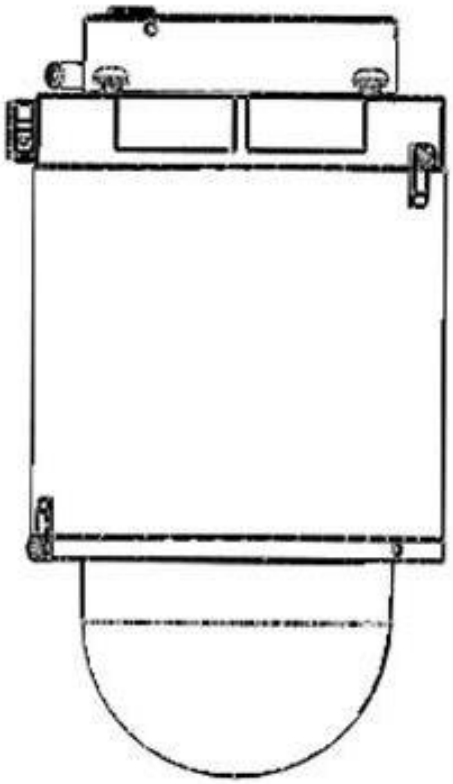
SPECTRUM
CAMERA SOLUTIONS

SPECIALIZING IN EXPLOSION PROOF TECHNOLOGY

SPECTRUM “D” SERIES INSTALLATION MANUAL



Explosion Proof Network Camera Installation Manual

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Document Number: 105607312018

Revision History		
Rev.	**Change Description**	**Date YYYY-MM-DD**
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1	FM Label Update	2019-03-08
2	Updated Manual Formatting	2022-01-10

Patents, Trademarks, and Proprietary Rights

Manufactured under United States US Patent 9917428 & US Patent D858611

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.

Warranties and Liabilities

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.

About Spectrum Camera Solutions LLC

Spectrum Camera Solutions manufactures a full range of globally certified Explosion Proof camera systems to monitor any hazardous area. Founded in 2012, Spectrum Camera Solutions has an unparalleled background as a world leader in hazardous area vision systems for process, security, and safety, creating a new range of Explosion Proof cameras based on durable materials, innovative engineering, and operational excellence.

Designed and Manufactured in USA

Spectrum Camera Solutions Explosion Proof Camera products are designed and manufactured in the USA. As a leader with a reputation for creating exciting and reliable hazardous area products, we pride ourselves in delivering outstanding execution from R&D to production as an ISO9001 & ISO14001 certified company.

Award Winning Manufacturer

As a committed leader to excellence and quality, Corporate Vision and Corporate Energy has recognized Spectrum Camera Solutions for our class-leading hazardous area products.

Patented Solutions

Being at the forefront of innovation and safety, Spectrum Camera Solutions is setting the benchmark for engineering excellence. Unique to the market, Spectrum's series of Explosion Proof Cameras utilize the latest technology available in the security camera market integrated into our dual patented housings designed to withstand harsh environmental conditions and certified for hazardous areas.

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8935 Almeda Genoa Rd. Bldg B, Houston, Texas, USA 77075

"D" Series

The Spectrum Explosion Proof

"D-Series" dome PTZ product line is designed the highest national and global industry standards for safe operations in potentially combustible environments. The D-Series is certified to national and international standards for hazardous areas and comes in a patented multi-chambered enclosure composed of marine-ready aluminum or 316L stainless steel with temperatures ranging from -20C° to +55C°. The explosion proof housing also has IP66/67 Type 4X ratings making the camera resistant to harsh offshore and onshore conditions.

The only Explosion Proof PTZ designed to be installed by a single installer, the D-Series features our quick-bolt mounting brackets/accessories, along with our secondary retention safety lanyard system and Ex breather drain membrane system, which guards against interior condensation by allowing equalization within the enclosure with the surrounding atmosphere.

Most D-Series incorporate Ex Power over Ethernet (PoE), providing ease of installation, greater flexibility of network design, robust power management, and cost-savings in the installation of cable and infrastructure.

- PTZ| Fixed| and Panoramic Dome Cameras
- Certified for Class I/II/III, Division 1, IECEx-ATEX Zone 1/21
- Temperature Range: -20C° to +55C°
- Marine-Ready Aluminum or 316L Stainless Steel
- Light weight: 17lbs - 63lbs
- Power over Ethernet (PoE)
- Patented Technology

Note:

This manual is intended to be used for the model specific installation manual. The core information of this manual in regard to installation practices, certifications, Specific Conditions of Use, and safety shall not be deleted. Additional information regarding voltage supply, network typology connections etc. will be changed accordingly.

Labels and model matrix of models, internal manufacturers etc. may be amended to show only the model of the device being produced and the specific installation manual produced for that model.

Table of Contents

1 | Introduction

Introduction

This is the Product Manual for the Spectrum Camera Solutions “D” Series Explosion-Proof Dome Camera.

1.1 | Intended Audience and Purpose of this Manual

This manual is intended as the primary technical reference for Designers, Procurers, Integrators, and Operators of Spectrum Camera Solutions product(s).

Spectrum Camera Solutions assumes that the customer will prepare appropriate documentation for end users of the product. The information required for Ex design, selection, erection, installation, setting-up, commissioning, controlling, troubleshooting, inspection, maintenance, and operations of the Spectrum Camera Solutions product is presented in this manual.

1.2 | Technical Terms and Abbreviations

See the glossary for definitions of potentially unfamiliar terms and abbreviations used throughout this manual. Certain terms do not appear in the manual but are included for general understanding of Spectrum Camera Solutions product(s).

NOTE: The terms “operator” and “user” refer to the person or persons overseeing the automatic operation of the product. In most cases, the product is connected to a system control device that must be programmed to communicate with the product and to respond to alarm messages and other feedback, safely and appropriately, for the intended application.

1.3 | Customer Support

For technical assistance with the installation, operation, troubleshooting, inspection or maintenance of the product, and for technical assistance with issues not covered in this manual:

- Refer to Camera Manufacturer’s Instruction Manual, or
- Contact:

SPECTRUM CAMERA SOLUTIONS
+1-281-769-8802
sales@spectrumcamera.com , and
support@spectrumcamera.com
8935 Almeda Genoa Rd. Bldg B, Houston, Texas, USA 77075

1.4 | Reference Documents

A list of recognized guidelines applicable to use of the camera in Explosive Atmospheres and related systems and technologies is presented here for reference. All users shall be competent with the applicable standards, codes, and regulations of their local or international authorities.

a. General Arrangement Drawing – Doc #
b. Assembly & Mounting Instructions – Doc #
c. Accessories – Doc #

1.4.1 | Camera Manufacturer

Manufacturer Name
Model #
Title of Document
Document # + Rev

1.4.2 | International Electrotechnical Commission (IEC) Publications

- IEC 60079-10-1 — Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres
- IEC 60079-10-2 — Explosive atmospheres - Part 10-2: Classification of areas - Explosive dust atmospheres
- IEC 60079-14 — Explosive atmospheres - Part 14: Electrical installations design, selection, and erection
- IEC 60079-17 — Explosive atmospheres - Part 17: Electrical installations inspection and maintenance
- IEC 60079-19 — Explosive atmospheres - Part 19: Equipment repair, overhaul and reclamation
- IECEx 05 – IEC System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEx System) IECEx Scheme for Certification of Personnel Competence for Explosive Atmospheres

1.4.3 | National Fire Protection Association (NFPA) Publications

- NFPA 497 — Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
- NFPA 499 — Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
- NFPA 70 — National Electrical Code
  - Divisions — Articles 500-504
  - Zones — Articles 505-516

2 | Model Matrix – D Series

SPECTRUM CAMERA SOLUTIONS
SPECIALIZING IN EXPLOSION PROOF TECHNOLOGY

2.1 | Imperial Models

DNXX-1-CCCCCC-BD

D	N		XX		1		CCCCCC **	BD ***
Model	**#**	**Inches**	**##**	**Manufacturer**	**(A)**	**(S)**	**#**	**Breather Drain**
D Series	1	3.32	01	Axis Communication	Aluminium Housing with SS 316L Dome Ring	Stainless Steel 316L Housing	Internal Equipment Part # from Manufacture	Breather Drain (Optional)
	2	7.75	02	Pelco/Oncam Grandeye				
	3	4.5	03	Samsung aka Hanwha Techwin America				
	4	5	04	Sony				
	5	5.5	05	Panasonic				
			06	Indigovison				
			07	Vivotek				
			08	TKH Group / Siqura				
			09	Arecont Vision				
			10	Avigilon				
			11	Hikvision				
			12	Bosch				
			13	Dvtel				
			14	Siemens				
			15	Tyco / American Dynamics				
			16	Vicon				
			17	FLIR				
			18-99	****				

Notes

*	Internal components and D Series must be approved by Spectrum
**	Must be approved and verified by Spectrum
***	Models supplied with Breather Drains will have IP66 ingress protection level
****	Additional Models Spectrum reserves the right to add additional compliant manufacturers in the future within constraints of our certification

2.2 | Metric Models

DMMMXX-1-CCCCCC-BD

D	MMM	XX		1		CCCCCC **	BD ***
Model	**Lube Length (mm)**	**##**	**Manufacturer**	**(A)**	**(S)**	**#**	**Breather Drain**
D Series	084 - 191	01	Axis Communication	Aluminium Housing with SS 316L Dome Ring	Stainless Steel 316L Housing	Internal Equipment Part # from Manufacture	Breather Drain (Optional)
		02	Pelco/Oncam Grandeye				
		03	Samsung aka Hanwha Techwin America				
		04	Sony				
		05	Panasonic				
		06	Indigovison				
		07	Vivotek				
		08	TKH Group / Siqura				
		09	Arecont Vision				
		10	Avigilon				
		11	Hikvision				
		12	Bosch				
		13	Dvtel				
		14	Siemens				
		15	Tyco / American Dynamics				
		16	Vicon				
		17	FLIR				
		18-99	****				

Notes

*	Internal components and DMMM Series must be approved by Spectrum
**	Must be approved and verified by Spectrum
***	Models supplied with Breather Drains will have IP66 ingress protection level
***	Additional Models Spectrum reserves the right to add additional compliant manufacturers in the future within constraints of our certification

3.1 | Warning Labels, Symbols, and Notices		
Symbol	**Label**	**Description**
	**Ex**	This symbol indicates specific conditions of use, schedule of limitations, procedures, instructions, and work methods that shall be followed to ensure that the product cannot cause a flammable gas, vapor, liquid, mist, dust, fiber, or flying atmosphere will not explode when exposed to any of the >13 potential sources of ignition.
	**CAUTION:**	Consists of conditions, practices, or procedures that must be observed to prevent personal injury and/or equipment damage.
	**WARNING:**	Risk of electric shock or high temperature parts may result in injury if proper precautions are not taken.
	NOTE:	Emphasizes important or essential information.
	**GROUND / EARTH:**	This symbol identifies a location for ground / bond . Earth equipment to protective earth. As a warning, it also indicates that grounding / bonding / earthing is required for safe operation of the equipment.

NOTE: The symbols are used throughout this manual to alert users to potential hazards or important information. ***Failure to adhere to these warnings may lead to negative impacts on health, safety, environmental, and equipment, whereby, this shall result in the null & void of all warranties and legal responsibilities of Manufacturer(s).***

3.2 | Safety Considerations

The equipment supplied by Spectrum Camera Solutions is designed to comply with relevant safety standards and to prevent the ignition of potential explosive atmospheres. The equipment and protective systems are designed and manufactured to ensure safe operation.

3.3 | Important Information

The product, systems, and equipment must be designed, selected, installed, commissioned, inspected, and maintained by qualified, competent, and authorized personnel only.

Qualified personnel shall have detailed 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 with temperature class T6 or T85°C, it is necessary to verify if this equipment is in accordance with the hazardous area classification drawings and reports where it is installed.

Note: Hazardous Area Classification must be performed by a qualified and competent Engineer. Failure to do so or any non-conformances to applicable standards, codes, or regulations shall null & void all warranties, liabilities, and responsibilities of the manufacturer.

3.4 | Personnel Qualifications Competence

Personnel responsible for design, selection, installation, commissioning, inspection, and maintenance of the equipment described in this manual:

- ✓ Should attend Integrator Training from a Spectrum Camera Solutions approved RTP (Recognized Training Provider);
- ✓ Read, understand, and comply with the instructions presented throughout this manual;
- ✓ Read the manual to understand the potential hazards associated with the systems or equipment;
- ✓ Retain this manual for future reference;
- ✓ Read, understand, and comply with the instructions presented throughout the associated Camera Manufacturer's Manuals;
- ✓ Fully understand and comply with all applicable local safety standards, by-laws, codes and regulations.
- ✓ Have the necessary IECEx Certificate Personnel of Competency (CoPC) with the relevant Ex Units applicable to their role & position to IECEx OD 504, or equivalent if applicable.
  https://www.iecex.com/
  https://www.iecex-certs.com/#/home
  - ➢ If applicable, National Deviations shall be complied with.
  - ➢ If applicable, Equivalent Personnel Certification is acceptable to a scheme that is ISO 17024 approved, specific to the region of installation and Ex Certification Scheme.

4 | Equipment Markings

4.1 | Metric Option

4.1.1 | AEx & Divisions – w/ Breather Drain

FM APPROVED

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8935 ALMEDA GENOA RD.
HOUSTON, TEXAS 77075
USA

CERT NO. FM17US0156X

INPUT: VOLTS, WATTS

MODEL NUMBER: D(MMM)(XX)-(1)-(CCCCCC)-BD SERIAL: TIME-MO-DY-YEAR

Class I Division 1 Groups B,C,D T6, Type 4X, IP66
Class II/III, Division 1, Groups E,F,G T6
Ta = -20°C to +55°C

-WARNINGS:
-NOT INCLUDING KETONE OR ESTER ATMOSPHERES
-CONDUIT ENTRIES ARE M20 X 1.5
-DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
-INSTALL SEAL AT ENCLOSURE ENTRY US Patent 9917428

4.1.2 | AEx & Divisions

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USA

CERT NO. FM17US0156X

INPUT: VOLTS, WATTS

MODEL NUMBER: D(MMM)(XX)-(1)-(CCCCCC) SERIAL: TIME-MO-DY-YEAR

Class I Division 1 Groups B,C,D T6, Type 4X, IP66/67
Class II/III, Division 1, Groups E,F,G T6
Ta = -20°C to +55°C

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-CONDUIT ENTRIES ARE M20 X 1.5
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-INSTALL SEAL AT ENCLOSURE ENTRY US Patent 9917428
US Patent D858611

4.1.3 | ATEX & IECEx – w/ Breather Drain

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FM C US APPROVED

MADE IN USA
CERT NO.
FM17US0156X
FM18CA0103X

CE 2809
UK CA 1725

MODEL: D(MMM)(XX)-(1)-(CCCCCC)-BD **SERIAL:** TIME-MO-DY-YEAR
INPUT: VOLTS, WATTS
Class I, Zone 1, AEx/Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, Type 4X, IP66
Zone 21, AEx/Ex tb IIIC T85°C Db Ta = -20°C to +55°C, Type 4X, IP66

Ex II 2 G Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, IP66
II 2 D Ex tb IIIC T85°C Db Ta = -20°C to +55°C, IP66
CERT NO. FM18ATEX0057X, IECEx FMG 18.0020X, FM22UKEX0028X

WARNING:DO NOT OPEN WHEN ENERGIZED OR WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
INSTALL SEAL AT ENCLOSURE ENTRY

www.spectrumcamera.com US Patent 9917428

4.1.4 | ATEX & IECEx

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FM C US APPROVED

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CERT NO.
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FM18CA0103X

CE 2809
UK CA 1725

MODEL: D(MMM)(XX)-(1)-(CCCCCC) **SERIAL:** TIME-MO-DY-YEAR
INPUT: VOLTS, WATTS
Class I, Zone 1, AEx/Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, Type 4X, IP66/67
Zone 21, AEx/Ex tb IIIC T85°C Db Ta = -20°C to +55°C, Type 4X, IP66/67

Ex II 2 G Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, IP66/67
II 2 D Ex tb IIIC T85°C Db Ta = -20°C to +55°C, IP66/67
CERT NO. FM18ATEX0057X, IECEx FMG 18.0020X, FM22UKEX0028X

WARNING:DO NOT OPEN WHEN ENERGIZED OR WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
INSTALL SEAL AT ENCLOSURE ENTRY

www.spectrumcamera.com US Patent 9917428

4.2 | Imperial Option

4.2.1 | AEx & Divisions – w/ Breather Drain

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8935 ALMEDA GENOA RD.
HOUSTON, TEXAS 77075
USA

CERT NO. FM17US0156X

INPUT: VOLTS, WATTS

MODEL NUMBER: D(N)(XX)-(1)-(CCCCCC)-BD SERIAL: TIME-MO-DY-YEAR

Class I Division 1 Groups B,C,D T6, Type 4X, IP66
Class II/III, Division 1, Groups E,F,G T6
Ta = -20°C to +55°C

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4.2.2 | AEx & Divisions

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MODEL NUMBER: D(N)(XX)-(1)-(CCCCCC) SERIAL: TIME-MO-DY-YEAR

Class I Division 1 Groups B,C,D T6, Type 4X, IP66/67
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Ta = -20°C to +55°C

-WARNINGS:
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-INSTALL SEAL AT ENCLOSURE ENTRY US Patent 9917428
US Patent D858611

4.2.3 | ATEX & IECEx – w/ Breather Drain

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MODEL: D(N)(XX)-(1)-(CCCCC)-BD **SERIAL:** TIME-MO-DY-YEAR
INPUT: VOLTS, WATTS
Class I, Zone 1, AEx/Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, Type 4X, IP66
Zone 21, AEx/Ex tb IIIC T85°C Db Ta = -20°C to +55°C, Type 4X, IP66

Ex II 2 G Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, IP66
II 2 D Ex tb IIIC T85°C Db Ta = -20°C to +55°C, IP66
CERT NO. FM18ATEX0057X, IECEx FMG 18.0020X, FM22UKEX0028X

WARNING:DO NOT OPEN WHEN ENERGIZED OR WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
INSTALL SEAL AT ENCLOSURE ENTRY

www.spectrumcamera.com US Patent 9917428
US Patent D858611

4.2.4 | ATEX & IECEx

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FM C US APPROVED

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UK CA 1725

MODEL: D(N)(XX)-(1)-(CCCCC) **SERIAL:** TIME-MO-DY-YEAR
INPUT: VOLTS, WATTS
Class I, Zone 1, AEx/Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, Type 4X, IP66/67
Zone 21, AEx/Ex tb IIIC T85°C Db Ta = -20°C to +55°C, Type 4X, IP66/67

Ex II 2 G Ex db IIB+H2 T6 Gb Ta = -20°C to +55°C, IP66/67
II 2 D Ex tb IIIC T85°C Db Ta = -20°C to +55°C, IP66/67
CERT NO. FM18ATEX0057X, IECEx FMG 18.0020X, FM22UKEX0028X

WARNING:DO NOT OPEN WHEN ENERGIZED OR WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT
INSTALL SEAL AT ENCLOSURE ENTRY

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US Patent D858611

4.3 | Warning Markings

4.3.1 | English

⚠WARNINGS:

-DO NOT OPEN WHEN ENERGIZED

-DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT

-POTENTIAL ELECTROSTATIC DISCHARGE: SEE INSTRUCTION

-SEAL AT ENTRY

-CABLE GLAND, CABLE AND/OR WIRING IN CONDUIT WHICH WILL BE USED IS REQUIRED TO BE RATED TO AT LEAST +70°C

4.3.2 | French

AVERTISSEMENTS:

-NE PAS OUVRIR SOUS TENSION

-NE PAS OUVRIR SI UNE ATMOSPHERE EXPLOSIVE PEUT ÊNTRE PRESENTE

-POTENTIEL DÉCHARGE ÉLECTROSTATIQUE: VOIR INSTRUCTION

-PRESS ÉTOUP, CÂBLE OU RACCORDEMENT AU CONDUIT DOIT AVOIR AU MOINS UNE TEMPÉRATURE AMBIANTE DE - 20 À 70 DEGRÉS CELSIUS

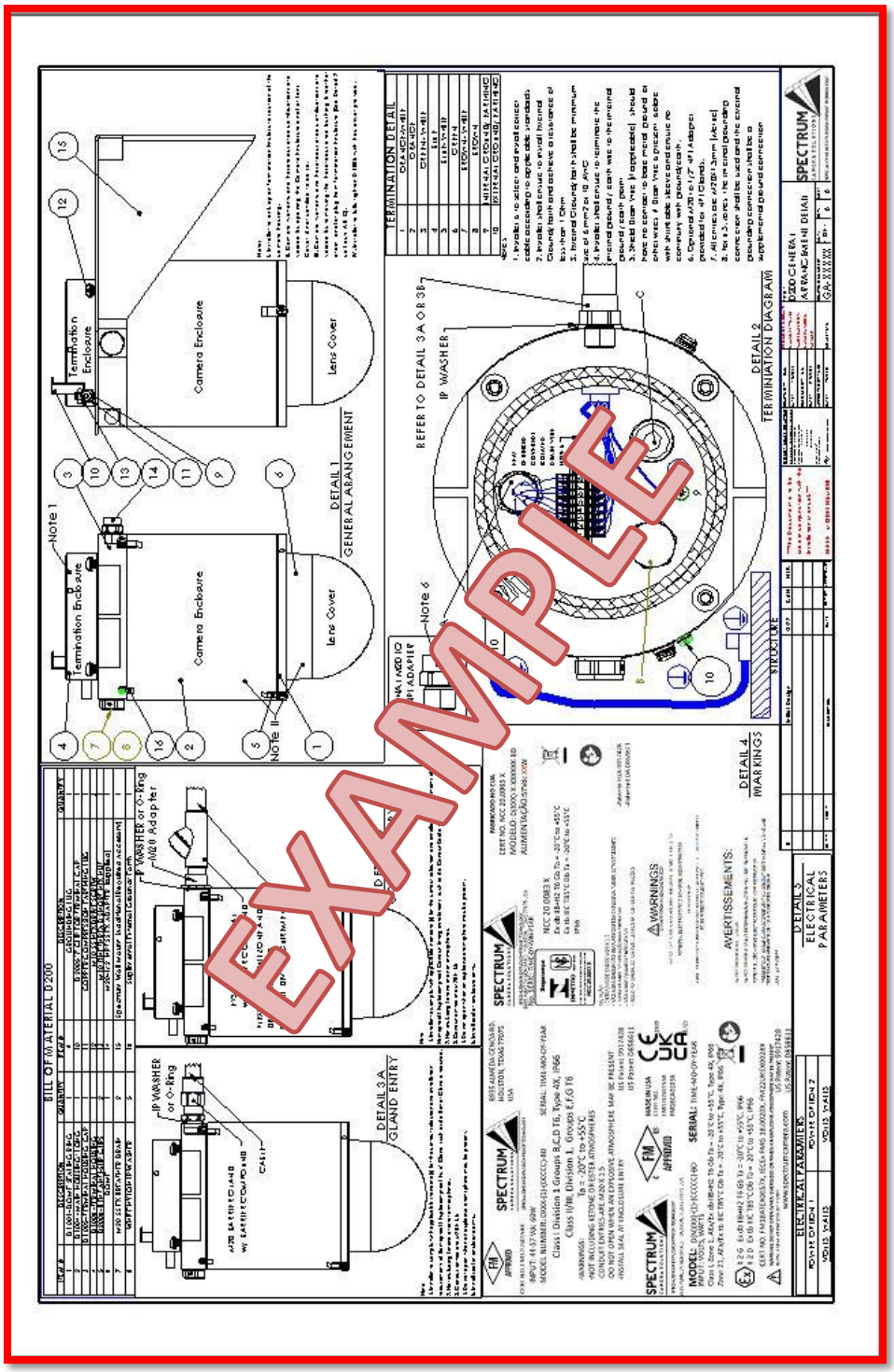
-SEAL A L'ENTREE

4.3.3 | Future #1

4.3.4 | Future #1

4 | Equipment Markings

Product Specific Markings
Please refer to General Arrangement Drawing for product specific Ex Equipment Markings and Warning Markings



5.1 | Instructions

This manual is intended be reviewed and used together with the manufacturer's manual for the internal equipment, and the Ex-Certificate requirements, conditions of use, & schedule of limitations.

Note: In the event of a conflict between the requirements of this "Explosion Proof" installation manual, the internal equipment manufacturer's manual, and the Ex-Certificate, then, the safety, design, selection, installation, commissioning, maintenance, inspection, and operation instructions & procedures described in this manual shall take precedence, with the Ex-Certificate holding ultimate precedence.

Note 2: Refer to General Arrangement Drawing

5.2 | Safety Considerations

The entire 5 | Instructions section must be read and fully understood by all person(s) involved in design, selection, installation, commissioning, maintenance, inspection, and operations of this equipment. This manual is designed to aid personnel in 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. Site specific requirements must also be adhered to.

5.3 | 'X' Specific Conditions of Use

1. The flameproof joints of the equipment are not intended to be repaired. Consult the manufacturer if dimensional information on the flameproof joints is necessary.
2. 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.
3. The equipment meets the requirements according to the low-level risk of mechanical danger. Therefore, the equipment shall be located and installed such that the risk of impact or other mechanical damage is reduced or avoided.

5.3.1 | Other Certificates - 'X' Specific Conditions of Use

Refer to all ATEX, CSA, IECEx, NEC, NFPA and FM certificates for any Specific 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 - Instructions

Review all material and safety information in this manual and install in accordance with this document and all other applicable ATEX, CSA, IECEx, NEC, NFPA 70 Installation Methods, FM, or other National Standards / codes / practices.

5.4 | Warning Markings

- Do not open when an Explosive Atmosphere may be present
- Potential electrostatic discharge: See instructions
- Seal at entry (with an Ex-Certified barrier gland or conduit seal with separate certificate)
- Cable gland, cable and/or wiring in conduit which will be used, is required to rated to at least +70°C

Warning – Procedures

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

Warning – Live Maintenance or Live Inspection

WARNING – DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT. Live maintenance or Live detailed inspections shall not be done. Sufficient time (15 minutes) shall be allowed for hot components to cool down before conducting maintenance or detail inspections. Be aware after de-energization internal components may still pose as a potential source of ignition, electrostatic discharge, or electrical shock risk.

Warning – Electrical Safety

Any additional safety and operating measures that are required must be determined by and followed by personnel performing work on the electrical equipment. All site-specific electrical safety considerations must be followed.

Warning – Anti-Static (ESD – Electrostatic Discharge)

Users and Operators should use anti-static PPE (clothes, boots, etc) to EN 1149-5 STANDARD FOR PROTECTION AGAINST EXPLOSION HAZARDS or equivalent standard. Failure to do so may cause a potential source of ignition or damage to components.

Warning – PPE (Personal Protection Equipment)

Slip resistant gloves and protective eyewear (glasses with side shields or goggles as appropriate) should be worn when performing all activates.

Also, refer to Warning – Anti-Static (ESD – Electrostatic Discharge).

Warning – Repair, Overhaul, and Reclamation

Unit must be returned to manufacturer for repairs, overhaul, or reclamation. Users are not permitted to perform any of these activities or open the main enclosure of the camera housing. Doing so will null & void all warranties and Ex-Certification(s)

Warning – Main Housing (Equipment Compartment)

The main housing is manufactured in a controlled environment that eliminates moister.

This compartment should only be opened by the manufacturer's factory certified technicians / integrators. Opening of the main housing will void all warranties. For instructions ensure to contact manufacturer.

NEVER open the main housing of the "D" Series, unless authorized to do so in writing by the manufacturer.

5.5.0 | Verification Dossier

When applicable, a Verification Dossier should be prepared by User or Operator for every installation and shall be kept on the premises or stores in another location.

In order to correctly install or extend an existing installation, all information listed in IEC 60079-14 Clause 4.2 and IEC 60079-17 Clause 4.4, additional to that required in non-hazardous area, is required as part of the verification dossier, where applicable.

All documentation, evidence of training, installation, inspections, and maintenance shall be documented and found within the Verified Dossier.

5.5.1 | Procurement, Selection

The "D" Series IP cameras operate from a variety of power options including IEEE compliant POE devices. Correct selection of the model for system installation is the responsibility of the User or Operator.

5.5.1.1 | Receival

Upon receival of the “D” Series IP Camera, the User or Operator is responsible for conducting an initial detailed inspection to ensure correct selection, no missing components or documentation, and absence of any damages.

5.5.1.2 | Preservation

It is the responsibility of the User or Operator to maintain ingress protection and implement approved preservation methods upon receival of the “D” Series IP Camera, including each stage of installation, operations, maintenance, and operations.

Preservation methods shall comply with site specifications and applicable standards, and to ensure not to invalidate the Ex protection method(s). Equipment shall be stored in a dry, ventilated, climate-controlled environment.

5.5.1.3 | Handling and Exposure

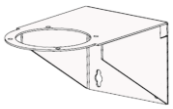
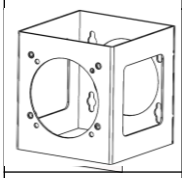
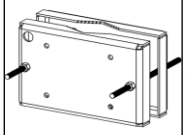
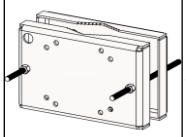
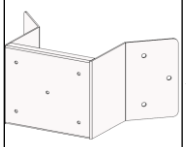
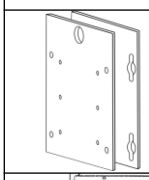
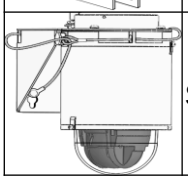
It is the responsibility of the User or Operator to ensure no exposure of the equipment to impacts, shocks, heavy pressure, temperature swing, chemicals, caustic agents, or aerosol cleaners.

Cleaning or wiping of the equipment shall ONLY be done with a clean, damp cloth with water and mild soap. No industrial, alcoholic, ketone, or similar cleaners shall be used.

5.5.2 | On-site Assembly

User or Operator must ensure to confirm receival and use of correct accessories with the instruction and technical specifications of the equipment to be installed. These may be sourced from Spectrum Camera Solutions LLC (Sec 5.5.2.1) or a third party.

5.5.2.1 | Accessories List – D Series

	SD-WM: WALL MOUNT
	SD-UM: UNIVERSAL MOUNT
	SD-PM: POLE MOUNT
	SD-PM XL: XL POLE MOUNT
	SD-CM: CORNER MOUNT
	SD-VM: VIBRATION MOUNT
	SD-RSK: RELIABLE SECURING KIT

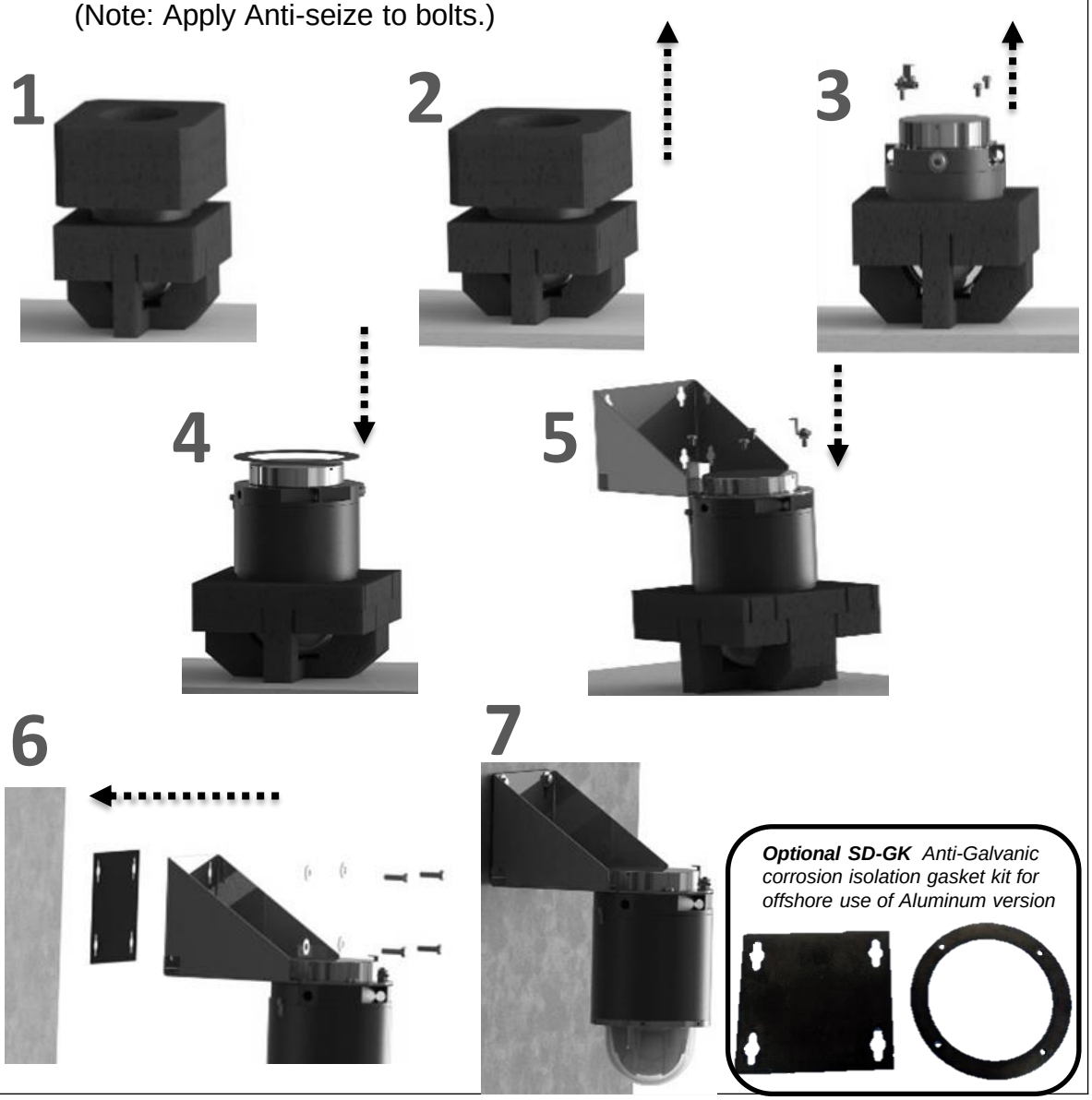
5.5.2.2 | BOM (Bill of Materials)

Refer to General Arrangement Drawing

5.5.2.3 | Unboxing

Step-by-step Instructions

1. Place camera on tabletop with dome facing down
2. Remove rear (Terminal Housing) foam packaging to reveal hardware
3. Remove hardware
4. *Install ring Gasket on terminal Housing* **Optional SD-GK Aluminum version only*
5. Install wall mount with hardware removed from step 3 (Note: Apply Anti-seize to bolts.)
6. Install wall mount gasket and hardware to secure mount to wall.**SD-GK*
7. Remove foam and protective blue film
   (Note: Apply Anti-seize to bolts.)



5.5.3 | Installation and Erection

The installation must be in accordance with IEC/EN 60079-14 and/or in accordance with national deviations / requirements.

Installation of equipment shall be done with hand tools. Excessive force, such as power tools, shall be not be used specifically to avoid damage of equipment.

Equipment shall be installed on secure, stable, mechanically robust and complete surfaces / assemblies.

Integrators / Installers shall be qualified (trained and competent) to install electrical equipment in explosive atmospheres and Spectrum Camera Solutions products.

Installations should be done to site approved engineered drawings and documented (inspection test reports).

5.5.3.1 | Mounting Bracket

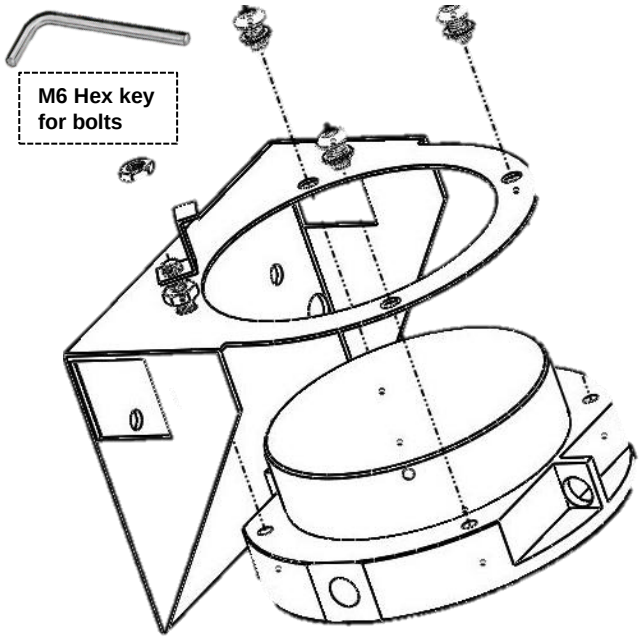


Figure 1. wall bracket installation

1. Use supplied M6 Hex key to unscrew the 3 bolts supplied on camera.
2. Make sure threads on camera and M10 x 1.5 are free of dirt and debris. Place mount on camera and align holes and tighten bolts.
   Note: add anti-seize for offshore installations.
3. Attach the camera with wall mount to mounting surface. Use only installation methods and materials capable of supporting four times the maximum specified load of the system.

5.5.3.2 | Top Cap Removal

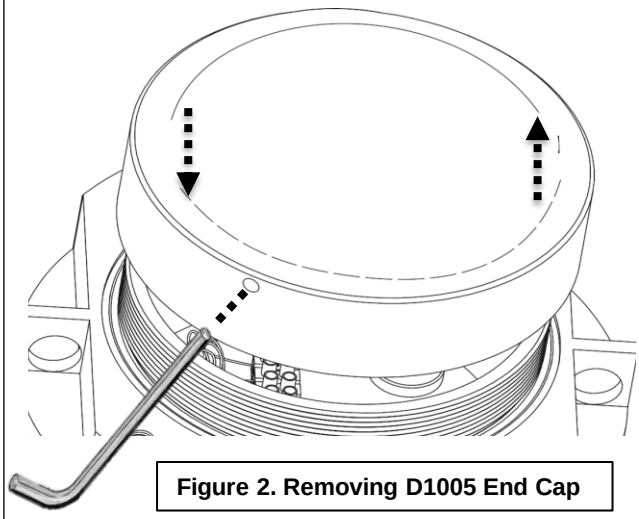


Figure 2. Removing D1005 End Cap

1. Use supplied M5 Hex key to loosen D1005 End cap by turning counterclockwise
2. Set D1005 terminal cap in safe place with threads facing up.
3. Proceed to Section 5.5.4

5.5.4.1 | Glands, Connectors, Accessories, Terminations

Refer to General Arrangement Drawing

Cable Glands

Cable gland selection shall comply with require Ex protection technique, cable type, cable armour, and other requirements.

The cable entry must be made-off and installed correctly as per Ex-Certificate and manufacturer's instructions in order not to alter the specific properties of terminal housing compartment. **All entries are M20 x 1.5.**

To maintain the ingress protection level of the equipment, all cable glands shall require use of IP (Ingress Protection) washers or o-ring, excluding fiber type. The use of gland "Shrouds" should be avoided, as they gather condensation and cause corrosion.

The connection to the external circuits must be done by cable glands or conduit fittings covered by a separate Ex-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 ex-certificate.
This equipment can be used with different voltage and power, the nominal parameters are specified in the manual.

Terminations – Refer to General Arrangement Drawing

Terminations shall be made with provided terminals.

The use of core-end sleeves / bootlace crimps / ferrules are approved for use with stranded cores. Creepage and clearance distance requirements shall be maintained.

Fiber-Optic terminations shall be according cable manufacturer's instructions.

5.5.4.2 | Cable Selection

Electrical Cable:

- Cable(s) must be tested and certified for temperatures of 70°C or higher.
- Shall be suitable for the division / zone in which the cable is installed in.
- Shall be Fire Resistant and/or Fire Retardant specific to standards and site-specific requirements.
- Cable shall provide sufficient sealing to avoid the passage of gas and flame propagation between the cores and other layers. IEC 60079-14 Annex E test compliance can verify a cables compliance. (IEC Standard)
- Cables <3 meters in lengths shall require sealing means, e.g. barrier gland. (IEC Standard)

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

5.5.4.3 | Electrical Parameters

Refer to General Arrangement Drawing

5.5.4.4 | Equipment Modifications

Modifications shall not be done. The equipment must be installed and used in strict accordance with the instructions given in this instruction manual

- This equipment contains no user-serviceable components.
- Unauthorized equipment changes or modifications will invalidate all applicable regulatory certifications and approvals.

5.5.4.5 | Grounding, Earthing, Bonding, Shielding

Refer to General Arrangement Drawing

5.5.5 | Adjustment and Parameter Settings

Any internal heating devices, fans, or devices that may be adjusted shall be done to manufacturer's instructions. Refer to camera manufacturer's manual in conjunction with this manual.

5.5.6 | QAQC (Quality Assurance & Quality Control)

The following electrical and safety checks shall be made and documented (inspection test reports) before initial Ex inspection, if applicable:

- Cable / core(s) continuity and polarity checks
- Fiber-optic continuity checks (if applicable)
- Insulation resistance checks of cables and core(s) insulation
- Equipotential Bond resistance checks (< 1 Ohm)
- Earthing / Grounding resistance checks (< 1 Ohm)
- Fault-loop impedance checks
- Safety Device setting checks
- Safety Device operations setting(s) checks

Testers shall be trained and competent to test electrical equipment in explosive atmospheres, local electrical codes and regulations

Note 1: Insulation resistance checks shall not be made with completed (landed) terminations, or internal components may be damaged.

Note 2: Such testing shall not be done within Hazardous Areas / Explosive Atmospheres, or without the direct approval of responsibly party with required isolations, permit systems, and gas detections measures in place.

5.5.7 | Ex – Initial Inspection

Equipment shall be inspected before handover for Pre-Commissioning or Operations. The Type of Inspection shall be “Initial Inspection”, with the QAQC test reports available and complete.

Initial Inspection
Inspection of all electrical equipment, systems, and installations before they are brought into service / energized.

Detailed Inspection:
Inspection which encompasses those aspects covered by a close inspection and, in addition, identifies those defects, such as loose terminations, which will only be apparent by opening the enclosure terminal housing, and/or using, where necessary, tools and test equipment.

Close Inspection:
Inspection which encompasses those aspects covered by a visual inspection and, in addition, identifies those defects, such as loose bolts, which will be apparent only by the use of access equipment

EXAMPLE Steps or ladders, (where necessary), and tools.

Note 1 to entry: Close inspections do not normally require the enclosure to be opened, or the equipment to be deenergized.

Visual Inspection:
Inspection which identifies, without the use of access equipment or tools, those defects, such as missing bolts, which will be apparent to the eye.

Inspectors should be qualified to inspect electrical equipment in explosive atmospheres and Spectrum Camera Solutions products.

5.5.7.1 | Documentation

Inspections should be documented via inspection test reports, with support of pictures.

Documentation formats shall comply with those found in IEC 60079-14 Annex C Initial inspection – Equipment-specific inspection schedules and/or NFPA 70 NEC500 / NEC505

Inspections shall be specific to the Ex protection techniques used.

5.5.7.2 | Specific Inspection Checks

General

- Equipment has been selected & installed appropriately for the area classification requirements based on class division / zone, group, temperature class / max surface temperature, ingress protection, ambient temperature ranges.
- There are no signs or evidence of scratches, dings, pitting, cracks, discolouration, deformations.
- There is no damage or unauthorized modifications.
- There is no evidence of unauthorized modifications.

Cable / Conduit Entries

- Appropriate sealing
- Barrier type cable gland or conduit seal is installed, if applicable.

Terminals

'X' – Specific Conditions of Use

- Specific conditions of use (if applicable) are complied with.

5.5.7.3 | Sample Documentation

Tables C.1, C.2 and C.3 give equipment-specific inspection schedules.

Table C.1 – Inspection schedule for Ex "d", Ex "e", Ex "n" and Ex "t"

Check that:		Ex "d"	Ex "e"	Ex "n" Ex "t"
		Grade of inspection: Detailed		
A	GENERAL (ALL EQUIPMENT)			
1	Equipment is appropriate to the EPL/zone requirements of the location	X	X	X
2	Equipment group is correct	X	X	X
3	Equipment temperature class is correct (only for gas)	X	X	n
4	Equipment maximum surface temperature is correct			t
5	Degree of protection (IP grade) of equipment is appropriate for the level of protection/group/conductivity	X	X	X
6	Equipment circuit identification is correct	X	X	X
7	Equipment circuit identification is available	X	X	X
8	Enclosure, glass parts and glass-to-metal sealing gaskets and/or compounds are satisfactory	X	X	X
9	There is no damage or unauthorized modifications	X	X	X
10	There is no evidence of unauthorized modification			
11	Bolts, cable entry devices (direct and indirect) and blanking elements are of the correct type and are complete and tight			
	– physical check	X	X	X
12	Threaded covers on enclosures are of the correct type, are tight and secured			
	– physical check	X		
13	Joint surfaces are clean and undamaged and gaskets, if any, are satisfactory and positioned correctly	X		
14	Condition of enclosure gaskets is satisfactory	X	X	X
15	There is no evidence of ingress of water or dust in the enclosure in accordance with the IP rating	X	X	X
16	Dimensions of flanged joint gaps are: – within the limits in accordance with the manufacturer's documentation or – within maximum values permitted by the relevant construction standard at time of installation or – within maximum values permitted by site documentation	X		
17	Electrical connections are tight		X	X
18	Unused terminals are tightened		X	n
19	Enclosed-break and hermetically sealed devices are undamaged			n
20	Encapsulated components are undamaged		X	n
21	Flameproof components are undamaged		X	n
22	Restricted breathing enclosure is satisfactory (type "nR" only)			n

Refer to IEC 60079-14 Annex C Tables C.1, C.2, and C.3

5.5.8 | Pre-Commissioning & Commissioning

Use and Setting-Up;

- Refer to camera manufacturer's instruction manual, in conjunction with this manual
- Parameters such as electrical values, ambient temperature ranges, maximum surface temperatures, and other limit values shall be review, verified, and documented in an inspection test report.
- Safety Devices shall be verified and validated for settings and correct operation.

5.5.8.1 | Maintenance

Follow the requirement(s) of:

- IEC 60079-17;
- Section 5.5.1.2 – Preservation;
- Section 5.5.1.3 – Handling and Exposure;

For each maintenance activity, an Ex-Inspection shall be done to the relevant Grade of Inspection (Detailed, Close, Visual). Opening of equipment requires a detailed inspection to be done. Conducting this inspection confirms compliance with Ex safe operation of the equipment and Section 5.5.8 – Periodic Inspections.

When cleaning the equipment, use a damp cloth to avoid build up of an electrostatic charge.

5.5.8.2 | Troubleshooting

Issue	Solution(s)
Signs of damage, discolouration, water ingress into camera (main) housing, modifications, use of non-OEM components	Do not open main housing; Complete an Ex-Inspection report; Contact Manufacturer
Camera not operating	Review troubleshooting instruction in camera manufacturer's manual
How to clean Dome / Lens	Refer to Section 5.5.1.3 – Handling and Exposure;
Unable to open terminal enclosure	Contact Integrator; Contact Manufacturer

5.5.9 | Periodic Inspections

Ex Inspections shall be carried via Period Inspections, with no greater then 3 years between inspections. Grade of inspection may be visual, close, or detailed.
(IEC 60079-14)

Past inspection results shall be available for review by inspector from the Verification Dossier.

Periodic Inspection
inspection of all electrical equipment, systems and installations carried out on a routine basis.

5.5.9.1 | Documentation

Inspections shall be documented via inspection test reports, with support of pictures.

Documentation formats shall comply with those found in IEC 60079-17 Clause 6 Inspection Tables.

Inspections shall be specific to the Ex-protection techniques used, with reference checks to IEC 60079-17 Clause 5 Additional inspection schedule requirements.

5.5.9.2 | Specific Inspection Checks

General

- Equipment has been selected & installed appropriately for the area classification requirements based on class division / zone, group, temperature class / max surface temperature, ingress protection, ambient temperature ranges.
- There shall be no signs or evidence of scratches, dings, pitting, cracks, discolouration, deformations.
- There is no damage or unauthorized modifications.
- There is no evidence of unauthorized modifications.

Cable / Conduit Entries

- Appropriate sealing;
- Barrier type cable gland or conduit seal is installed, if applicable.

'X' – Specific Conditions of Use

- Specific conditions of use (if applicable) are complied with.

5.5.9.3 | Sample Documentation

Table 1 – Inspection schedule for Ex "d", Ex "e", Ex "n" and Ex "t/tD"

	Check that: X = required for all types, n = type "n" only, t = type "t" and "tD" only	Ex "d"			Ex "e"			Ex "n" Ex"t/tD"		
		Grade of inspection								
		D	C	V	D	C	V	D	C	V
A	**GENERAL (ALL EQUIPMENT)**									
1	Equipment is appropriate to the EPL/Zone requirements of the location	X	X	X	X	X	X	X	X	X
2	Equipment group is correct	X	X		X	X		X	X	
3	Equipment temperature class is correct (only for gas)	X	X		X	X		n	n	
4	Equipment maximum surface temperature is correct							t	t	
5	Degree of protection (IP grade) of equipment is appropriate for the level of protection/group/conductivity	X	X	X	X	X	X	X	X	X
6	Equipment circuit identification is correct	X			X			X		
7	Equipment circuit identification is available	X	X	X	X	X	X	X	X	X
8	Enclosure, glass parts and glass-to-metal sealing gaskets and/or compounds are satisfactory	X	X	X	X	X	X	X	X	X
9	There is no damage or unauthorized modifications	X			X			X		
10	There is no evidence of unauthorized modifications		X	X		X	X		X	X
11	Bolts, cable entry devices (direct and indirect) and blanking elements are of the correct type and are complete and tight									
	– physical check	X	X		X	X		X	X	
	– visual check			X			X			X
12	Threaded covers on enclosures are of the correct type, are tight and secured									
	– physical check	X	X							
	– visual check			X						
13	Joint surfaces are clean and undamaged and gaskets, if any, are satisfactory and positioned correctly	X								

Refer to IEC 60079-17 Clause 6, Tables 1

5.5.10 | Repair, Overhaul, and Reclamation

The flameproof joints of the equipment are not intended to be repaired. Consult the manufacturer if dimensional information on the flameproof joints is necessary.

The main housing is manufactured in a controlled environment that eliminates moister at the factory and is only to be opened by the manufacturer's factory certified technicians at an authorized repair facility. Opening of the main housing will void all warranties.

NEVER open the main housing of the "D" Series unless authorized and trained and certified to do so by the manufacturer.

5.5.10.1 | Servicing

The main housing is manufactured in a controlled environment that eliminates moister at the factory and is only to be opened by the manufacturer's factory certified technicians at an authorized repair facility. Opening of the main housing will void all warranties.

NEVER open the main housing of the "D" Series unless authorized and trained and certified to do so by the manufacturer.

Consult the integrator and/or manufacturer.

Internal parts, components, accessories are not to be removed, replaced, or adjusted without consent of the manufacturer.

5.5.10.2 | Cells and Batteries

Cells and Batteries are non-serviceable / non-replaceable.
(Certain models may allow replacement)

Consult with the integrator and/or manufacturer.

5.5.11 | Decommissioning

The Equipment contains power source(s) and chemicals that are potentially dangerous to personnel and environment. ISO 14001 - Terminology

When the equipment has reached its end of life (use, function, or operation), please contact the integrator and/or manufacturer to return to have it safely recycled.

5.5.12 | Training

For Spectrum Camera Solutions training and installer certification please contact Spectrum Camera at:

SPECTRUM CAMERA SOLUTIONS
+1-281-769-8802
sales@spectrumcamera.com , and
support@spectrumcamera.com
8935 Almeda Genoa Rd. Bldg B, Houston, Texas, USA 77075

5.5.13 | Specialty Tools

5.5.14 | Standards

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

Ex Scheme / Region	Standards
IECEx (Global)	IEC 60079-0:2017 IEC 60079-1:2014 IEC 60079-31:2013
ATEX (EU)	EN 60079-0:2018 EN 60079-1:2014 EN 60079-31:2014
AEx (USA)	ANSI/ISA 60079-0:2013 ANSI/UL 60079-1:2015 ANSI/ISA 60079-31:2015
Zones (Canada)	CAN/CSA-C22.2 No. 60079-0:2015 CAN/CSA-C22.2 No. 60079-1:2016 CAN/CSA-C22.2 No. 60079-31:2015
IP (Ingress Protection)	IEC 60529:2013 EN 60529:1991 + A1:2000 + A2:2013 ANSI/IEC 60529:2004 CAN/CSA-C22.2 No. 60529:2016