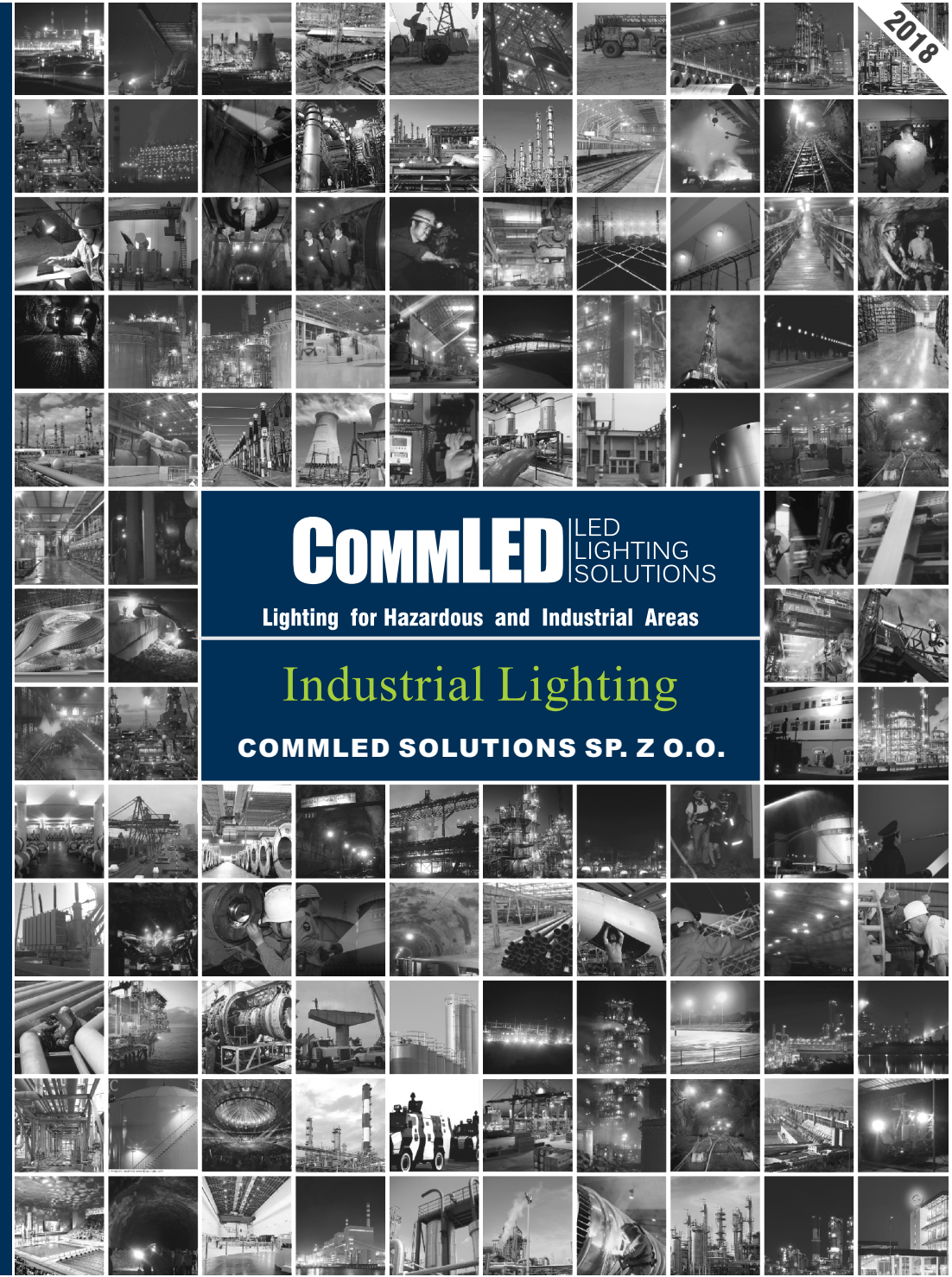


2018



COMMLED | LED LIGHTING SOLUTIONS

Lighting for Hazardous and Industrial Areas

Industrial Lighting

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■ Low height region of pedestrian intensive, like offshore oil, chemical device platform, oil tankers of various channels, cabin, etc.

■ EX Mark: Ⓜ II 2G Ex de op is IIC T5 Gb
Ⓜ II 2D Ex op is tb IIIC T95°C Db, IP66
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CS5401



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces Fluorescent lamp
CS5401—L2×10	90~264VAC	2×10W	1800	6.6	class I, zone1 & zone2, zone21 & zone22	780×180×110	2×20W
CS5401—L2×20		2×20W	3600	10.7		1390×180×110	2×40W

■ Suitable for oil production platform, oil refining platform, living platform, hazardous chemicals ships, shore machines and other hazardous areas.

■ EX Mark: Ex nR IIC T6 Gc
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2"

CS5402B



Type	Rated voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces energy saving lamp
CS5402B—L20	120~240VAC	20W	2200	3.2	zone2	700×182×68	50W
CS5402B—L30		30W	3300	3.2			50~70W
CS5402B—L40		40W	4400	3.4			100W
CS5402B—L60		60W	6600	4.5		150W	
CS5402B—L80	220~240VAC	80W	8800	4.7		1150×182×68	175W



■ Equipment area, stacking and stockyard, like petrochemical plants, chemical plants, pharmaceutical plants, etc.

■ EX Mark: Ⓜ II 2 G Ex d IIB T6 Gb
Ⓜ II 2 D Ex tb IIIC T80°C Db, IP66
■ Cable Entry: G3/4"

CS9101



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9101—L25H	90~305VAC	25W	2800	9	class I, zone1 & zone2, zone21 & zone22	326×370×88	70W
CS9101—L40H		40W	4200				100W
CS9101—L60H		60W	5900				150W
CS9101—L80H		80W	7200				175W
CS9101—L25L	18~43VAC/ 18~55VDC	25W	2800	9		326×370×88	70W
CS9101—L40L		40W	4200				100W

■ Low height region like petrochemical plants, chemical plants, power distribution room, cable channel of power plant, etc.

■ EX Mark: Ex de IIC T6 Gb

CS9200



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces energy saving lamp
CS9200—L6	90~264VAC	6W	500	1.3	class I, zone1 & zone2	Ø150×140	18W
CS9200—L12		12W	1000				22W
CS9200—L20		20W	1500				45W
CS9200—L6D	18~43VAC/ 18~55VDC	6W	500	1.3		Ø150×140	18W
CS9200—L12D		12W	1000				22W



■ Low and medium installation height region, like oil production, oil refining equipment platforms, chemical plants, petrochemical plants, pharmaceutical plants, polishing plants, etc.

■ EX Mark: Ⓜ II 2 G Ex d IIB T6 Gb
Ⓜ II 2 D Ex tb IIIC T80°C Db, IP66
■ Cable Entry: G3/4"

CS9303



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9303—L25H	90~264VAC	25W	2400	4	class I, zone1 & zone2, zone21 & zone22	Ø240×160	50~70W
CS9303—L40H		40W	4300				100W
CS9303—L60H		60W	5800				150W
CS9303—L25L	18~43VAC/ 18~55VDC	25W	2400	4		Ø240×160	50~70W
CS9303—L40L		40W	4300				100W

We are convinced that our leading role in future will also contribute to your success.

■ Suitable for oilfield, chemical industry, offshore drilling platform, ship, cruise, steel industry, petroleum etc.

■ EX Mark: Ⓜ II 2G Ex db e IIC T6/ T5/ T4 Gb
Ⓜ II 2D Ex tb IIIC T80°C/ T95°C/ T130°C Db, IP66
■ Cable Entry: M20×1.5, NPT1/2" (P type/S type)
M25×1.5, NPT3/4", G3/4" (P type)

CS9306P

Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9306P—L30	90~264VAC	30W	3500	4.2	class I, zone1 & zone2, zone21 & zone22	Ø230×270	70W
CS9306P—L40		40W	4600				100W
CS9306P—L50		50W	5600				100~150W
CS9306P—L60		60W	7000				150W
CS9306P—L80		80W	8800				175W
CS9306P—L30L	18~43VAC/ 18~55VDC	30W	3500	4.2	Ø230×270	70W	
CS9306P—L40L		40W	4600			100W	
CS9306P—L50L		50W	5600			100~150W	
CS9306P—L60L		60W	7000			150W	
CS9306P—L80L		80W	8800			175W	
CS9306S—L30	90~264VAC	30W	3500	4.9	class I, zone1 & zone2, zone21 & zone22	245×260×270	70W
CS9306S—L40		40W	4600				100W
CS9306S—L50		50W	5600				100~150W
CS9306S—L60		60W	6900				150W
CS9306S—L80		80W	8800				175W
CS9306S—L30L	18~43VAC/ 18~55VDC	30W	3500	4.9	245×260×270	70W	
CS9306S—L40L		40W	4600			100W	
CS9306S—L50L		50W	5600			100~150W	
CS9306S—L60L		60W	6900			150W	
CS9306S—L80L		80W	8800			175W	

*The lamp can be matched with a lens: 18°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for oilfield, chemical industry, offshore drilling platform, ship, cruise, steel industry, petroleum etc.

■ EX Mark: Ⓜ II 2G Ex db e IIC T4/ T3 Gb
Ⓜ II 2D Ex tb IIIC T130°C/ T195°C Db, IP66
■ Cable Entry: M20×1.5, NPT1/2" (P type/S type)
M25×1.5, NPT3/4", G3/4" (P type)

CS9307P

Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9307P—L100	90~264VAC	100W	11500	6.4	class I, zone1 & zone2, zone21 & zone22	Ø300×290	250W
CS9307P—L120		120W	13200				250~400W
CS9307P—L150		150W	16800				400W
CS9307P—L200		200W	23700				400~600W
CS9307P—L240		240W	29100				600~800W
CS9307S—L100	90~264VAC	100W	11800	7.5	class I, zone1 & zone2, zone21 & zone22	295×330×350	250W
CS9307S—L120		120W	13600				250~400W
CS9307S—L150		150W	17300				400W
CS9307S—L200		200W	23300				400~600W
CS9307S—L240		240W	28400				600~800W

*The lamp can be matched with a lens: 18°/25°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for oil drilling, refining platform, chemical petrol factory, pharmaceutical factory, polishing factory, etc.

■ EX Mark: Ex d IIC T4/ T5/ T6 Gb
Ex ID A21 T130°C/ T95°C/ T80°C
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CS9308P

Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9308P—L30	90~264VAC	30W	3500	3	class I, zone1 & zone2, zone21 & zone22	Ø230×170	70W
CS9308P—L40		40W	4600				100W
CS9308P—L50		50W	5600				100~150W
CS9308P—L60		60W	7000				150W
CS9308P—L80		80W	8800				175W
CS9308P—L30D	185~264VAC	30W	3500	3	Ø230×170	70W	
CS9308P—L40D		40W	4600			100W	
CS9308P—L50D		50W	5600			100~150W	
CS9308P—L60D		60W	7000			150W	
CS9308P—L80D		80W	8800			175W	

*The lamp can be matched with a lens: 18°/25°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for oil drilling, refining platform, chemical petrol factory, pharmaceutical factory, polishing factory, etc.

■ EX Mark: Ex d IIC T4/ T5/ T6 Gb
Ex ID A21 T130°C/ T95°C/ T80°C
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CS9308S

Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9308S—L30	90~264VAC	30W	3500	3.7	class I, zone1 & zone2, zone21 & zone22	180×230×270	70W
CS9308S—L40		40W	4600				100W
CS9308S—L50		50W	5600				100~150W
CS9308S—L60		60W	6900				150W
CS9308S—L80		80W	8800				175W
CS9308S—L30D	185~264VAC	30W	3500	3.7	180×230×270	70W	
CS9308S—L40D		40W	4600			100W	
CS9308S—L50D		50W	5600			100~150W	
CS9308S—L60D		60W	6900			150W	
CS9308S—L80D		80W	8800			175W	

*The lamp can be matched with a lens: 18°/25°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for ultra-high area, high temperature and high humidity area and vibration environment, like docks, offshore airports, container yard of transfer station, stockyard, ultra-high plant, etc.

■ EX Mark: Ⓜ II 3 G Ex nR IIC T4/ T3 Gc
Ⓜ II 2 D Ex tb IIIC T130°C/ T195°C Db
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CS9309S

Type	Rated voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS9309S—L240	100~277VAC	240W	27200	13	602×250×340	600W
CS9309S—L300		300W	34600			600~1000W
CS9309S—L400		400W	46600			1000W
CS9309S—L480		480W	56800			>1000W
CS9309S—L240—18°		240W	23000			600W
CS9309S—L300—18°	100~277VAC	300W	29200	14	602×270×340	600~1000W
CS9309S—L400—25°		400W	43000			1000W
CS9309S—L480—25°		480W	51500			>1000W

*The lamp can be matched with a lens: 18°/25°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for high installation height in moist corrosive environment, such as offshore drilling platform, oil Terminal, etc. Ideal to be used in the environment of flammable gas, steam and dust environment, such as petrochemical plant, chemical Plant, coal washery, pharmaceutical factory, etc.

■ EX Mark: Ⓜ II 2G Ex db IIC T5/ T4/ T3 Gb
Ⓜ II 2D Ex tb IIIC T95°C/ T130°C/ T195°C Db
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CS9700

Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9700—L60	90~305VAC	60W	6800	6.3	class I, zone1 & zone2, zone21 & zone22	300×202×332	150W
CS9700—L80		80W	8900				175W
CS9700—L100		100W	11600				250W
CS9700—L120		120W	13400				250~400W
CS9700—L150		150W	16100				400W
CS9700—L200		200W	22700				>400W

*Other beam angle available: 40°, 60°, 80°, 100°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Used as a junction box and accessory for lighting equipment installed in hazardous areas like petrochemical plants, chemical plants, pharmaceutical factory, polishing plant, etc.

■ EX Mark: Ⓜ II 2 G Ex db IIC T6 Gb
Ⓜ II 2 D Ex tb IIIC T80°C Db, IP66
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CS01A/ CSD01B

Type	Rated voltage (V)	Current (A)	Net weight (kg)	Application	Size (mm)	Inlet Thread
CS01A	≤500V	20	1.2	class I, zone1 & zone2, zone21 & zone22	185×185×75	G3/4"
CS01B						M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"
CS02	≤500V	20	0.8	class I, zone1 & zone2, zone21 & zone22	116×116×76	M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"



■ Flood light in this series can be used for stationary local illumination in coal mines and in other places on explosive hazardous gas(methane-mixtures), coal dust, etc. like coal mine tunnel, cavern, substations, pump room, etc.

■ EX Mark: Ex d I Mb
■ Cable Entry: G3/4"



CS24/127L(A)
CS35/127L(A)
CS48/127L(A)



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS24/127L(A)	90~264VAC	24W	2000	4.1	422×177×77	70W
CS35/127L(A)		35W	3200			100W
CS48/127L(A)		48W	3900			100~150W



■ Flood light in this series can be used for stationary local illumination in coal mines and in other places on explosive hazardous gas(methane-mixtures), coal dust, etc. like coal mine tunnel, cavern, substations, pump room, etc.

■ EX Mark: Ex d I Mb
■ Cable Entry: G3/4"



CS20/127L(C)
CS30/127L(C)
CS45/127L(C)



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS20/127L(C)—P	90~264VAC	20W	1950	2.7	Ø230×180	50W
CS30/127L(C)—P		30W	2750			70W
CS45/127L(C)—P		45W	4100			100W



■ Flood light in this series can be used for stationary local illumination in coal mines and in other places on explosive hazardous gas(methane-mixtures), coal dust, etc. like coal mine tunnel, cavern, substations, pump room, etc.

■ EX Mark: Ex d I Mb
■ Cable Entry: G3/4"



CS20/127L(C)
CS30/127L(C)
CS45/127L(C)



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS20/127L(C)—S	90~264VAC	20W	1950	3.2	218×230×268	50W
CS30/127L(C)—S		30W	2750			70W
CS45/127L(C)—S		45W	4100			100W



■ Flood light in this series can be used for stationary local illumination in coal mines and in other places on explosive hazardous gas(methane-mixtures), coal dust, etc. like coal mine tunnel, cavern, substations, pump room, etc.

■ EX Mark: Ex d I Mb
■ Cable Entry: G3/4"



CS30/127L(A)



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS30/127L(A)	90~264VAC	30W	2600	4.4	Ø200×218	70W

*Material is 304 stainless steel

■ Power plants, substations, chemical plants, metallurgical plants and other indoor and outdoor lighting. ■ Cable Entry: M16



CS8101



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS8101—L25	90~264VAC	25W	2800	4.7	300×300×75	70W
CS8101—L40		40W	4200			100W
CS8101—L60		60W	5900			150W
CS8101—L80		80W	7200			175W
CS8101—L25D	18~43VAC/ 18~55VDC	25W	2800	4.7	300×300×75	70W
CS8101—L40D		40W	4200			100W
CS8101—L60D		60W	5900			150W
CS8101—L80D		80W	7200			175W

■ Power plants, substations, chemical plants, metallurgical plants, docks and other indoor and outdoor lighting. ■ Cable Entry: M16



CS8102



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS8102—L80	90~305VAC	80W	8800	5.2	322×363×150	175W~250W
CS8102—L100		100W	11000			250W
CS8102—L120		120W	12200	6.2	417×363×150	250W~400W
CS8102—L150		150W	16500			400W
CS8102—L180		180W	18900	7.2	512×363×150	400W~600W
CS8102—L240		240W	25200			600W
CS8102—L300		300W	31500	8.2	607×363×150	600~1000W

*The lamp can be matched with a lens: 80°×100°.

■ Power plants, substations, chemical plants, metallurgical plants, docks and other indoor and outdoor lighting. ■ Cable Entry: M20



CS8302



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS8302—L80	90~305VAC	80W	7600	8	380×270×427	150W
CS8302—L100		100W	9000			175W
CS8302—L120		120W	10200			175~250W
CS8302—L150		150W	11250			250~400W

*The lamp can be matched with a lens: 5°(80~120W), 50°(80~150W). CCT: 3000K, 4000K, 5000K

■ Suitable for plant lighting to high, medium and low installation height region with demanding high temperature performance. ■ Cable Entry: G3/4"



CS8501



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS8501—L80	90~305VAC	80W	7600	7.5	Ø380×270	150W
CS8501—L100		100W	9000			175W
CS8501—L120		120W	10200			175~250W
CS8501—L150		150W	11250			250~400W

*The lamp can be matched with a lens: 50°, 65°. CCT: 3000K, 4000K, 5000K

■ Suitable for oil drilling, refining platform, chemical petrol factory, pharmaceutical factory, polishing factory, etc.



CS8502



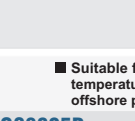



Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
CS8502—L60	90~305VAC	60W	7000	2.2	Ø230×175	150W
CS8502—L80		80W	8800	2.6	Ø230×180	175W
CS8502—L100		100W	11600	4.8	Ø300×235	250W
CS8502—L120		120W	12700			250~400W
CS8502—L150		150W	16800	400W		
CS8502—L200		200W	23700	400W~600W		

*The lamp can be matched with a lens: 25°, 40°, 60°, 80°, 100°, 200°. CCT: 3000K, 4000K, 5000K

■ Suitable for low installation height region in high temperature, high humidity and vibration corrosive environments, like offshore platforms, ship transport corridors, passages, etc.




■ Cable Entry: M20×1.5, NPT1/2" (P type/S type)
M25×1.5, NPT3/4", G3/4" (P type)

CS8603P	Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
	CS8603P—L30	90~305VAC	30W	3500	4.2	Ø230×270	70W
	CS8603P—L40		40W	4600			100W
	CS8603P—L50		50W	5600			100~150W
	CS8603P—L60		60W	7000			150W
	CS8603P—L80		80W	8800			175W
	CS8603S—L30D	18~43VAC/ 18~55VDC	30W	3500	4.2	Ø230×270	70W
	CS8603S—L40D		40W	4600			100W
	CS8603S—L50D		50W	5600			100~150W
	CS8603S—L60D		60W	7000			150W
	CS8603S—L80D		80W	8800			175W
	CS8603S—L30	90~305VAC	30W	3500	4.9	245×260×270	70W
	CS8603S—L40		40W	4600			100W
	CS8603S—L50		50W	5600			100~150W
	CS8603S—L60		60W	6900			150W
	CS8603S—L80		80W	8800			175W
	CS8603S—L30D	18~43VAC/ 18~55VDC	30W	3500	4.9	245×260×270	70W
	CS8603S—L40D		40W	4600			100W
	CS8603S—L50D		50W	5600			100~150W
	CS8603S—L60D		60W	6900			150W
	CS8603S—L80D		80W	8800			175W

*The lamp can be matched with a lens: 18°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for low installation height region in high temperature, high humidity and vibration environment, like offshore platforms, ship transport corridors, passages, etc.



■ Cable Entry: M20×1.5, NPT1/2" (P type/S type)
M25×1.5, NPT3/4", G3/4" (P type)

CS8605P	Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
	CS8605P—L100	90~305VAC	100W	11500	6.4	Ø300×290	250W
	CS8605P—L120		120W	13200			250~400W
	CS8605P—L150		150W	16800			400W
	CS8605P—L200		200W	23700			400~600W
	CS8605P—L240		240W	29100			600~800W
	CS8605S—L100	90~305VAC	100W	11800	7.5	295×330×350	250W
	CS8605S—L120		120W	13600			250~400W
	CS8605S—L150		150W	17300			400W
	CS8605S—L200		200W	23300			400~600W
	CS8605S—L240		240W	28400			600~800W
	CS8605S—L100—18°	90~305VAC	100W	10000	8	295×350×350	250W
	CS8605S—L120—18°		120W	11500			250~400W
	CS8605S—L150—18°		150W	14600			400W
	CS8605S—L200—25°		200W	21500			400~600W
	CS8605S—L240—25°		240W	25500			600~800W

*The lamp can be matched with a lens: 18°/25°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for ultra-high area, high temperature and high humidity area and vibration environment, like docks, offshore airports, container yard of transfer station, stockyard, ultra-high plant, etc.



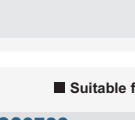

■ Cable Entry: M20×1.5, M25×1.5, NPT3/4",
NPT1/2", G3/4"

CS8606S	Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
	CS8606S—L240	90~305VAC	240W	27200	13	602×250×340	600W
	CS8606S—L300		300W	34600			600~1000W
	CS8606S—L400		400W	46600			1000W
	CS8606S—L480		480W	56800			>1000W
	CS8606S—L240—18°	90~305VAC	240W	23000	14	602×270×340	600W
	CS8606S—L300—18°		300W	29200			600~1000W
	CS8606S—L400—25°		400W	43000			1000W
	CS8606S—L480—25°		480W	51500			>1000W
	CS8606S—L480—25°		480W	51500			>1000W

*The lamp can be matched with a lens: 18°/25°, 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K


■ Low installation height region in high temperature and humidity and moderately corrosive environments, like Power plants, chemical plants, metallurgical plants transport corridors, etc.

■ Cable Entry: G3/4", M25×1.5


CS8607P	Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
	CS8607P—L30	90~264VAC	30W	3500	3	Ø230×170	70W
	CS8607P—L40		40W	4600			100W
	CS8607P—L50		50W	5600			100~150W
	CS8607P—L60		60W	7000			150W
	CS8607P—L80		80W	8800			175W
	CS8607S—L30D	185~264VAC	30W	3500	3	Ø230×170	70W
	CS8607S—L40D		40W	4600			100W
	CS8607S—L50D		50W	5600			100~150W
	CS8607S—L60D		60W	7000			150W
	CS8607S—L80D		80W	8800			175W
	CS8607S—L30	90~264VAC	30W	3500	3.7	180×230×270	70W
	CS8607S—L40		40W	4600			100W
	CS8607S—L50		50W	5600			100~150W
	CS8607S—L60		60W	6900			150W
	CS8607S—L80		80W	8800			175W
	CS8607S—L30D	185~264VAC	30W	3500	3.7	180×230×270	70W
	CS8607S—L40D		40W	4600			100W
	CS8607S—L50D		50W	5600			100~150W
	CS8607S—L60D		60W	6900			150W
	CS8607S—L80D		80W	8800			175W

*The lamp can be matched with a lens: 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for road of variety industrial plant area.


CS8702	Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces HPS
	CS8702—L60	90~305VAC	60W	6600	6.5	520×315×100	150W
	CS8702—L80		80W	8800			150W~250W
	CS8702—L100		100W	11000			250W
	CS8702—L120		120W	13200			250~400W
	CS8702—L150		150W	16500	7.5	615×315×100	400W
	CS8702—L180		180W	18900			400~600W
	CS8702—L240		240W	25200			600W
	CS8702—L240		240W	25200			8.5

■ Suitable for low installation height area of variety industrial plants ducts, power distribution, walkways, etc.

CS8800	Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces Fluorescent lamp
	CS8800—L6	90~264VAC	6W	600	1	180×130×66	12W
	CS8800—L12		12W	1200			22W
	CS8800—L20		20W	1700			45W
	CS8800—L6D	18~43VAC/ 18~55VDC	6W	600	1	180×130×66	12W
	CS8800—L12D		12W	1200			22W

■ Chemical plants, docks, metallurgical plants and other high-temperature performance for demanding industrial environments.

■ Cable Entry: M20×1.5, M25×1.5, NPT3/4",
NPT1/2", G3/4"

CS9710	Type	Input voltage (V)	Wattage (W)	Light output (lm)	Net weight (kg)	Size (mm)	Replaces MH
	CS9710—L80	90~305VAC	80W	8900	6.3	300×202×332	175W
	CS9710—L100		100W	11600			250W
	CS9710—L120		120W	13400			250~400W
	CS9710—L150		150W	16100			400W
	CS9710—L200		200W	22700			>400W

*Other beam angle available: 40°, 60°, 80°, 100°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K



■ Low height region of pedestrian intensive, like offshore oil, chemical device platform, oil tankers of various channels, cabin, etc.

■ EX Mark: Ⓜ II 2 G Ex d e op is IIC T5 Gb
Ⓜ II 2 D Ex op is tb IIC T95 °C Db, IP66
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CS5401J



Type	Input voltage (V)	Wattage (W)	Emergency wattage (W)	Light output (lm)	Emergency duration (min)	Net weight (kg)	Application	Size (mm)	Replaces Fluorescent lamp
CS5401J—L2×10	90-264VAC	2×10W	1×10W	1800(Normal)/900(Emergency)	180min	6.6(Lamp)/2.9(Emergency box)	class I, zone1 & zone2, zone21 & zone22	780×180×110	2×20W
CS5401J—L2×20		2×20W	1×20W	3600(Normal)/1800(Emergency)	90min	10.7(Lamp)/2.9(Emergency box)		1390×180×110	2×40W

*Equipped with explosion proof emergency box CSP01; only one tube lighting when emergency.



■ Low installation height equipment area like petrochemical plants, chemical plants, pharmaceutical factory, polishing plant, etc.

■ EX Mark: Ⓜ II 2 G Ex d IIC T6 Gb
Ⓜ II 2 D Ex tb IIC T80 °C Db, IP66
■ Cable Entry: M20×1.5, M25×1.5, NPT3/4", NPT1/2", G3/4"

CSP01



Type	Input voltage (V)	Wattage (W)	Emergency duration (min)	Output voltage (V)	Net weight (kg)	Application	Size (mm)
CSP01	90-264VAC	30W	60min	220VDC	2.9	class I, zone1 & zone2, zone21 & zone22	238×222×106
		20W	90min				
		10W	180min				

■ Equipment area, stacking and stockyard, like petrochemical plants, chemical plants, pharmaceutical plants, etc.

■ EX Mark: Ex d IIB T5/T6 Gb
Ex ID A21, IP66, T95 °C / T80 °C
■ Cable Entry: G3/4"

CS9101A CS9101B



Type	Input voltage (V)	Wattage (W)	Emergency wattage (W)	Emergency light output (lm)	Emergency duration (min)	Net weight (kg)	Size (mm)	Replaces MH
CS9101A—L25—15	90-264VAC	25W	15W	1800	120min	9	370×326×88	70W/ 35W
CS9101A—L40—15		40W	15W	1800				100W/ 35W
CS9101A—L60—15		60W	15W	1800				150W/ 35W
CS9101A—L25—25	90-264VAC	25W	25W	3000	70min	9	370×326×88	70W/ 50W
CS9101A—L40—25		40W	25W	3000				100W/ 50W
CS9101A—L60—25		60W	25W	3000				150W/ 50W
CS9101B—L15	90-264VAC	/	15W	1800	120min	9	370×326×88	/ 35W
CS9101B—L25	/	25W	3000	70min				/ 50W

■ Suitable for emergency lighting to low installation height region in extreme climate, like offshore oil, chemical equipment platforms, tankers, ships, docks, piers, etc.

■ EX Mark: Ⓜ II 2 G Ex db e IIC T6/T5 Gb
Ⓜ II 2 D Ex tb IIC T80 °C / T95 °C Db, IP66
■ Cable Entry: M20×1.5, NPT1/2" (P type/S type), M25×1.5, NPT3/4", G3/4" (S type)

CS9306AP/BP CS9306AS/B3



Type	Input voltage (V)	Wattage (W)	Emergency wattage (W)	Emergency light output (lm)	Emergency duration (min)	Net weight (kg)	Application	Size (mm)	Replaces MH
CS9306AP—L40—15	90-264VAC	40W	15W	1800	120min	4.2	class I, zone1 & zone2, zone21 & zone22	Ø230×270	100W/ 35W
CS9306AP—L40—25			25W	3300	70min				100W/ 50W
CS9306BP—L15		/	15W	1800	120min				/ 35W
CS9306BP—L25			25W	3300	70min				/ 50W
CS9306AS—L40—15	90-264VAC	40W	15W	1800	120min	4.9	class I, zone1 & zone2, zone21 & zone22	245×260×270	100W/ 35W
CS9306AS—L40—25			25W	3300	70min				100W/ 50W
CS9306BS—L15		/	15W	1800	120min				/ 35W
CS9306BS—L25			25W	3300	70min				/ 50W

*The lamp can be matched with a lens: 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Power plants, substations, chemical plants, metallurgical plants and other indoor and outdoor emergency lighting.

■ Cable Entry: M16



CS8101A CS8101B



Type	Input voltage (V)	Wattage (W)	Emergency wattage (W)	Emergency light output (lm)	Emergency duration (min)	Net weight (kg)	Size (mm)	Replaces MH	
CS8101A—L25—15	90-264VAC	25W	15W	1800	120min	4.7	300×300×75	70W/ 35W	
CS8101A—L40—15			40W	15W				1800	100W/ 35W
CS8101A—L60—15			60W	15W				1800	150W/ 35W
CS8101A—L25—15	90-264VAC	25W	25W	3000	70min	4.7	300×300×75	70W/ 50W	
CS8101A—L40—15			40W	25W				3000	100W/ 50W
CS8101A—L60—15			60W	25W				3000	150W/ 50W
CS8101B—L15	90-264VAC	/	15W	1800	120min	4.7	300×300×75	/ 35W	
CS8101B—L25	/	/	25W	3000	70min			/ 50W	

*CS8101B—L15, CS8101B—L25 only have emergency lighting function.

■ Suitable for emergency lighting to low installation height region in high temperature and humidity and vibration corrosive environments, like offshore platforms, ship transport corridors, passages, etc.

■ Cable Entry: M20×1.5, NPT1/2" (P type/S type), M25×1.5, NPT3/4", G3/4" (P type)



CS8603AP/BP CS8603AS/B3



Type	Input voltage (V)	Wattage (W)	Emergency wattage (W)	Emergency light output (lm)	Emergency duration (min)	Net weight (kg)	Size (mm)	Replaces MH
CS8603AP—L40—15	90-264VAC	40W	15W	1800	120min	4.2	Ø230×270	100W/ 35W
CS8603AP—L40—25			25W	3300	70min			100W/ 50W
CS8603BP—L15			/	15W	1800			120min
CS8603BP—L25	25W	3300		70min	/ 50W			
CS8603AS—L40—15	90-264VAC	40W	15W	1800	120min	4.9	245×260×270	100W/ 35W
CS8603AS—L40—25			25W	3300	70min			100W/ 50W
CS8603BS—L15			/	15W	1800			120min
CS8603BS—L25	25W	3300		70min	/ 50W			

*The lamp can be matched with a lens: 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Suitable for emergency lighting to low installation height region in high temperature and humidity and vibration corrosive environments, like offshore platforms, ship transport corridors, passages, etc.

■ Cable Entry: M20×1.5, NPT1/2" (P type/S type), M25×1.5, NPT3/4", G3/4" (P type)



CS8603A1P/B1P CS8603A1S/B1S



Type	Input voltage (V)	Wattage (W)	Emergency wattage (W)	Emergency light output (lm)	Emergency duration (min)	Net weight (kg)	Size (mm)	Replaces MH
CS8603A1P—L40—15	90-264VAC	40W	15W	1800	240min	5.2	Ø260×270	100W/ 35W
CS8603A1P—L40—25			25W	3300	140min			100W/ 50W
CS8603B1P—L15			/	15W	1800			240min
CS8603B1P—L25	25W	3300		140min	/ 50W			
CS8603A1S—L40—15	90-264VAC	40W	15W	1800	240min	5.9	245×260×270	100W/ 35W
CS8603A1S—L40—25			25W	3300	140min			100W/ 50W
CS8603B1S—L15			/	15W	1800			240min
CS8603B1S—L25	25W	3300		140min	/ 50W			

*The lamp can be matched with a lens: 40°, 60°, 80°, 100°, 200°, 60°×80°, 90°×110°. CCT: 3000K, 4000K, 5000K

■ Power plants, substations, chemical plants, metallurgical plants and other indoor and outdoor emergency lighting.



CS8810A CS8810B



Type	Input voltage (V)	Wattage (W)	Emergency wattage (W)	Emergency light output (lm)	Emergency duration (h)	Net weight (kg)	Size (mm)	Replaces Fluorescent lamp
CS8810A—A	90-264VAC	12W	6W	600	> 10	2	180×130×65	28W
CS8810B—A			6W	4W				300
CS8810A—M		6W	6W	600				28W
CS8810B—M			4W	300				18W

*CS8810A—A, CS8810B—A for auto emergency, CS8810A—M, CS8810B—M for the manual emergency.



CS3210

Light source	30W LED
Rated capacity	12Ah 24V
Runtime	12hrs(High) / 24hrs(Low)
Ex Mark	Ex de IIC T6 Gb

Application: This product is widely used as mobile lighting for all kinds of night work tasks, repairing, inspection and accident relief etc.



CS6210

Light source	1W LED
Rated capacity	5.2Ah 3.7V
Runtime	8hrs(High) / 40hrs(Low) 55hrs(Flood)
Ex Mark	Ex ib IIC T5 Gb

Application: It is widely used as mobile lighting in the power station, oil filed, chemical industry, fire fighting, police, military and other hazardous areas.



CS6610A

Light source	3x3W LED
Rated capacity	5.2Ah 11.1V
Runtime	7hrs(High) / 13hrs(Low)
Ex Mark	Ex de IIC T6 Gb

Application: This product is ideal for use in patrol, inspection, repairing and other night work tasks in explosive and flammable atmosphere.



CS7300A CS7300B

Light source	3W/ 1W LED
Rated capacity	2.6Ah 3.7V
Runtime	CS7300A 4hrs(High) / 10hrs(Low) CS7300B 8hrs(High) / 18hrs(Low)
Ex Mark	Ex d IIC T6 Gb

Application: This product is used in the fields of electric power, fire fighting, petrol, petrochemical, metallurgy, etc. It can also be used for signal communication.



CS4100B

Color available	Red, Blue, Yellow, Green, White.
Flashing frequency	2.7Hz
Runtime	500hrs
Ex Mark	Ex ia IIC T5 Ga

Application: It can serve as signal communication tools in hazardous area such as construction, fire fighting, rescue etc.



CS6310A CS6310B

Light source	1W LED
Rated capacity	1.4Ah 3.7V
Runtime	CS6310A 4hrs(High) / 8hrs(Low) CS6310B 8hrs(High) / 16hrs(Low)
Ex Mark	Ex ib IIC T4 Gb

Application: It is the ideal lighting solution for workers in power station, oil filed, chemical industry, fire fighting, military and other hazardous areas.



CS7101

Light source	3x3W LED
Rated capacity	2.6Ah 22.2V
Runtime	11hrs(High) / 16hrs(Low) 20hrs(Flash)
Ex Mark	Ex d ib IIC T6 Gb

Application: It is the ideal lighting solution for workers in power station, oil filed, chemical industry, fire fighting, military and other hazardous areas.



CS7500A CS7500B CS7500C

Light source	5W/ 3W/ 1W LED
Rated capacity	5.2Ah 3.7V
Runtime	CS7500A 4hrs(High) / 10hrs(Low) CS7500B 6hrs(High) / 10hrs(Low) CS7500C 12hrs(High) / 20hrs(Low)
Ex Mark	Ex d IIC T6 Gb

Application: It is ideal for the night work tasks in explosive area such as fire fighting, gas station, power station, police, inspection and other hazardous areas.



CS3320A CS3320B

Light source	45W/35W HID	
Input voltage range	DC(9~28V)	
Light output	CS3320A 3,200 lm	CS3320B 4,100 lm

Application: It is ideal to be used in the wild, road or on the sea for searching, patrol, rescue etc.



CS7600

Light source	1W LED
Rated capacity	4.4Ah 3.7V
Runtime	10hrs(Worklight) 30hrs(Signal light)

Application: It is used at railway, aviation and other transportation area and some special fields, serving as signal indication, safety warning and normal illumination.



CS7610

Light source	1W LED
Rated capacity	4.4Ah 3.7V
Runtime	10hrs

Application: It is used at railway, aviation and other transportation area and some special fields, serving as normal illumination and emergency lighting.



CS3500D

Specification	Unit	CS3500D	
Rated voltage	VAC	220	220
Power of lamp head	W	2x150	2x240
Light output	lm	2x17300 2x26700	
Continuous working time	h	13	
Minimum lifting height	mm	1,750	
Maximum lifting height	mm	4,500	
Generator	Rated power	W	2,000
	Rated volume	L	15
Beam angle		60°x80°/25°	

Application: It is applicable to large and high brightness lighting in the operation sites of large scale construction, rescue and maintenance, accident handling, disaster relieve, etc.



CS3500F

Specification	Unit	CS3500F	
Rated voltage	VAC	220	220
Power of lamp head	W	4x60	4x100
Light output	lm	4x6500 4x9000	
Continuous working time	h	13	
Minimum lifting height	mm	1,750	
Maximum lifting height	mm	4,500	
Generator	Rated power	W	2,000
	Rated volume	L	15
Beam angle		60°x80°	

Application: It is applicable to large and high brightness lighting in the operation sites of large scale construction, rescue and maintenance, accident handling, disaster relieve, etc.



CS6220

Light source	1W LED
Rated capacity	5.2Ah 3.7V
Runtime	8hrs(High) / 40hrs(Low) 55hrs(Flood)

Application: This product is suitable for inspection, repairing, rescue and some other night work tasks.



CS7600A

Light source	LED
Rated capacity	4.4Ah 3.7V
Runtime	14hrs
Color	Red, Green, Yellow

Application: It is used at railway, aviation and other transportation area and some special fields, serving as signal indication, safety warning and normal illumination.



CS7710 CS7710A

Light source	1W/3W LED	
Rated capacity	2.6Ah 3.7V	
Runtime	CS7710	3hrs(High) / 10hrs(Low)
	CS7710A	9hrs(High) / 19hrs(Low)

Application: It is widely used in the public security department, railway, military, police, transportation, civil aviation, inspection and customs preventive officer etc.



CS3500E

Specification	Unit	CS3500E	
Rated voltage	VAC	220	220
Power of lamp head	W	4x150	4x240
Light output	lm	4x17300 4x26700	
Continuous working time	h	13	
Minimum lifting height	mm	1,750	
Maximum lifting height	mm	4,500	
Generator	Rated power	W	2,000
	Rated volume	L	15
Beam angle		60°x80°	

Application: It is applicable to large and high brightness lighting in the operation sites of large scale construction, rescue and maintenance, accident handling, disaster relieve, etc.

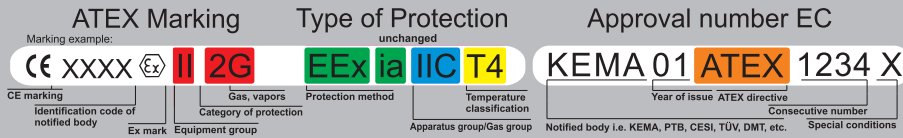


CS3520C

Specification	Unit	CS3520C	
Rated voltage	VAC	220	220
Power of lamp head	W	2x60	2x100
Light output	lm	2x6500 4x9000	
Continuous working time	h	>6	
Minimum lifting height	mm	1,450	
Maximum lifting height	mm	2,800	
Generator	Rated power	W	900
	Rated volume	L	3.8
Beam angle		18°/60°x80°	

Application: This product is suitable for use as large area illumination solution at the working sites of constructions, maintenance, repair, accident spot, and disaster relief etc.

ATEX certified instrumentation from Endress+Hauser



II 2G

Category of Equipment

ATEX directive divides equipment into groups and additional into categories:

Group I (Mines)	Group II (Surface (non-mining) equipment)												
Subdivided into categories	Category subdivided into Zone												
M1 Equipment remains functional with an explosive atmosphere present	<table border="1"> <thead> <tr> <th>Category</th> <th>subdivided into</th> <th>Zone</th> </tr> </thead> <tbody> <tr> <td>1G (gas) 1D (dust)</td> <td>Equipment with a very high level of protection</td> <td>0 (gas) 20 (dust)</td> </tr> <tr> <td>2G (gas) 2D (dust)</td> <td>Equipment with a high level of protection</td> <td>1 (gas) 21 (dust)</td> </tr> <tr> <td>3G (gas) 3D (dust)</td> <td>Equipment with a normal level of protection</td> <td>2 (gas) 22 (dust)</td> </tr> </tbody> </table>	Category	subdivided into	Zone	1G (gas) 1D (dust)	Equipment with a very high level of protection	0 (gas) 20 (dust)	2G (gas) 2D (dust)	Equipment with a high level of protection	1 (gas) 21 (dust)	3G (gas) 3D (dust)	Equipment with a normal level of protection	2 (gas) 22 (dust)
Category	subdivided into	Zone											
1G (gas) 1D (dust)	Equipment with a very high level of protection	0 (gas) 20 (dust)											
2G (gas) 2D (dust)	Equipment with a high level of protection	1 (gas) 21 (dust)											
3G (gas) 3D (dust)	Equipment with a normal level of protection	2 (gas) 22 (dust)											
M2 Equipment to be de-energized in the event of an explosive atmosphere													

Note: category 2D apparatus required for Zone 22 (conductive dust).

Examples of Category marking:
 1/2G for equipment interfacing Zone 0 and Zone 1 areas
 1/3D for equipment interfacing Zone 20 and Zone 22 areas
 (1) for associated apparatus with intrinsically safe output into Zone 0

ATEX

ATEX Directives

ATmosphère **EX**plosible

At this moment there are three directives for equipment intended for use in Hazardous Area:

Old directives specify the European standards

New directives specify the so called Essential Health and Safety Requirements

Dust-Ex hazardous areas are regulated first time in EC.

Summary of changes:
 Categorisation of equipment matching area classifications.
 Categorisation based upon Essential Safety Requirements (ESR):
 - Consider electrical and non-electrical equipment, also dust-Ex hazardous areas
 - Influencing equipment design with respect to Protective method
 Choice of materials
 Equipment marking
 Safety instructions included
 Environmental and atmospheric conditions
 Software included

82/139/EEC (Mines) Will be valid until June 30, 2003 Only Electrical Equipment

76/117/EEC (Surface Industries) Will be valid until June 30, 2003 Only Electrical Equipment

New directive 94/9/EC (ATEX) valid since March 1, 1996 mandatory July 1, 2003 All Equipment, Protective Systems and Components

It will be mandatory to re-certify equipment certified under the old directives if you want to sell this equipment after July 1, 2003.

T4

Temperature Classification

Maximum Surface Temperature	Temperature Classification		
Degree C	Degree F	IEC/European	North American ¹
450	842	T1	T1
300	572	T2	T2
280	536		T2A
260	500		T2B
230	446		T2C
215	419		T2D
200	392	T3	T3
180	356		T3A
165	329		T3B
160	320		T3C
135	275	T4	T4
120	248		T4A
100	212	T5	T5
85	185	T6	T6

¹ for comparison only

IIC

Apparatus Group and Gas/Dust Group

Hazard Categories	Apparatus Classification		Min. Ignition Energy
	Europe	North America ¹	
Mines	Group I	Group D (gaseous mines)	
Acetylene	Group IIC	Class I, Group A	20 µJ
Hydrogen	Group IC	Class I, Group B	20 µJ
Ethylene	Group IIB	Class I, Group C	80 µJ
Propane	Group IIA	Class I, Group D	180 µJ
Metal dust	-	Class II, Group E	More easily ignitable
Coal dust	-	Class II, Group F	
Grain dust	-	Class II, Group G	
Fibers	-	Class III	

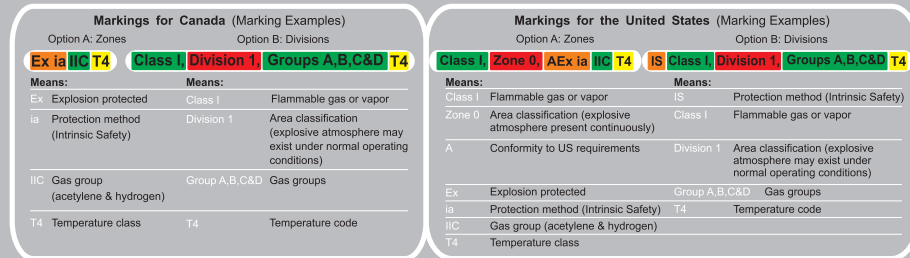
EEEx ia

Protection Method

Summary of protection methods against explosion

General Principles	IEC / European		American ¹		Principle Characteristics	
	Practice	Zone	Conelec EN	Practice		Division
Explosion Containment	Explosion-proof Ex «d»	1, 2	50018	Explosion-proof	1, 2	Relatively easy to be applied, but with specific mechanical requirements. Maintenance and checks are more time consuming.
Segregation	Pressurization Ex «p»	1, 2	50016	Purging	1, 2	Suitable for cabinets and motors. Requires specific monitoring alarm systems.
	Encapsulation Ex «m»	1, 2	50028	Not recognized	-	Suitable for sensors, small circuits and solenoid valves. Maintenance practically impossible.
Prevention	Oil-immersion Ex «o»	1, 2	50015	Oil-immersion	1, 2	Suitable for transformers and where there are arming parts. Generally not widely used.
	Powder filling Ex «q»	1, 2	50017	Not recognized	-	Suitable where there are no moving parts. Present maintenance difficulty. Not widely used.
Prevention	Increased safety Ex «e»	1, 2	50019	Not recognized	-	Suitable for non-sparking apparatus during normal functioning (terminals, connections, lamp sockets, motors). Particular construction requirements.
	Intrinsic safety Ex «i»	0, 1, 2 (20, 21, 22) [*]	50020 50039 50284	Intrinsic safety	1, 2	Suitable for process instrumentation. Economical and easy installation, maintenance and checks. Limited to low power circuits.
	Intrinsic safety Ex «ib»	1, 2 (21, 22) [*]	50020 50039	Not recognized	-	Similar to Ex «i» except for the number of faults to be considered.
Special requirement for category 1 equipment	Type n Ex «n»	2	50021	Non incandive	2	Alternative to standardized types of protection for zone 2 and division 2. No certificate required in Europe.
		0 (1, 2) [*]	50284	Not recognized	-	Additional requirements for equipment protected by standardized types of protection.
Dust Ex Protection	Protection by enclosure and temperature limitation	20, 21, 22	50281	NEC Section 90-4	1, 2	Special requirements for equipment in dust explosion hazardous areas.

Certified Instrumentation from Endress+Hauser for North America



Special Purpose Enclosures

Enclosure Type US (NEMA 250) and Canada (CSA Std. C22.2 No. 94)	Approximate equivalent IP-Code (IEC 60529)	Protection against
1	→ IP10	incidental contact with the enclosed equipment
2	→ IP11	dripping and light splashing of liquids
3	→ IP54	windblown dust, rain, sleet, snow and external formation of ice
3R	→ IP14	rain, sleet, snow and external formation of ice
3S	→ IP54	windblown dust, rain, sleet, snow and external mechanism(s) remain operable when ice laden
4	→ IP56	windblown dust, rain, sleet, snow, splashing water, hose-directed water and corrosion
4X	→ IP56	windblown dust, rain, sleet, snow, splashing water, hose-directed water and corrosion
5	→ IP67	setting airborne dust, lint, fibers, flyings, dripping and light splashing of liquids
6	→ IP67	hose-directed water, entry of water during occasional temporary submersion at limited depth
6P	→ IP67	hose-directed water, entry of water during prolonged submersion at limited depth

Zone/Division

Area Classification

IEC	Flammable Material Present Continuously (> 1000 h/y)	Flammable Material Present Intermittently (10...1000 h/y)	Flammable Material Present Abnormally (< 10 h/y)
CENELEC	Gas, Zone 0	Zone 1	Zone 2
CENELEC	Dust, Zone 20	Zone 21	Zone 22
NEC & CEC (North America)	Gas, Dust and Fibers, Division 1, Zone 0	Division 1, Zone 1	Division 2, Zone 2

IIC/Groups

Hazardous Locations Groups

Typical Hazard	North America CEC Section 18, NEC Article 500	CENELEC/IEC Temperature Class
Acetylene	Class I/Group A or IIC	IIC
Hydrogen	Class I/Group B or IIC	IIC
Ethylene	Class I/Group C or IIB	IIB
Propane	Class I/Group D or IIA	IIA
Methane	Group D (gaseous mines) or I	I
Metal Dust	Class II/Group E	-
Coal Dust	Class II/Group F	-
Grain Dust	Class II/Group G	-
Fibers	Class III	-

Ex/AEx

Protection Concepts

Method of Protection	Code	Permitted Use	Standard US (FM)	Standard Canada (CSA)	Protection Principle
Increased Safety	AEx e	Class I, Zone 1	FM 3600 [†] (ISA S12.16.01)		No arcs, sparks or hot surfaces
	Ex e	Zone 1	IEC 60079-7	CSA Std. E79-7	
Non-incandive	(NI)	Class I, Div 2	FM 3611	CSA Std. C22.2 No. 213 and CEC, Part I, App. J	
Non-sparking	Ex nA	Zone 2	IEC 60079-15	CSA Std. E79-15	
Explosionproof	(XP)	Class I, Div 1	FM 3615	CSA Std. C22.2 No. 30	
Flameproof	AEx d	Class I, Zone 1	FM 3600 [†] (ISA S12.22.01)		Contain the explosion and quench the flame
	Ex d	Zone 1	IEC 60079-1	CSA Std. E79-1	
Powder Filled	AEx q	Class I, Zone 1	FM 3600 [†] (ISA S12.25.01)		Limit energy of sparks and surface temperature
	Ex q	Zone 1	IEC 60079-5	CSA Std. E79-5	
Enclosed Break	Ex nC	Zone 2	IEC 60079-15	CSA Std. 79-15	
Intrinsic Safety	(IS)	Class I, Div 1	FM 3610 [†]	CSA Std. C22.2 No. 157	
	AEx ia	Class I, Zone 0	FM 3610 [†]		Limit energy of sparks and surface temperature
	AEx ib	Class I, Zone 1	FM 3610 [†]		
	Ex ia	Zone 0	IEC 60079-11	CSA Std. C22.2 No. 157 [†]	
	Ex ib	Zone 1	IEC 60079-11	CSA Std. E79-11	
	Ex nA	Zone 2	IEC 60079-15	CSA Std. E79-15	
	Ex nL	Zone 2	IEC 60079-15	CSA Std. E79-15	
Limited Energy					
Pressurized	Type X	Class I, Div 1	FM 3620		Keep flammable gas out
	Type Y	Class I, Div 1	FM 3620		
	Type Z	Class I, Div 2	FM 3620		
	Ex p	Zone 1		CSA Std. E79-2	
	Ex px	Zone 1	IEC 60079-2		
	Ex py	Zone 1	IEC 60079-2		
	Ex pz	Zone 2	IEC 60079-2		
	Ex nZ	Zone 2	IEC 60079-15	CSA Std. E79-15	
	Ex nZ	Zone 2	IEC 60079-15	CSA Std. E79-15	
Restricted Breathing	Ex nR	Zone 2	IEC 60079-15		
Encapsulation	AEx m	Class I, Zone 1	FM 3600 [†] (ISA S12.23.01)		
	Ex m	Zone 1	IEC 60079-18	CSA Std. E79-18	
Oil Immersion	AEx o	Class I, Zone 1	FM 3600 [†] (ISA S12.26.01)		
	Ex o	Zone 1	IEC 60079-6	CSA Std. E79-6	

[†]Also shall comply with ISA S12.02.01

T4

Temperature Code and Temperature Class

Maximum Surface Temperature [°C]	North American Temperature Code	CENELEC/IEC Temperature Class
450	T1	T1
300	T2	T2
280	T2A	
260	T2B	
230	T2C	
215	T2D	
200	T3	T3
180	T3A	
165	T3B	
160	T3C	
135	T4	T4
120	T4A	
100	T5	T5
85	T6	T6