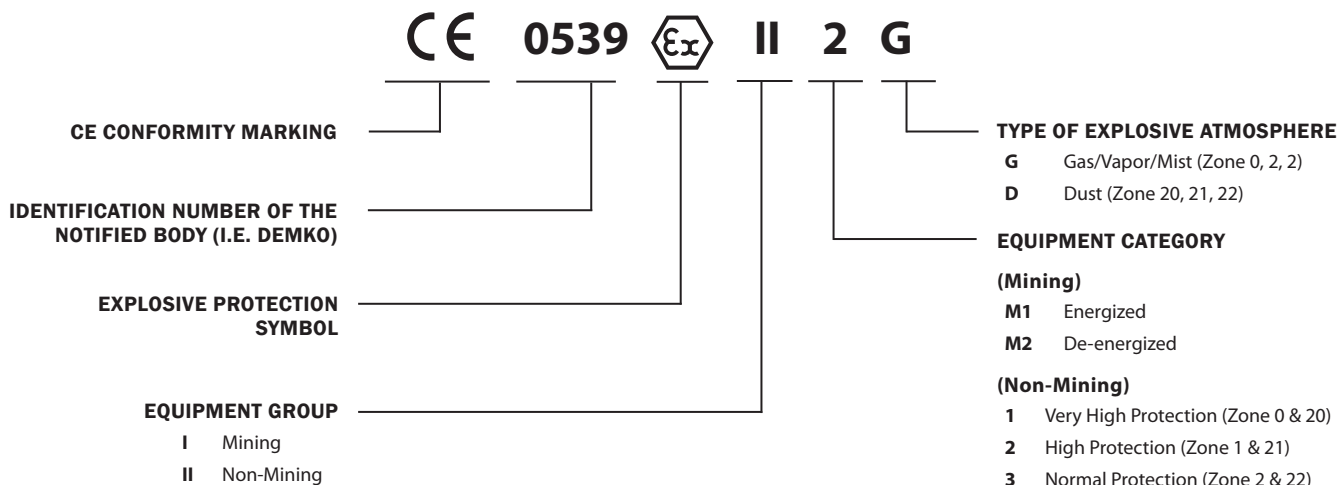
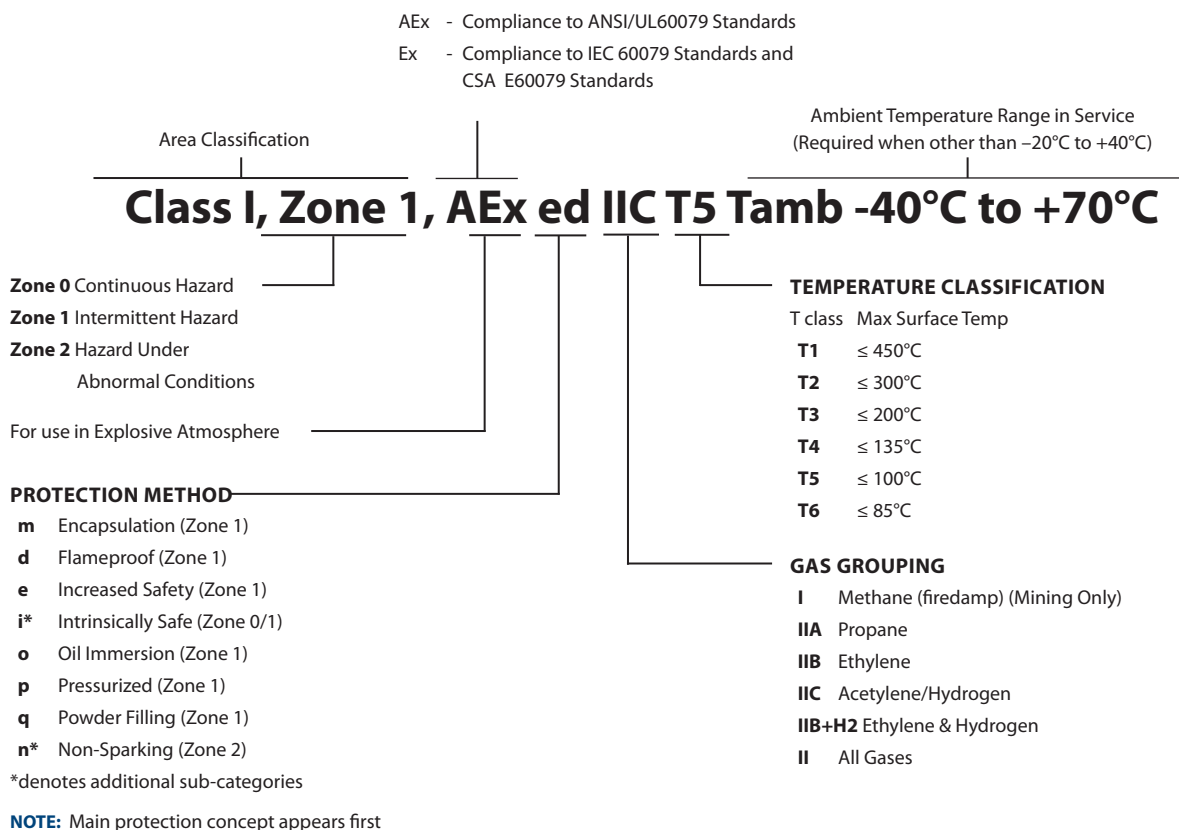


## Equipment Marking

### ATEX Directive



### NEC 505, CEC Sec.18, IEC, CENELEC



**METHODS OF PROTECTION**

Protection Method	Permitted Use	ATEX Equipment Category	Certification Documents			
			UL	CSA	CENELEC	IEC
Explosionproof	Division 1	--	ANSI/UL 1203	CSA-30	--	--
Intrinsically Safe (2 Fault)	Division 1	--	ANSI/UL 913	CSA-157	--	--
Purge/Pressurized (Type X or Y)	Division 1	--	ANSI/NFPA 496	ANSI/NFPA 496	--	--
Nonincendive	Division 2	--	UL 1604	CSA-213	--	--
Non-sparking device	Division 2	--	UL 1604	CSA-213	--	--
Purge/Pressurized (Type Z)	Division 2	--	ANSI/NFPA 496	ANSI/NFPA 496	--	--
Hermetically sealed	Division 2	--	UL 1604	CSA-213	--	--
Any Class I, Division 1 Method	Division 2	--	--	--	--	--

Protection Method	Permitted Use	ATEX Equipment Category	Certification Documents			
			UL (AEx)	CSA (Ex)	CENELEC (EEx)	IEC (Ex)
Intrinsically Safe 'ia' (2 Fault)	Zone 0	M1 & 1	ANSI/UL 60079-11	CAN/CSA-E60079-11	EN 60079-11 & -25	IEC 60 079-11
Flameproof 'd'	Zone 1	M2 & 2	ANSI/UL 60079-1	CAN/CSA-E60079-1	EN 60079-1	IEC 60 079-1
Increased Safety 'e'	Zone 1	M2 & 2	ANSI/UL 60079-7	CAN/CSA-E60079-7	EN 60079-7	IEC 60 079-7
Intrinsically Safe 'ib' (1 Fault)	Zone 1	M2 & 2	ANSI/UL 60079-11	CAN/CSA-E60079-11	EN 60079-11 & -25	IEC 60 079-11
Encapsulation 'm'	Zone 1	2	ANSI/UL 60079-18	CAN/CSA-E79-18	EN 60079-18	IEC 60 079-18
Oil Immersion 'o'	Zone 1	2	ANSI/UL 60079-6	CAN/CSA-E60079-6	EN 60079-6	IEC 60 079-6
Purged/Pressurized 'p'	Zone 1	2	ANSI/NFPA 496	CAN/CSA-E60079-2	EN 60079-2	IEC 60 079-2
Powder filling 'q'	Zone 1	2	ANSI/UL 60079-5	CAN/CSA-E60079-5	EN 60079-5	IEC 60 079-5
Any Zone 0 Method	Zone 1	--	--	--	--	--
Non-sparking 'nA'	Zone 2	3	ANSI/UL 60079-15	CAN/CSA-E60079-15	EN 60079-15	IEC 60 079-15
Hermetically sealed 'nC'	Zone 2	3	ANSI/UL 60079-15	CAN/CSA-E60079-15	EN 60079-15	IEC 60 079-15
Nonincendive 'nC'	Zone 2	3	ANSI/UL 60079-15	CAN/CSA-E60079-15	EN 60079-15	IEC 60 079-15
Restricted breathing 'nR'	Zone 2	3	ANSI/UL 60079-15	CAN/CSA-E60079-15	EN 60079-15	IEC 60 079-15
Any Zone 0 or 1 Method	Zone 2	--	--	--	--	--

**ATEX EQUIPMENT CLASSIFICATIONS**

Equipment Group	Equipment Category	Atmosphere	Level of Protection	Required Protection
I	M1	Methane & Dust	Very High	Two faults, remain energized and functioning
I	M2		High	Severe normal operations, de-energize in explosive atmosphere
II	1	Gas, Vapors, Mist & Dust	Very High	Two faults, remain energized and functioning
II	2		High	One fault
II	3		Low	Normal operation

**AREA CLASSIFICATIONS**

NEC 500	Class I	Potentially explosive gas or vapor
	Class II	Potentially explosive dust
	Class III	Potentially explosive fiber
	Division 1	Potentially explosive substance present under normal operating conditions
	Division 2	Potentially explosive substance present under abnormal operating conditions
NEC 505, IEC, Europe	Zone 0	Explosive gas present continuously
	Zone 1	Explosive gas present occasionally under normal operating conditions
	Zone 2	Explosive gas present for short period
	Zone 20	Explosive dust present continuously
	Zone 21	Explosive dust present occasionally under normal operating conditions
	Zone 22	Explosive dust present for short period

### INGRESS PROTECTION (IP XX) CODES - IEC60529

First Digit	Protection Against Solid Bodies	Second Digit	Protection Against Liquids
0	No protection	0	No protection
1	Objects > 50mm	1	Vertically dripping water
2	Objects > 12mm	2	75-90 Deg. dripping water
3	Objects > 2.5mm	3	Sprayed water
4	Object > 1mm	4	Splashed water
5	Dust Protected	5	Water jets
6	Dust-tight	6	Heavy seas
7	--	7	Effects of immersion
8	--	8	Indefinite immersion

### NEMA TYPE DESIGNATIONS

Enclosure Type	Intended Use and Description
1	Indoor use primarily to provide a degree of protection against limited amounts of falling dirt.
2	Indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.
3	Outdoor use primarily to provide a degree of protection against rain, sleet, wind blown dust and damage from external ice formation.
3R	Outdoor use primarily to provide a degree of protection against rain, sleet, and damage from external ice formation.
3S	Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and to provide for operation of external mechanisms when ice laden.
4	Indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.
4X	Indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation.
5	Indoor use primarily to provide a degree of protection against settling airborne dust, falling dirt, and dripping noncorrosive liquids.
6	Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, and the entry of water during occasional temporary submersion at limited depth and damage from external ice formation.
6P	Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth and damage from external ice formation.
7	Indoor use in locations classified as Class I, Division 1, Groups A, B, C or D hazardous locations as defined in the National Electric Code (NFPA 70) (Commonly referred to as explosion-proof).
8	Indoor or outdoor use in locations classified as Class I, Division 2, Groups A, B, C or D hazardous locations as defined in the National Electric Code (NFPA 70) (commonly referred to as oil immersed).
9	Indoor use in locations classified as Class II, Division 1, Groups E, F and G hazardous locations as defined in the National Electric Code (NFPA 70) (commonly referred to as dust-ignition proof).
10	Intended to meet the applicable requirements of the Mine Safety and Health Administration (MSHA).
12 and 12K	Indoor use primarily to provide a degree of protection against circulating dust, falling dirt, and dripping noncorrosive liquids.
13	Indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and noncorrosive coolant

### ATMOSPHERE GROUPS

Gas, Dust, Fiber	NEC 505, IEC, Europe	NEC 500
Acetylene	Group IIC	Group A
Hydrogen	Group IIC (IIB+H2)	Group B
Ethylene	Group IIB	Group C
Propane	Group IIA	Group D
Methane	Group I (firedamp)	Group D
Metal Dust	None	Group E
Coal Dust	None	Group F
Grain Dust	None	Group G
Fibers	None	None

### TEMPERATURE CLASSES

Maximum Surface Temperature	NEC 505, IEC, Europe	NEC 500
450° C	T1	T1
300° C	T2	T2
280° C	---	T2A
260° C	---	T2B
230° C	---	T2C
215° C	---	T2D
200° C	T3	T3
180° C	---	T3A
165° C	---	T3B
160° C	---	T3C
135° C	T4	T4
120° C	---	T4A
100° C	T5	T5
85° C	T6	T6

**MINIMUM SPACING BETWEEN CENTERS OF CONDUIT OR CABLE ENTRIES**

NPT [metric]	3 [M75]	2-1/2 [M63]	2 [M50]	1-1/2 [M40]	1-1/4 [M32]	1 [M25]	3/4 [M20]	1/2 [M16]
1/2 [M16]	3 [77mm]	2-5/8 [68mm]	2-3/8 [61mm]	2 [51mm]	1-7/8 [48mm]	1-5/8 [42mm]	1-3/8 [35mm]	1-1/4 [32mm]
3/4 [M20]	3-1/8 [80mm]	2-3/4 [70mm]	2-1/2 [64mm]	2-1/8 [54mm]	2 [51mm]	1-3/4 [45mm]	1-1/2 [38mm]	1-3/8 [35mm]
1 [M25]	3-1/4 [83mm]	2-7/8 [74mm]	2-3/4 [70mm]	2-1/4 [58mm]	2-1/8 [54mm]	1-7/8 [48mm]	1-3/4 [45mm]	1-5/8 [42mm]
1-1/4 [M32]	3-1/2 [89mm]	3-1/8 [80mm]	2-7/8 [74mm]	2-1/2 [64mm]	2-3/8 [61mm]	2-1/8 [54mm]	2 [51mm]	1-7/8 [48mm]
1-1/2 [M40]	3-5/8 [92mm]	3-1/4 [83mm]	3 [77mm]	2-5/8 [68mm]	2-1/2 [64mm]	2-1/4 [58mm]	2-1/8 [54mm]	2 [51mm]
2 [M50]	3-5/8 [92mm]	3-5/8 [92mm]	3-3/8 [86mm]	3 [77mm]	2-7/8 [74mm]	2-3/4 [70mm]	2-1/2 [64mm]	2-3/8 [61mm]
2-1/2 [M63]	3-5/8 [92mm]	3-7/8 [99mm]	3-5/8 [92mm]	3-1/4 [83mm]	3-1/8 [80mm]	2-7/8 [74mm]	2-3/4 [70mm]	2-5/8 [68mm]
3 [M75]	4-5/8 [118mm]	3-5/8 [92mm]	3-5/8 [92mm]	3-5/8 [92mm]	3-1/2 [89mm]	3-1/4 [83mm]	3-1/8 [80mm]	3 [77mm]

**MINIMUM DISTANCE FROM CONDUIT/CABLE CENTER TO EDGE OF BOX/ OPENING**

NPT [metric]	3 [M75]	2-1/2 [M63]	2 [M50]	1-1/2 [M40]	1-1/4 [M32]	1 [M25]	3/4 [M20]	1/2 [M16]
Min. Distance	1-3/4 [45mm]	1-7/16 [37mm]	1-3/16 [31mm]	1 [26mm]	7/8 [23mm]	11/16 [18mm]	9/16 [14mm]	1/2 [13mm]

**MINIMUM WIRE BENDING REQUIREMENTS**

AWG/MCM (mm <sup>2</sup> )	16 (1.5)	14 (2.5)	12 (4)	10 (6)	8 (10)	6 (16)	4 (25)	2 (35)
Min. Distance	1-1/2 [38mm]	1-1/2 [38mm]	1-1/2 [38mm]	1-1/2 [38mm]	2 [51mm]	3 [77mm]	3-1/2 [89mm]	5-1/2 [140mm]

AWG/MCM (mm <sup>2</sup> )	1/0 (50)	2/0 (70)	3/0 (95)	4/0 (120)	250 (150)	350 (185)	400 (240)	500 (300)
Min. Distance	6 [152mm]	6-1/2 [165mm]	7 [178mm]	8-1/2 [216mm]	10 [254mm]	12 [305mm]	13 [330mm]	14 [356mm]

**ELECTRICAL WIRE CONVERSION**

AWG/MCM	22	20	18	16	14	12	10	8	6	4	2
Metric (mm <sup>2</sup> )	0.50	0.75	1.0	1.5	2.5	4	6	10	16	25	35

AWG/MCM	1/0	2/0	3/0	4/0	250	350	400	500	750	1000	1500
Metric (mm <sup>2</sup> )	50	70	95	120	150	185	240	300	400	625	800

**NOTES:**

- The minimum spacing and distance tables provided for conduit/cable fittings and entries are based on maintaining a minimum wall section. They do not take into consideration wrench clearances and locknut turning radius. Consult conduit/cable fitting manufacturer for suggested wrench clearances or spacing.

This information is compiled from data which we believe is reliable and is given in good faith. Since the methods of application and condition under which our products are used are beyond our control, we are not able to guarantee the application and/or use of same. The user assumes all risks and liability in connection with the application and use of our products.