2. Remove the existing camera module from the xWatch.
3. Using the index pin as a guide, install the new xWatch camera module on the terminal block.
4. Re-assemble the device housing.
5. Clean the camera lens if required.

## MAINTENANCE

### CLEANING

The xWatch camera requires no periodic calibration or servicing. However, the camera lens should be cleaned on a regular basis.

Clean the camera lens using a clean cloth or tissue and Det-Tronics window cleaning solution (p/n 001680-001). If a stronger solution is needed, isopropyl alcohol may be used.

### REPLACEMENT PARTS

Part Number	Description
107427-004	Rubber O-rings (order 1 per device)
001680-001	Window cleaner squeeze bottle (package of six bottles)
005003-001	Silicone-free grease

## ACCESSORIES

Part Number	Description
009448-003	Model DE2020N – Spare Camera Module, 2.33 mm, NTSC
009448-004	Model DE2020P – Spare Camera Module, 2.33 mm, PAL
009448-005	Model DE2022N – Spare Camera Module, 4.3 mm, NTSC
009448-006	Model DE2022P – Spare Camera Module, 4.33 mm, PAL
009448-007	Model DE2023N – Spare Camera Module, 8.0 mm, NTSC
009448-008	Model DE2023P – Spare Camera Module, 8.0 mm, PAL

Specifications subject to change without notice.

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