



EyeCGas® 2.0

Intrinsically Safe OGI

EyeCGas® 2.0 – CERTIFIED OGI

CERTIFIED AND CLASSIFIED FOR HAZARDOUS LOCATIONS:
ATEX, IECEX, ANSI/ISA & CSA

Opgal's EyeCGas 2.0 camera is certified to the following standards:

ANSI/ISA-12.12.01-Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III Hazardous (Classified) Locations,

CSA C22.2 No. 213-M1987, First Edition: Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations.

IECEX EMT 19.0006X as Intrinsic Safety "ic", protection "n"

EMT19ATEX0009X

Ex II 3 GD

Ex ic nA nC IIC T6 Gc Tamb = -20 °C to +50 °C

Ex ic IIIC T85 °C Dc Tamb = -20 °C to +50 °C

IEC 60079-0:2017 Edition:7.0 Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-11:2011 Edition:6.0 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

IEC 60079-15:2010 Edition:4 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"





Utilizing certified equipment for use in hazardous location allows a higher level of safety and operability confidence. It increases operator's efficiency as it eliminates the need for getting a “hot permit” before entering the inspection area.

Moreover, the EyeCGas 2.0 OGI is approved as an Intrinsic Safety product, being under this principle, a protection method based on limiting the energy, in an electrical circuit, under normal or fault conditions such, that any spark or thermal effect produced is incapable of causing an ignition of a hazardous material.

What is a Hazardous Location?

The hazardous location classification system was designed to promote the safe use of electrical equipment in environments where fire or explosion hazards may exist due to the presence of ignitable concentrations of flammable gases or vapors. These locations are grouped according to the characteristics of the hazard that may exist and the likelihood of their existence.

Areas are classified according to the likelihood that they will produce a combustion hazard for the electronic device. In a hazardous area each apparatus must possess the appropriate approvals for safe operation in that area (i.e. to ensure that it does not become a source of ignition). Various methods of protection are used to meet this need. In the gas detection applications, hazardous areas are generally defined by a few factors: the type of gas that may be present, and the degree of probability that it will be present at any given instant.

Hazardous areas and certification standards are defined differently in various countries, this document will explain the ones that are relevant for the EyeCGas 2.0 camera.



For North America

EyeCGas 2.0 is certified for Class I and II, Division 2, and Class III Groups A-D, T6 According to CSA C22.2 No. 213-M1987 and ANSI/ISA-12.12.01

The NEC and CSA define hazardous locations by class and division

There are three classes:

Class I Locations are made hazardous by the presence of flammable gases, liquids or vapors.

Class II Locations are described as hazardous because of the presence of combustible dusts.

Class III Locations contain easily ignitable fibers or flyings.

Division refers to the likelihood that ignitable concentrations of flammable materials are present.

Division 1 Designates an environment where ignitable concentrations of flammable gases, liquids, vapors or dusts can exist some of the time or all the time under normal operating conditions or where easily ignitable fibers and flyings are manufactured, handled or used.

Division 2 Locations are areas where ignitable concentrations are not likely to exist under normal operating conditions or where Class III materials are stored or handled.

Hazardous classes are further defined by groups. Combustible materials are grouped by their relevant physical properties.

These groups include (but are not limited to):

Group A Acetylene

Group B Hydrogen

Group C Ethylene, carbon monoxide

Group D Propane, gasoline, naphtha, benzene, butane, ethyl alcohol, acetone, methane

Group E Metals including aluminum, magnesium (Div. 1 only)

Group F Carbonaceous dusts including coal, carbon black, coke

Group G Dusts not included in E and F including wood, plastics, flour, starch or grain dusts



| EyeCGas 2.0 Certification: | | Class I and II, Division 2, and Class III Groups A-D, T6 | |
|----------------------------|------------|--|---|
| Class I, II & III | Division 2 | Groups A-D | T6 |
| | | | T6 |
| | | Group A-D | <p>Maximum Surface Temperature Of Electrical Apparatus = 85°C Ignition Temperature Of Gas Or Vapor > 85°C <i>T6 marked equipment can be used in T5 – T1</i></p> <p>Typical gases for the different groups are: Group A Acetylene Group B Hydrogen Group C Ethylene, carbon monoxide Group D Propane, gasoline, naphtha, benzene, butane, ethyl alcohol, acetone, methane</p> |
| | | Division 2 | Where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operating conditions |
| | | Class I Division 1 & 2 | Flammable Gases, vapors or liquids A - Acetylene, B - Hydrogen, C - Ethylene, D - Propane |
| | | Class II Division 1 & 2 | F - Carbonaceous dusts, such as carbon & charcoal G - Non-conductive dusts, such as flour, grain, wood & plastic |
| | | Class III Division 1 & 2 | Non-ignitable fibres/flyings, such as cotton lint, flax & rayon |

International and Europe

EyeCGas 2.0 is certified for:
 IECEx EMT 19.0006X as Intrinsic Safety "ic", protection "n"
 EMT19ATEX0009X, Ex II 3 GD Ex ic nA nC IIC T6 Gc Tamb = -20°C to +50°C
 Ex ic IIIC T85 °C Dc Tamb = -20°C to +50°C

According to ATEX ratings for use in potentially explosive atmospheres:

IEC 60079-0:2017 Edition: 7.0 Explosive atmospheres - Part 0: Equipment - General requirements
 IEC 60079-11:2011 Edition: 6.0 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
 IEC 60079-15:2010 Edition: 4 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"



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Marking Element

Examples of Possible Values

Equipment Group

- I Mines
- II Above ground

Equipment Category

- 1 Gas, Vapor, Mist, Dust – Two Faults
- 2 Gas, Vapor, Mist, Dust – one Faults
- 3 Gas, Vapor, Mist, Dust – Normal

EX

Explosion protection

Protection concept

- nc Hermetic sealing, keep flammable gas out
- ia Intrinsically safe, limit energy of sparks & temp
- pz Pressurized, keep flammable gas out
- lc Intrinsic Safety
- nC Flame proof, contain the explosion

Gas Group

Gases are grouped based on MESG - Maximum Experimental Safe Gap (IEC 60079-1A) and the MIC - Minimum Ignition Current (IEC 60079-3)

- II Gas/Vapor (broken in IIA, IIB, IIC)
- III Dust (broken in IIA, IIB, IIC)

Temperature Classification

Equipment maximum surface temp.
 (T6 is the most stringent, as T6 covers T1-T5)
 T1 - 450°, T2 - 300°, T3 - 200°, T4 - 135°, T5 - 100°, T6 - 85°



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Ex II 3 GD Ex ic nA nC IIC T6 Gc Ex ic IIIC T85 °C Dc Tamb = -20 °C to +50 °C

| | | | | | | | | | | | | | | |
|----|----|---|----|----|----|----|-----|----|----|----|------|--------|------|--|
| Ex | II | 3 | GD | ic | nA | nC | IIC | T6 | Gc | ic | IIIC | T85 °C | Dc | Tamb = -20 °C to +50 °C |
| | | | | | | | | | | | | | | Ambient temperature Range -20°C to +50°C |
| | | | | | | | | | | | | | DC | Enclosure contains equipment meeting "Gc" requirements without presurization, used in Group III Hazardous Locations |
| | | | | | | | | | | | | T85 °C | | Minimum Surface Temperature |
| | | | | | | | | | | | | | IIIC | Combustible Dust Surface Conductive |
| | | | | | | | | | | | | | ic | Intrinsic Safety - with reference on EN/IEC 60079-11. Protection concept - Electrical - Gas and Dust |
| | | | | | | | | | | | | | Gc | Enclosure contains equipment meeting "Gc" requirements without presurization, used in Group II Hazardous Locations |
| | | | | | | | | | | | | | T6 | Device surface temperature will not exceed 85° T6 marked equipment can be used in T5 – T1 (100° - 450°) |
| | | | | | | | | | | | | | IIC | Protected for gases of Gas group IIC that includes groups IIA & IIB Typical gases for the different groups are: IIA- Acetic Acid, Acetone, Ammonia, Butane, Ethanol, Kerosene, Methane, Methanol, Propane, Iso-propyl alcohol, Toluene, Xylene IIB Ethylene, MEK, n-propyl alcohol, THF IIC Acetylene, Hydrogen |
| | | | | | | | | | | | | | nC | Protection concept Gases, Vapors & Mists: Electrical: Contains the explosion, prevents propagation |
| | | | | | | | | | | | | | nA | Protection concept - Gases, Vapors & Mists: Electrical of No Arcs, sparks or hot surfaces |
| | | | | | | | | | | | | | ic | Intrinsic Safety - with reference on EN/IEC 60079-11. Protection concept - Electrical - Gas and Dust |
| | | | | | | | | | | | | | GD | Equipment for Gas and Dust |
| | | | | | | | | | | | | | 3 | Normal protection Category 3 (non-mining) for Zone 2 with environment of Gas, Vapor Mists and Dusts |
| | | | | | | | | | | | | | II | Group II (chemical industries, refineries, etc.) |
| | | | | | | | | | | | | | Ex | Explosion-protected equipment, certified to European ATEX |

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element
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REQUEST
DEMO

