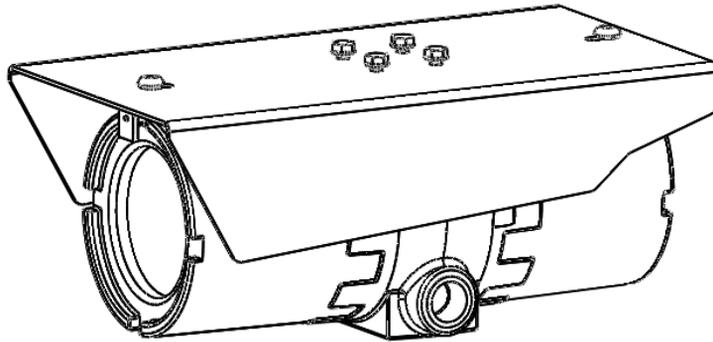


SPECTRUM F101-Q1785-BD



Explosion Proof Network Camera Installation Manual



Information in this document is subject to change without notice. All terms mentioned in this manual that are known to be trademarks have been appropriately capitalized. Spectrum Camera Solutions LLC acknowledges all trademark(s) and the rights of the trademark(s) owned by the company referred to herein.



Release Date: 01/10/2020

Document Name F101-Q1785-BD INSTALLATION MANUAL

© Copyright 2020 by Spectrum Camera Solutions LLC All rights reserved

Revision Record		
Rev.	Description	Date
0	Initial Release	01/10/2020
1	Model Specific Info added	3/14/2020
2	Update Parameters	5/12/2020

Table of Contents

Legal Notices and Revision History Inside front cover

	Page
<u>LEGAL NOTICES & DESCRIPTION</u>	<u>4</u>
<u>LABELS</u>	<u>5</u>
<u>STANDARDS AND CERTIFICATIONS</u>	<u>6</u>
<u>DOCUMENT SYMBOLS</u>	<u>7</u>
<u>HOW TO USE THIS MANUAL</u>	<u>8</u>
<u>GENERAL SAFETY AND OPERATING INFORMATION</u>	<u>9</u>
<u>SPECIFICATIONS</u>	<u>12</u>
<u>UNBOXING/HARDWARE</u>	<u>14</u>
<u>WIRING ENTRIES</u>	<u>16</u>
<u>INSTALLATION</u>	<u>17</u>
<u>DISMANTLING AND MAINTENANCE</u>	<u>21</u>

Copyright Notice:

This document contains information proprietary to Spectrum Camera Solutions LLC with all rights reserved worldwide. Any reproduction or disclosure of this publication, or any part thereof, to persons other than Spectrum Camera Solutions LLC personnel or customers is strictly prohibited, except by written permission of Spectrum Camera Solutions LLC. Unauthorized use, disclosure, reproduction, or translation of this publication will result in Spectrum Camera Solutions LLC exercising maximum possible legal action against all persons and / or organizations involved.

Disclaimer:

Spectrum Camera Solutions LLC makes no representations or warranties with respect to the contents hereof. Further, Spectrum Camera Solutions LLC reserves the right to revise this publication and to make changes in the content hereof, without obligation to notify any person or organization of such revision or changes.

Patent Notice:

Manufactured under United States US Patent 9917428 & US Patent D858611

Trademark Information:

Spectrum Camera Solutions LLC and its logo(s) are trademark(s) of Spectrum Camera Solutions LLC.

Description:

The F1xx series includes a full range of powder-coated aluminum camera stations specifically designed for hazardous area applications. Spectrum's F1xx series utilize the most robust and advanced camera technologies available.





SPECIALIZING IN EXPLOSION PROOF TECHNOLOGY
8935 ALMEDA GENOA RD. HOUSTON, TEXAS 77075 USA

SERIAL:



MADE IN USA



CERT NO.
FM18US0262X & FM18CA0126X
MODEL: F101-Q1785-BD
INPUT: IEEE 802.3af/802.3at 57vdc, 8.7W;
12-24vdc, 25W

US: Class I Division 1 Groups BCD T5 Ta= -40°C to +60°C, Type 4X, IP66
Class II/III Division 1 Groups EFG Ta= -40°C to +60°C, Type 4X, IP66
Canda: Class I Division 1 Groups BCD T5 Ta= -50°C to +60°C, Type 4X, IP66
Class II/III Division 1 Groups EFG Ta= -50°C to +60°C, Type 4X, IP66
Class I, Zone 1, AEx/Ex db IIB+H2 T5 Gb Ta = -50°C to +60°C, Type 4X, IP66
Zone 21, AEx/Ex tb IIIC T85°C Db Ta = -50°C to +60°C, Type 4X, IP66



II 2 G Ex db IIB+H2 T5 Gb Ta = -50°C to +60°C, IP66
II 2 D Ex tb IIIC T85°C Db Ta = -50°C to +60°C, IP66
CERT NO. FM18ATEX0073X & IECEx FMG 18.0029X



WARNING: DO NOT OPEN WHEN ENERGIZED OR WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT. INSTALL SEAL WITHIN 18 inches. For Zones, install seal at entry. WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTION. USE 80°C OR HIGHER RATED CONDUCTORS.

AVERTISSEMENT: NE PAS OUVRIR LORSQU'ENERGISE OU QUAND UNE ATMOSPHERE EXPLOSIVE PEUT ETRE PRESENTE. Les joints de fermeture sont obligatoires dans une distance de 18 pouces. Pour les zones, installez un sceau à l'entrée. AVERTISSEMENT - RISQUE DE CHARGE ÉLECTROSTATIQUE POTENTIEL - VOIR LES INSTRUCTIONS. UTILISEZ DES CONDUCTEURS COTÉS DE 80 ° C OU PLUS.



STANDARDS-

The equipment is manufactured in accordance with the IECEx scheme, the ATEX Directive 2014/34/EU and with the following standards :

IEC 60079-0:2011
IEC 60079-1:2014
IEC 60079-31:2013
IEC 60529:2013
EN 60079-0:2012 + A11:2013
EN 60079-1:2014
EN 60079-31:2014
EN 60529:1991 + A1:2000 + A2:2013
ANSI/ISA 60079-0:2013
ANSI/UL 60079-1:2015
ANSI/ISA 60079-31:2015
ANSI/IEC 60529:2004
CAN/CSA-C22.2 No. 60079-0:2015
CAN/CSA-C22.2 No. 60079-1:2016
CAN/CSA-C22.2 No. 60079-31:2015
CAN/CSA-C22.2 No. 60529:2016

Specific Conditions of Use:

- The flameproof joints of the equipment are not intended to be repaired. Consult the manufacturer if dimensional information on the flameproof joints is necessary.
- Follow the manufacturer's instructions to reduce the potential of an electrostatic charging hazard on the surface of the equipment in Group II and III environments.

 **NOTE:** Use a clean cloth dampened with pure water for cleaning.

CERTIFICATIONS-

CERT NO. FM18US0262X & FM18CA0126X

US: Class I Division 1 Groups BCD T5 Ta= -40°C to +60°C, Type 4X, IP66

Class II/III Division 1 Groups EFG Ta= -40°C to +60°C, Type 4X, IP66

Canada: Class I Division 1 Groups BCD T5Ta= -50°C to +60°C, Type 4X, IP66

Class II/III Division 1 Groups EFG Ta= -50°C to +60°C, Type 4X, IP66

Class I, Zone 1, AEx/Ex db IIB+H2 T5 Gb Ta = -50°C to +60°C, Type 4X, IP66

Zone 21, AEx/Ex tb IIIC T85°C Db Ta = -50°C to +60°C, Type 4X, IP66

CERT NO. FM18ATEX0073X & IECEx FMG 18.0029X

II 2 G Ex db IIB+H2 T5 Gb Ta = -50°C to +60°C, IP66

II 2 D Ex tb IIIC T85°C Db Ta = -50°C to +60°C, IP66



The following symbols are used throughout this manual to alert users to potential hazards or important information. ***Failure to heed the warnings and cautions listed herein can lead to injury and equipment damage.***

Symbol	Label	Description
	WARNING:	Consists of conditions, practices, or procedures that must be observed to prevent personal injury and/or equipment damage.
	CAUTION:	Risk of electric shock or high temperature parts may result in injury if proper precautions are not taken.
	NOTE:	Emphasizes important or essential information.

Locating Information:

 ***NOTE:*** *In the interest of completeness, manuals and drawings included with the system may provide information pertaining to options not included with your equipment. Information in application notes supersedes general information in these documents. Information can be located in this manual using any of the following aids.*



General Manual:

This manual is intended to be used in conjunction with installed equipment manual from internal equipment manufacturer.

 Note: In the event of a conflict between the requirements of this general installation manual and the internal equipment manual, the safety and installation procedures described in this manual shall take precedence.

Safety Considerations:

This information that must be read and understood by all persons installing, using, or maintaining this equipment. This manual is designed to aid personnel in the correct and safe installation, operation, and maintenance of the systems described. Personnel must consider all actions and procedures for potential hazards or conditions that may not have been anticipated in the written procedures. If a procedure cannot be performed safely, it must not be performed until appropriate actions can be taken to ensure the safety of equipment and personnel. The procedures in this manual are not designed to replace or supersede required or common-sense safety practices. All safety warnings listed in any documents applicable to equipment and parts used in or with the system described in this manual must be read and heeded before commencing work on any part of the system.



NOTE: Refer to all ATEX, CSA, IECEX, NEC, NFPA and FM certificates for any Special Conditions of Use. If the sign “X” is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule of the certificate.



NOTE: Review all material and safety information in this manual and install in accordance with this document and all other applicable ATEX, CSA, IECEX, NEC, NFPA70 Installation Methods and FM and National standards.



Warning- Failure to follow appropriate safety procedures or appropriate use of the equipment described in this manual can lead to injury of personnel or equipment damage.



Warning – Explosion Hazard– Do not open equipment unless power has been removed or the area is known to be non-hazardous.



General safety and operating information applicable to electrical equipment installed within hazardous locations. This information must be understood by all persons installing, using, or maintaining the electrical equipment. This information is designed to aid personnel in safe installation, operation, and maintenance of the "F" Series equipment. It is not designed to replace or limit appropriate safety measures applicable to work performed by personnel. Any additional safety and operating measures that are required must be determined by and followed by personnel performing work on the electrical equipment.



WARNING: Deviation from the specified instructions or procedure steps can result in injury to personnel, equipment malfunction or equipment damage.



WARNING: Return unit to factory for any repairs or replacement of parts, customer not permitted to repair. This will void all warranties and hazardous area certification(s) if unauthorized repair occurs.

General Precautions:

Slip resistant gloves and protective eyewear (glasses with side shields or goggles as appropriate) should be worn when installing and servicing any part of electrical equipment. Hot components should be allowed to cool before servicing if possible. Other appropriate equipment or clothing must be used as required by the type of work performed. All applicable regulations and procedures must be followed for the work performed. Before beginning any work on the equipment, carefully consider all the potential hazards and ensure that appropriate measures are taken to prevent injury to personnel or equipment damage.



CAUTION: Failure to allow adequate cooling of electrical equipment components with hot surfaces before opening the enclosure can lead to injury of personnel or equipment damage.

CAUTION: Electrical equipment components may be hot even when power is not applied. Take appropriate precautions to prevent injury from contact with hot items.



Electrical Power:

The "F1XX" Series IP cameras operate from a variety of power options including IEEE compliant POE devices.

The power supply used with this product shall fulfill the requirements for Safety Extra Low Voltage (SELV) and Limited Power Source (LPS) according to IEC/EN/UL 62368-1 or IEC/EN/UL 60950-1 or Listed Class II Power Source Equipment. The product shall be grounded either through a shielded network cable (STP) or other appropriate method.

Camera Location:

The "F1XX" Series IP camera must be installed in a suitable location away from impacts, heavy vibration and extreme heat. The "F1XX" Series camera must not be installed in an area classification for which it is not rated. The "F1XX" Series camera must be attached securely and appropriately to a wall or supporting structure.



CAUTION: The electrical cover should never be removed unless power is removed (for at least 5 minutes) from the unit or the area is known not to contain hazardous gases.

NOTE:

- The product shall be installed by a trained professional.
- The product shall be used in compliance with local laws and regulations.
- Store the product in a dry and ventilated environment.
- Avoid exposing the product to shocks or heavy pressure.
- Do not install the product on unstable brackets, surfaces or walls.
- Use only applicable tools when installing the product. Using excessive force with power tools could cause damage to the product.
- Do not use chemicals, caustic agents, or aerosol cleaners.
- Use a clean cloth dampened with pure water for cleaning.
- Use only accessories that comply with the technical specification of the product. These can be provided by Spectrum or a third party.



Installation:

The installation must be realized in accordance with IEC/EN 60079-14 and/or in accordance with the national requirements. This equipment must be installed and used only by qualified personnel, having knowledge concerning electrical equipment for use in potentially explosive areas containing gas and/or dust. Qualified personnel must have knowledge regarding the types of explosion protection. This equipment is intended to be used in zone 1, 2, 21 and 22 for groups IIB+H2 and IIIC with temperature class T5 or T85°C, it is necessary to verify if this equipment is in accordance with the atmosphere where it is installed.

Connections:

Electric parameters power control unit Maximum supply voltage:
POE+ IEEE 802.3at/af, and AC/DC 12-24 Volts 25W

The terminals are suitable for solid and stranded wires.- *See wiring Diagram Page

Cable Glands:

The cable entry must be made in order not to alter the specific properties of terminal housing compartment. The connection to the external circuits must be realized by cable glands or pipe fittings covered by a separate certificate(s). If a cable gland is not used, or an entry is open, the entry must be closed by a stopping plug covered by a separate certificate. The diameter of the cable gland is $\frac{3}{4}$ inch NPT.

This equipment can be used with different voltage and power, the nominal parameters are specified in the manual.

Cable: cable must be tested and certified for temperatures of 80°C or higher.

Fiber Cable: Use a suitably certified optical fiber cable and internal connections shall comply with requirements of IEC/EN 60079-15

Equipment Modifications:

This equipment must be installed and used in strict accordance with the instructions given in the user documentation. This equipment contains no user-serviceable components.

Unauthorized equipment changes or modifications will invalidate all applicable regulatory certifications and approvals.



CERTIFICATIONS of Model- F101-Q1785-BD

FM18US0262X & FM18CA0126X

US: Class I Division 1 Groups BCD T5 Ta= -40°C to +60°C, Type 4X, IP66

Class II/III Division 1 Groups EFG Ta= -40°C to +60°C, Type 4X, IP66

Canada: Class I Division 1 Groups BCD T5 Ta= -50°C to +60°C, Type 4X, IP66

Class II/III Division 1 Groups EFG Ta= -50°C to +60°C, Type 4X, IP66

Class I, Zone 1, AEx/Ex db IIB+H2 T5 Gb Ta = -50°C to +60°C, Type 4X, IP66

Zone 21, AEx/Ex tb IIIC T85°C Db Ta = -50°C to +60°C, Type 4X, IP66

II 2 G Ex db IIB+H2 T5 Gb Ta = -50°C to +06°C, IP66

II 2 D Ex tb IIIC T85°C Db Ta = -50°C to +60°C, IP66

CERT NO. FM18ATEX0073X & IECEX FMG 18.0029X

ELECTRICAL REQUIREMENTS of Model- F101-Q1785-BD

POWER

Camera: IEEE 802.3af/802.3at Type 1 Class 3 8.7W

INPUT/CONSUMPTION

Heating: ; 12-24 VDC/AC, 25W

Environmental Conditions (Equipment must be powered)

OPERATIONONAL CONDITIONS

USE

For Indoor and Outdoor Use



F1XX Series Casing Material Specifications	
ALUMINUM	15lbs



NOTE: Spectrum Camera Solutions, LLC is NOT responsible for any misuse or improper installation of product, assumes no liability for special or consequential damages caused by use or misuse or improper installation of its products sold and assumes no liability for injury from use or misuse or improper installation of its products or attached products.

Power Source Specification For F101-Q1785-BD

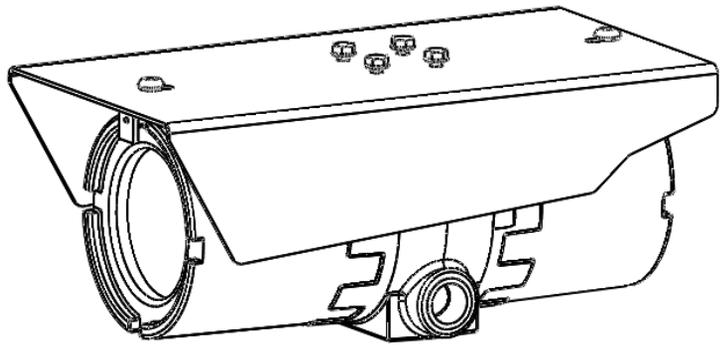
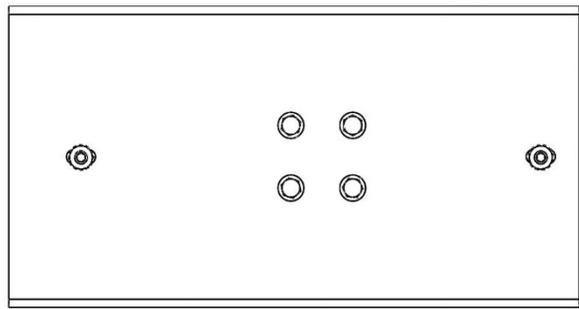
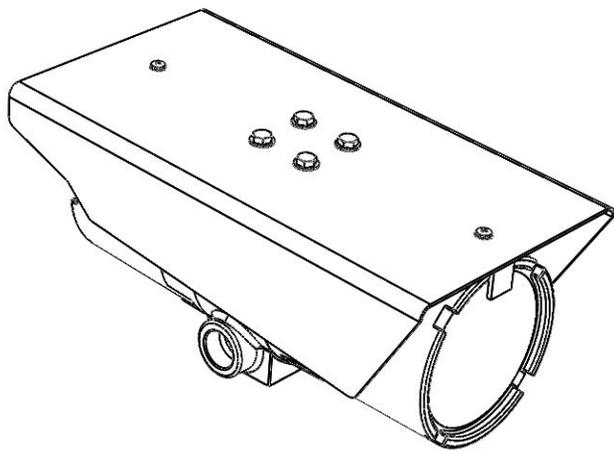
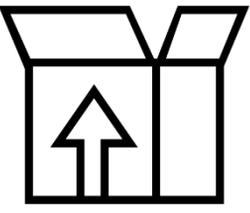
The power supply used with this product shall have a rated output voltage within voltage range of 12-24 V DC/AC. The power supply shall also fulfill one of the following requirements: • Safety Extra Low Voltage (SELV) according to clause 2.2 of IEC/EN/UL 60950-1 and Limited Power Source (LPS) according to clause 2.5 of IEC/EN/UL 60950-1 or CEC/NEC Class 2 source of supply as defined in the Canadian Electrical Code, CSA C22.1 and National Electrical Code, ANSI/NFPA 70 • Class 1 electrical energy source (ES1) and Class 2 power source (PS2) rated output power limited to ≤100 W according to IEC/EN/UL 62368-1. When used with Power over Ethernet (PoE) the Power sourcing equipment (PSE) shall comply with IEEE 802.3af/802.3at and Limited Power Source (LPS) according to clause 2.5 of IEC/EN/UL 60950-1 or annex Q of IEC/EN/UL 62368-1.

Grounding Specification For F1XX

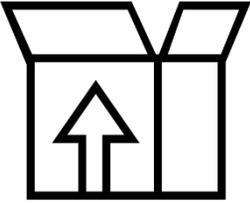
For U.S zones, the internal grounding connection shall be used and the external grounding connection shall be a supplemental ground connection. The product shall be grounded either through a shielded network cable (STP) or other appropriate method.



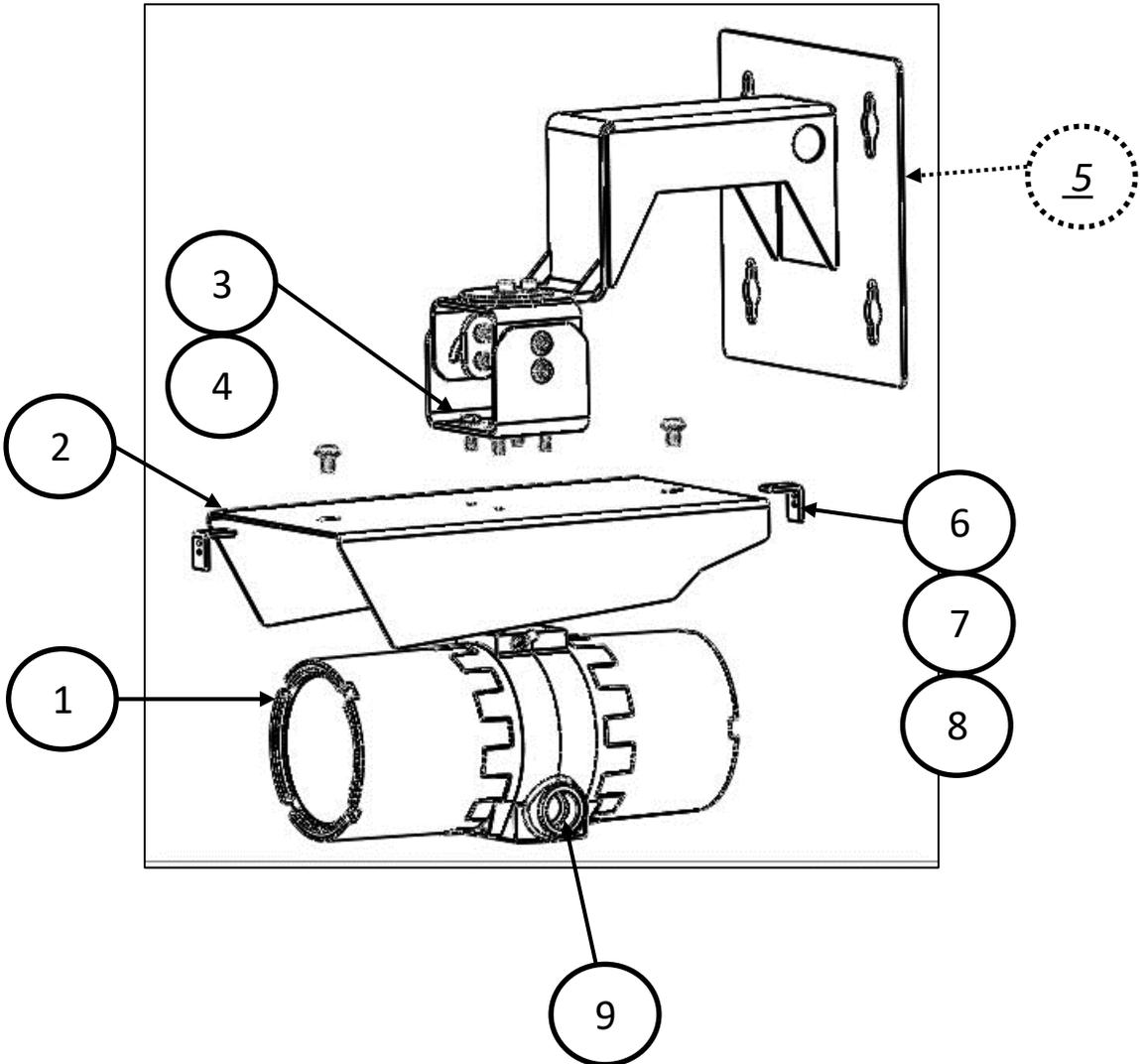
UNBOXING

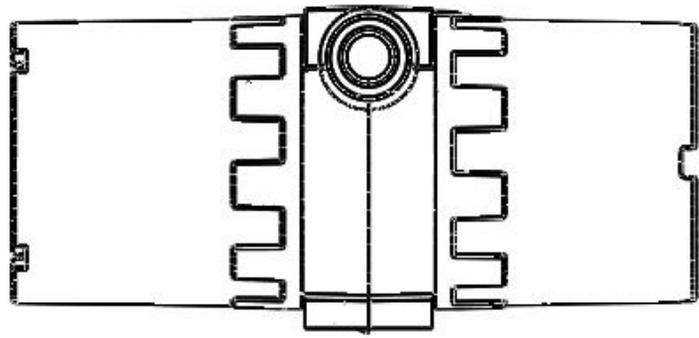


HARDWARE

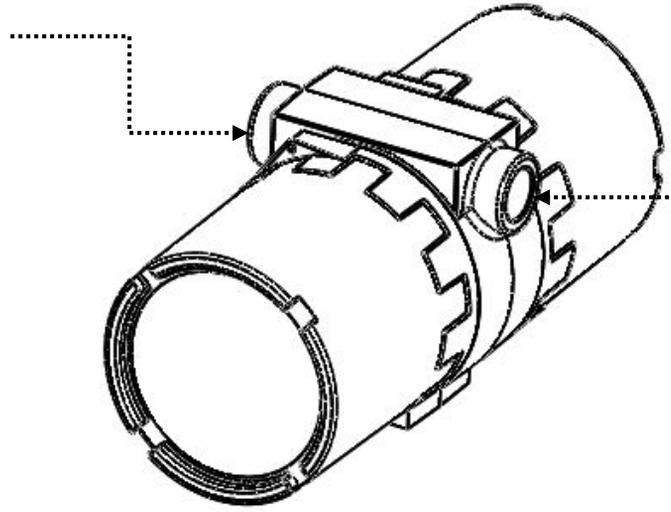


- 1- (QTY 1) F1XX- CAMERA ASSEMBLY
- 2- (QTY 1) SUN SHIELD
- 3- (1 SET) .250-20 HEX SCREW
- 4- (1 SET) SPLIT LOCK WASHER
- 5- F1XX-WM (**WALL MOUNT NOT INCLUDED**)
- 6- (QTY 2) SUN SHIELD STOP
- 7. (1 SET) .3125-18 PAN HEAD SCREW
- 8. (1 SET) LOCK WASHER
- 9. (QTY 1) CMP 781DT25 BREATHER DRAIN
- 10. (QTY 1) R1.3/4.20.N 3/4" NPT to M20 EX reducer





3/4" NPT PORT



3/4" NPT PORT

Conduit Entries are 3/4 inch NPT Use appropriate adapter to keep ingress protection



CAUTION: Ensure power is disconnected prior to connecting



INSTALLATION

2. Loosen set screw and remove 1/4-20 hex screws then lift the sunshield from the camera housing. Tabletop Figure 2.1

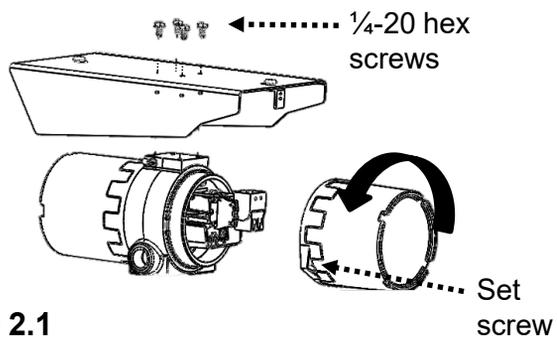
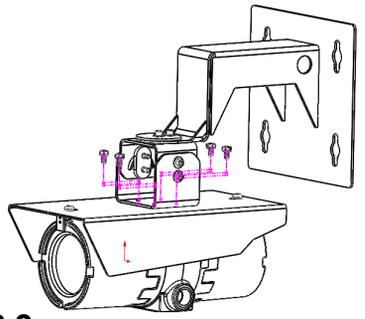


Figure 2.1

Figure 2.2



-If wall mounted, remove sunshield stop.>

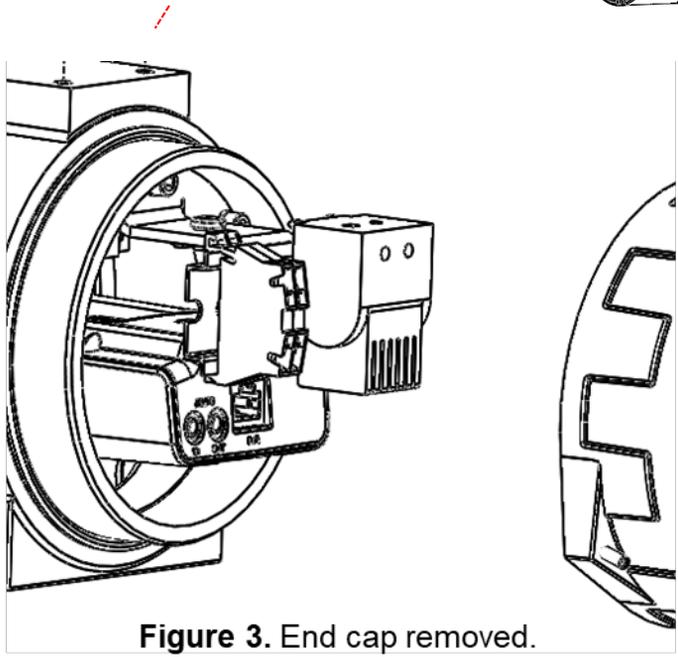
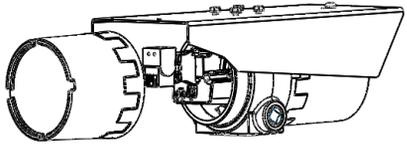


Figure 3. End cap removed.

3. Unscrew end cap from housing, revealing terminal blocks and the rear of the camera. Figure shows P1377 camera for example.



4. Push release on terminal block and insert positive 12-24 vdc/ac connection into terminal block (+A), release to secure. Do the same for negative ac/dc connection into terminal block (-B).

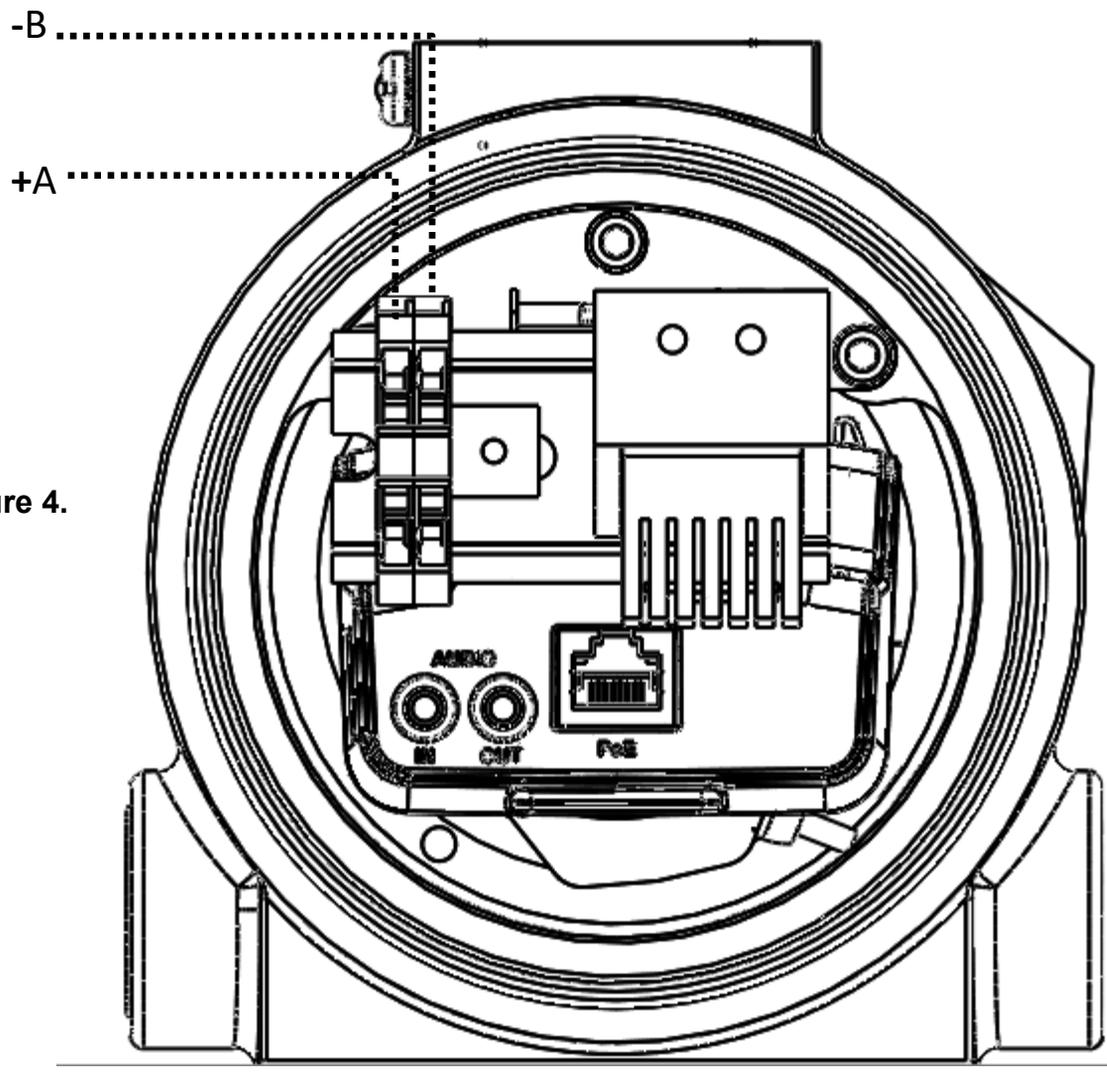


Figure 4.

5. The product shall be grounded either through a shielded network cable (STP) or other appropriate method.

5.1 Crimp RJ-45 using T568B color code then plug Cat6 POE into the RJ-45 Port located on the back of the Camera.

5.2 Internal grounding screw 5850-6 SLBHUC 10-24x ¼ ZS ZGR

Figure 5.1

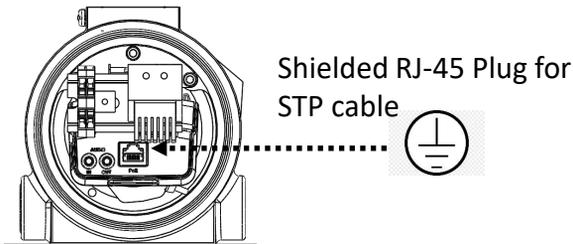
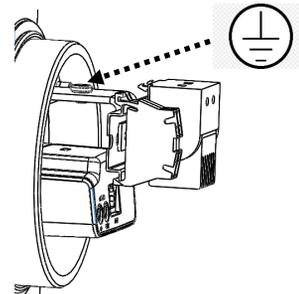
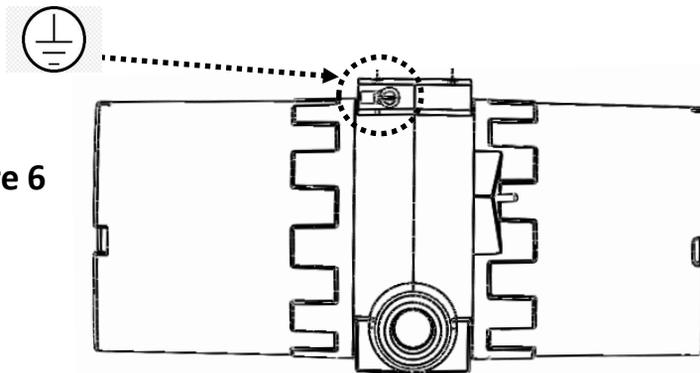


Figure 5.2



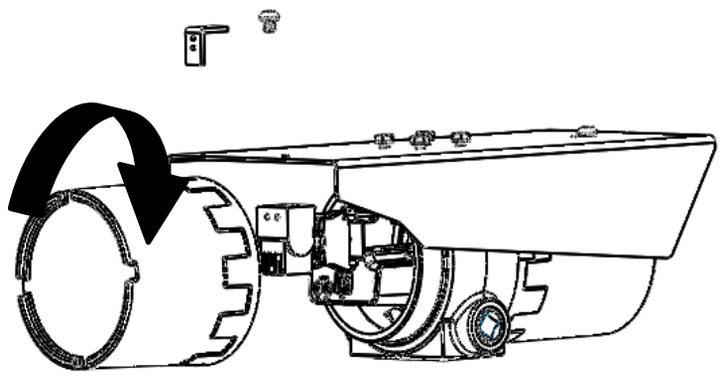
6. Connect external ground. For U.S zones, the internal grounding connection shall be used, and the external grounding connection shall be a supplemental ground connection. External ground wire connection is suitable for up to 3.25 mm (#8AWG)

Figure 6



- 7. Ensure threads and gaskets are free of dirt and debris.
- 8. Reinstall F1XX end cap by hand to tighten by turning clockwise until hand tight and gasket is seated

Figure 8.



- 9. Tighten both set screws on the end cap and lens cap ends of the housing.

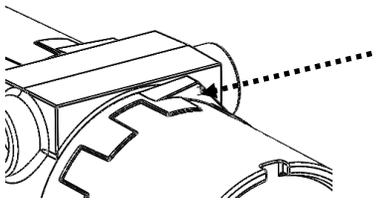
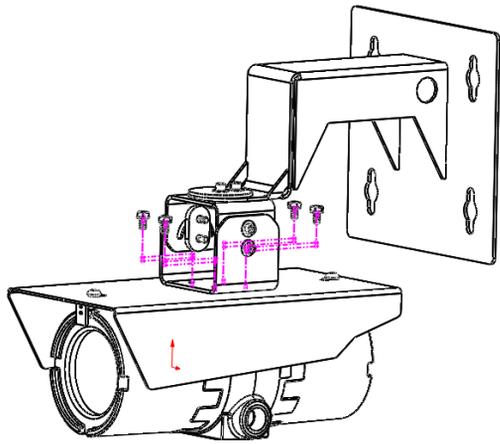


Figure 9. Set Screw (same on lens cap)

- 10. Install F1xx-WM wall mount.

Figure 10.



- 11. Remove Protective film after installation. If protective film is not removed in timely manor damage to lens is likely to occur with UV exposure

- 12. Apply power. For internal equipment startup procedures, setting changes, and troubleshooting guides reference the camera manufacturer's manual included with the "F1XX" Series Cameras. If the included copy is lost, please contact support@spectrumcamera.com for a PDF copy.



Dismantling:

All repairs of explosion-proof equipment must be made according the specified criteria of IEC/EN 60079-19 rule by qualified personnel, having knowledge concerning electrical equipment for potentially explosive areas containing gas and/or dust. Qualified personnel must have knowledge regarding the types of explosion protection.

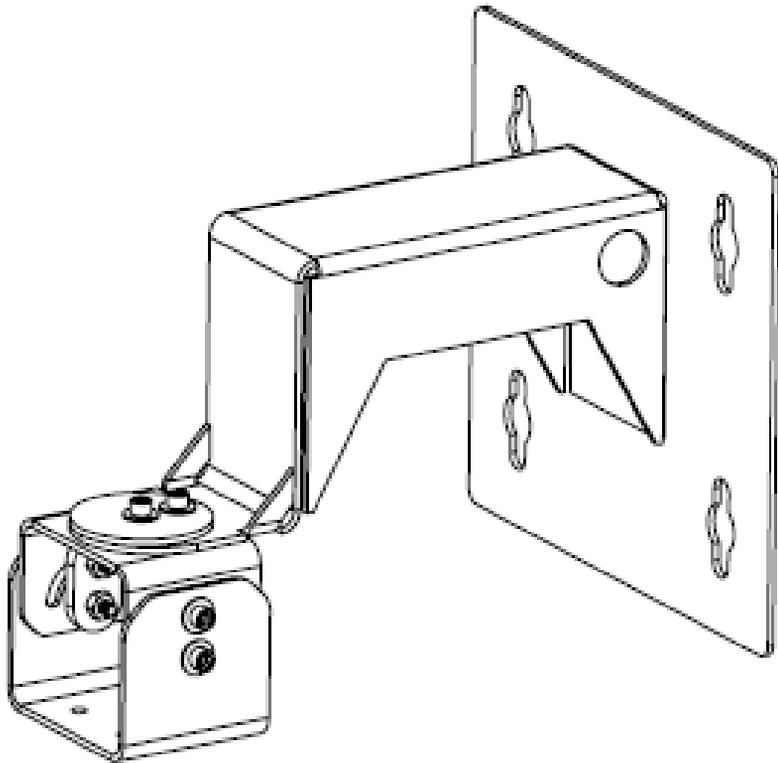
Maintenance:

The maintenance must be realized in accordance with IEC/EN 60079-17 and/or in accordance with the national requirements.

Cleaning lens- Washdown lens with water first to avoid partials scratching the surface. Clean lens with damp microfiber cloth with mild dish soap and water. Lastly, apply coating of Repel (by Unelko corporation) surface cleaner. Never use harsh chemicals or abrasive towels.

Replacing the battery- The F101-Q1785-BD product uses Maxell 3.0 V CR2032 lithium battery Lithium primary battery composed of cathode from Manganese Dioxide – Organic electrolyte - Lithium as the power supply for its internal real-time clock (RTC). Under normal conditions this battery will last for a minimum of five years. Low battery power affects the operation of the RTC, causing it to reset at every power-up. When the battery needs replacing, a log message will appear in the product's server report. For more information about the server report, see the product's setup pages or contact Spectrum support. The battery should not be replaced unless required, but if the battery does need replacing, contact Spectrum support at support@spectrumcamera.com for assistance.





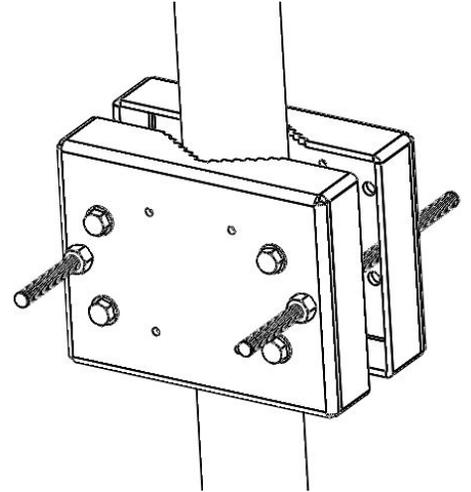
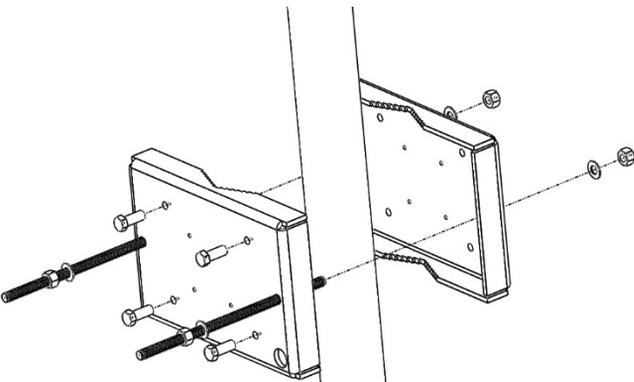
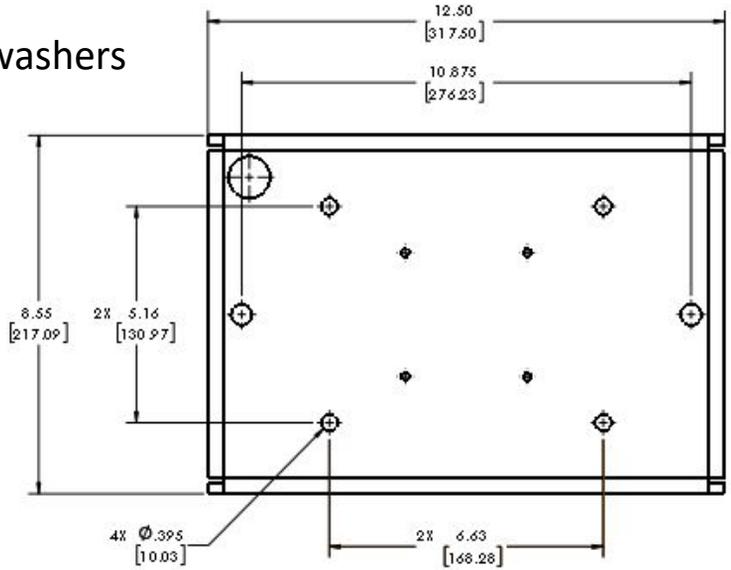
SD-PMA POLE MOUNT ADAPTER

HARDWARE

QTY 4 7/16-20 18-8 Bolts

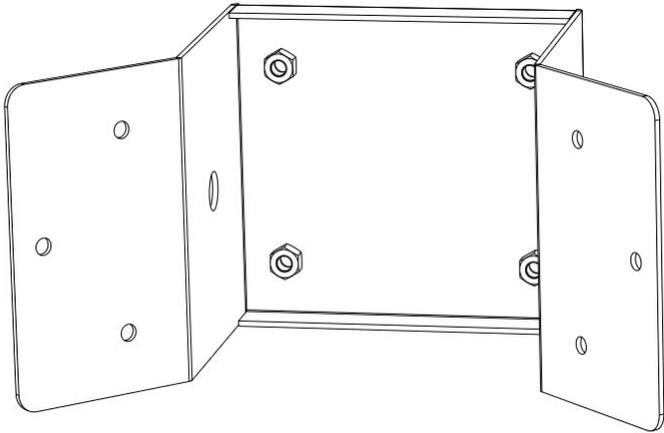
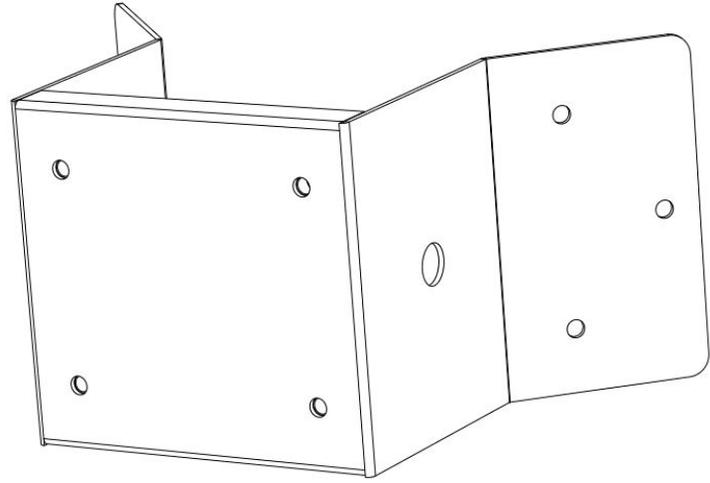
QTY 2 12in all thread with nuts and washers

QTY 2 A1612 sides



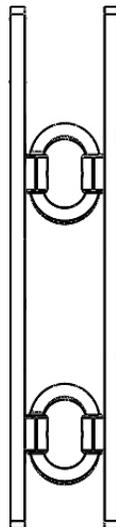
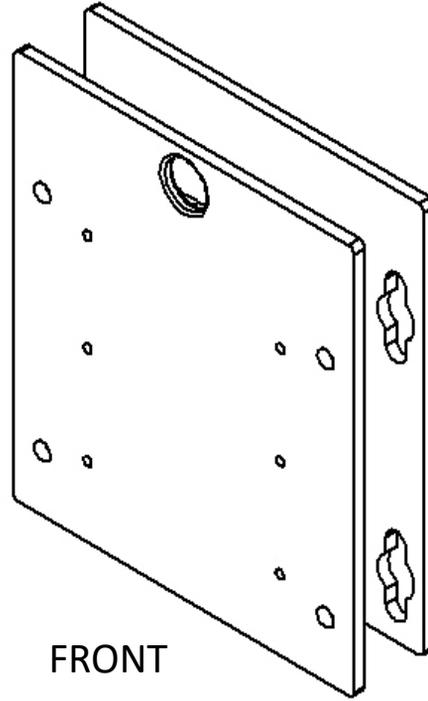
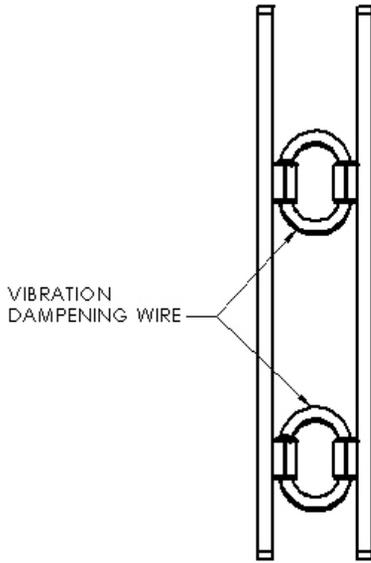
SD-CM CORNER MOUNT

HARDWARE-
QTY 4 7/16-20 18-8 Bolts



SD-VM VIBRATION MOUNT

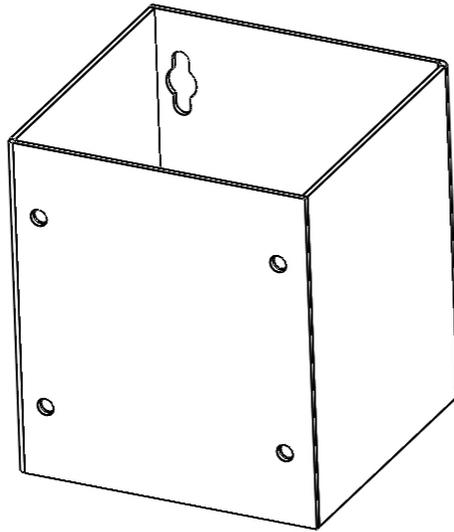
HARDWARE-
QTY 4 7/16-20 18-8 Bolts



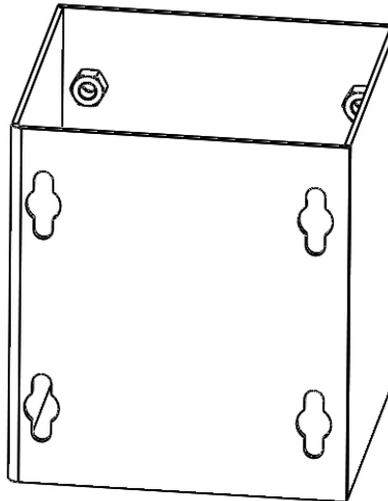
SD-SO STANDOFF MOUNT

HARDWARE-
QTY 4 7/16-20 18-8 Bolts

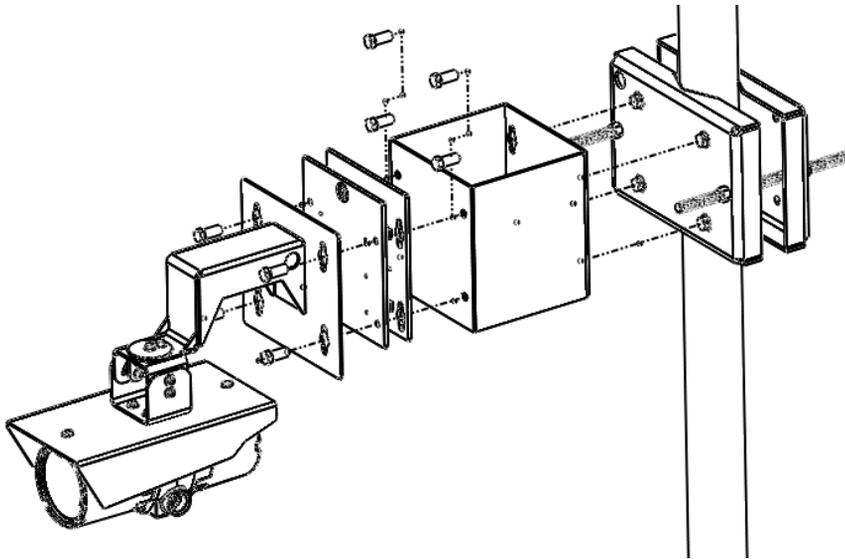
FRONT



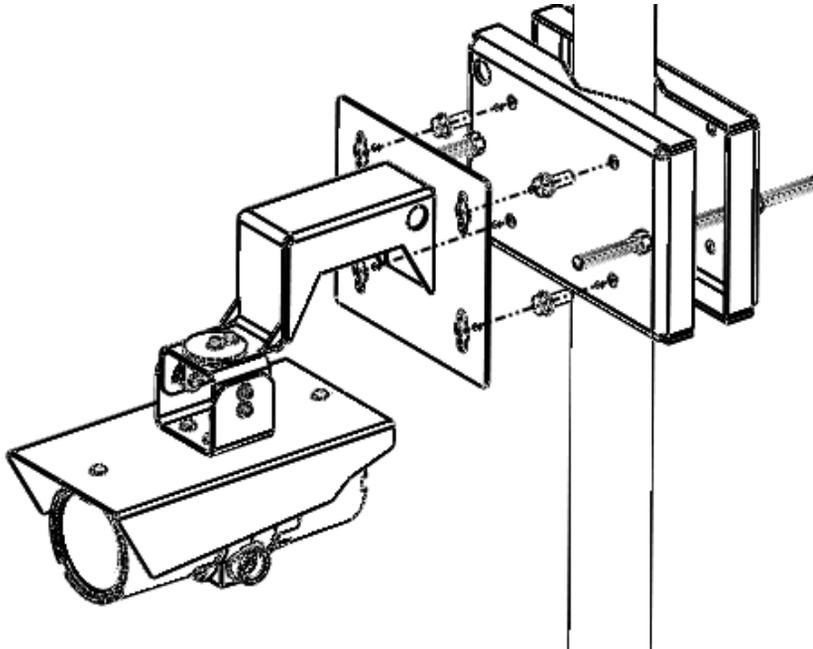
BACK



F1XX-WM+SD-VM+SD-SO+ SD-PMA



F1XX-WM+SD-PMA



EU Declaration of Conformity

Spectrum Camera Solutions, LLC

Spectrum Camera Solutions declares that under our sole responsibility that the product (s) listed below conform to the relevant provisions of 2014/34/EU of November 08, 2018



Statement of Compliance with Applicable European Directives

We: Spectrum Camera Solutions, LLC.
8935 Alameda Genoa Rd. Houston, Texas 77075 USA

as the manufacturer of the equipment listed below.

F101-Q1785-BD

Ex II 2 G Ex db IIB+H2 T5 Gb

Ex II 2 D Ex tb IIIC T85°C Db

IP66 -50°C ≤ Ta ≤ +60°C

confirm, in accordance with the requirements of clause 1.2.7 of the Essential Health and Safety Requirements of Community Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres that the above equipment/protective system has been designed and manufactured so as to:

- (a) avoid physical injury or other harm which might be caused by direct or indirect contact;
- (b) assure that surface temperatures of accessible parts or radiation which would cause a danger, are not produced;
- (c) eliminate non-electrical dangers which are revealed by experience;
- (d) assure that foreseeable conditions of overload shall not give rise to dangerous situations.

and where these risks are wholly or partly covered by other Community Directives, the equipment/protective system satisfies the requirements of those specific Directives.

and that literature describing the equipment/protective system will not contradict the instructions with regard to safety aspects.

Issued on: January 1, 2020

Authorized by: Casey Hodges

Name: Casey Hodges

Position: Mechanical Engineer

