

# Amphenol Amphe-EX Explosion-proof Series



## EXCLUSIVE WORLDWIDE ASSEMBLER OF AMPHE-EX CIRCULAR CONNECTORS

Amphenol Industrial's explosion-proof connector series Amphe-EX is ATEX and IECEx-approved for Zone 1-rated (Europe) (IECEx 60079). Amphe-EX is the only explosion-proof connector that allows the use of copper, coax and fibre optic contacts in one product. PEI-Genesis is the only approved worldwide assembling distributor.

- Complements Amphenol Star-Line EX connectors
- Meets IECEx 60079

## APPLICATIONS

- Chemical manufacturing
- Petrochemical refineries
- Pharmaceutical manufacturing
- Land and offshore drill rigs
- Flour and sugar refining
- Aircraft fuelling pods

All areas where the risk of an explosion exists.

## FEATURES

### MATERIAL

The shells are machined from high-tensile strength aluminum and plated with a hard anodic coating or stainless steel to withstand the most extreme environments.

### CONTACT TYPES

There are many sizes and types with different contact configurations that can be used on this connector series. Insert patterns ranging from 2 to 79 contacts include RF, fibre optic, and coaxial.

### MATING SYSTEM

The Double-Lead Acme threaded coupling systems ensure a positive mating which allows for self-cleaning mating action and does not clog with ice, mud, snow, or sand. Inserts are compatible with the D38999 series III layouts up to shell size 21.

### KEYING

Additional keying of the shells ensures that mis-mating of similar connectors does not occur in explosive environments.

### PHYSICAL SIZE

Smaller interface than most heavy-duty, hazardous-rated connectors.

### EASE OF ASSEMBLY

Conductors are easily terminated to the contacts with ample space to slip cable housing over conductors to eliminate seating of inserts and cumbersome handling.

### ACCOMODATION OF VARIOUS CABLE TYPES

The cable gland terminations allow for the use of various types of cable in the construction such as unarmored, armored, and sheathed cable. Flexible cables such as SOOW-A,W, G-GC and DLO can also be used.

### APPROVALS

ATEX for Zone 1-IIC, IECEx, and Centelec IP68-rated.

**TECHNICAL SPECIFICATIONS**

**MATERIALS AND FINISHES**

Shell & Plating	Aluminum alloy, alloy (black hardcoat), or stainless steel (1.4404, ANSI 316L)
Contacts	Copper alloy
Plating	Gold-plated, 50 microinches per MIL-G-45204 type II, grade C, class I
Insulator	Hard, dielectric wafer which contains tines for high-reliability retention of crimp contacts
Grommet & Seals	Silicone-based elastomer

**ELECTRICAL DATA**

Contact Sizes 22D, 20, 16, 12, and 8

Operating Voltage & Test Voltage

TEST VOLTAGES	SERVICE RATING			
	N	M	I	II
Sea Level	1000	1300	1800	2300
100,000 Feet	200	200	200	200

Current Rating by Contact Size and Wire Accommodation (Test Amps) (Unmated Condition)	WIRE SIZE	22D	20	16	12	10	8
	28	1.5	-	-	-	-	-
26	2.0	-	-	-	-	-	-
24	3.0	3.0	-	-	-	-	-
22	5.0	5.0	-	-	-	-	-
20	-	7.5	7.5	-	-	-	-
18	-	-	10.0	-	-	-	-
16	-	-	13.0	-	-	-	-
14	-	-	-	17.0	-	-	-
12	-	-	-	23.0	-	-	-
8 (power)	-	-	-	-	-	-	46

Contact Resistance of Mated Contacts End-to-End

CONTACT SIZE	MAXIMUM MILLIVOLT DROP
22D	73
20	55
16	49
12	42
8 (power)	26

Insulation Resistance

5,000 megohms minimum

**MECHANICAL**

Operating Temperature

-40°C to + 125°C (-40°F to +257°F)

Sealing

Against sand, dust per MIL-STD-202 & ice resistance

Wire Sealing Range

CONTACT SIZE	MIN inches	MAX inches	MIN mm	MAX mm
22D	0.030	0.054	0.76	1.37
20	0.040	0.083	1.02	2.11
16	0.065	0.109	1.65	2.77
12	0.097	0.142	2.46	3.61
8 (power)	0.135	0.155	3.43	3.94

TECHNICAL SPECIFICATIONS

Insulation Strip Length		CONTACT SIZE		STRIP LENGTH
		22D	.125 (3.18)	
		20	.188 (4.77)	
		16	.188 (4.77)	
		12	.188 (4.77)	
		8 (power)	.470 (11.94)	
All dimensions in inches (millimeters in parenthesis)				
Mating Life	500 cycles minimum			
Salt Spray	300 days			
Temperature Durability	-20°C + 40°C ambient (-4°F to +104°F)			
Contact Type	Crimp			
Number of Circuits	2 to 79			
Contact Insertion	Rear-insertion/rear-extraction with simple plastic or high-quality metal hand tools.			
Contact Retention	CONTACT	AXIAL LOAD NEWTONS ±10%	AXIAL LOAD POUNDS ±10%	
	22D	44	10	
	20	67	15	
	16	111	25	
	12	111	25	
	8 (power)	111	25	
Polarization	Five keyways with optional master keyway rotations (Note insert and main keyways remain fixed)			
Approvals				



EEx dIIC T6 / Ex tD A21 IP68 (Plug and Receptacles)  
 EEx de IIC T6 / Ex tD A21 IP68 (Panel mount receptacles filled with cement)  
 Sira 07ATEX1229X

RJ45 AMPHE-EX

**BOX MOUNT RECEPTACLES WITH POTTING ADAPTER**

**EXM-A02-19-RJF-00**

RJ45 to PCB

**EXM-A02-19-RJF-01**

RJ45 to RJ45

**IN-LINE RECEPTACLE WITH EEX D GLAND**

**EXM-A01-19-RJF-00A2**

RJ45 to PCB

**EXM-A01-19-RJF-01A2**

RJ45 to RJ45

Cable range – .283 to .460 in (7.2 to 11.7mm)

Other sizes available

← Mates with →

**CABLE PLUG EEX D GLAND**

**EXM-A06-19-RJ2-03A2**

Cable range – .283 to .460 in (7.2 to 11.7mm)



### STEP 3: SELECT LAYOUT

For listing by # of contacts, → see pages 290-291.

INSERT ARRANGEMENT NUMBER	SERVICE RATING	TOTAL NUMBER OF CONTACTS	22D	20	16	12	8
9-35	M	6	6				
9-94	M	2		2			
9-98	I	3		3			
11-2	I	2			2		
11-5	I	5		5			
11-35	M	13	13				
11-98	I	6		6			
11-99	I	7		7			
13-4	I	4			4		
13-8	I	8		8			
13-13	I, Fibre Optic	4			2	2	
13-35	M	22	22				
13-98	I	10		10			
15-5	II	5			5		
15-15	I	15		14	1		
15-18	I	18		18			
15-19	I	19		19			
15-35	M	37	37				
15-97	I	12		8	4		
15-AC	M	26	24		2*		
17-2	M	39	38				1**
17-6	I	6				6	
17-8	II	8			8		
17-22	Coax	4				2	2*
17-26	I	26		26			
17-31	I	19	4	11	4*		
17-35	M	55	55				
17-99	I	23		21	2		
19-11	II	11			11		
19-31	M	15	12			1	2*
19-32	I	32		32			
19-35	M	66	66				
19-RJ	RJ45						
21-11	I	11				11	
21-16	II	16			16		
21-35	M	79	79				
21-39	I	39		37	2		
21-41	I	41		41			
21-75	M	4					4*

\* COAX \*\* TWINAX

### STEP 4: SELECT CONTACT

P = Pin S = Socket

All dimensions in inches (millimeters in parenthesis)

### STEP 5: SELECT GLAND SIZE

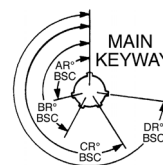
Leave blank for 02 Shell Style or no gland required

Shell Size	EEx d Cable MAX Gland Size Code	Unarmored Cable No Modification Needed		Armored & Sheathed Cable -BS	
		Min.	Max.	Min.	Max.
9/11	A1	.1575 (4.0)	.3307 (8.4)	.3543 (9.0)	.5315 (13.5)
13	A	.3780 (9.6)	.5512 (14.0)	.6102 (15.5)	.8307 (21.1)
15/17	B	.5315 (13.5)	.7874 (20.0)	.7992 (20.3)	1.079 (27.4)
19/21	C	.7677 (19.5)	1.035 (26.3)	1.051 (26.7)	1.339 (34.0)

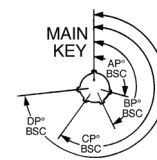
### STEP 6: SELECT POLARIZATION

- N = Normal Standard
- 01 = Highly-Popular
- 02 = Check for Availability
- 03 = Check for Availability
- 04 = Check for Availability

A plug with a given polarization letter will mate with a receptacle with the same polarization letter. The angles for a given connector are the same whether it contains pins or sockets. Inserts are not rotated in conjunction with the master keyway.



Receptacle Front face shown.



Plug Front face shown.

Shell Size	Key & Keyway Arrangement Identification	ARo or BRo or CRo or DRo or APo BPo CPo DPo BSC BSC BSC BSC			
		APo BSC	BPo BSC	CPo BSC	DPo BSC
9 & 11	N	95	141	208	236
	01		156	182	292
	02		145	195	252
	03		156	220	255
	04		146	234	298
13 & 15	05	80	141	184	242
	N		142	196	293
	01		170	200	310
	02		169	200	244
	03		140	200	257
17, 19, 21	04	80	145	176	280
	05		153	180	272
	N		142	196	273
	01		170	200	310
	02		169	200	244
	03		140	200	257
	04		145	180	280
	05		153	197	272

### STEP 7: SELECT MODIFIER

- FO = Size 16 fibre optic termini
  - BS = Armored Cable & Sheathed Cable
- Other sizes available. Contact us for details.

LAYOUT BY NUMBER OF CONTACTS

View of Mating-Face of Pin Insert



CONTACTS	1	2	3	4	
LAYOUT					
# OF CONTACTS	9-94	11-2	9-98	13-4	13-13
SERVICE RATING	2-#20 M	2-#16 I	3-#20 I	4-#16 I	2-#16, 2-#12 I, FIBER OPTIC
					17-22 2-#12, 2-#8 COAX
CONTACTS	4	5		6	
LAYOUT					
# OF CONTACTS	21-75	11-5	15-5	9-35	11-98
SERVICE RATING	4-#8 M	5-#20 I	5-#16 II	6-#22D M	6-#20 I
					17-6 6-#12 I
CONTACTS	7	8	10	11	
LAYOUT					
# OF CONTACTS	11-99	13-8	17-8	13-98	19-11
SERVICE RATING	7-#20 I	8-#20 I	8-#16 II	10-#20 I	11-#16 II
					21-11 11-#12 I
CONTACTS	12	13	15	16	18
LAYOUT					
# OF CONTACTS	15-97	11-35	15-15	19-31	21-16
SERVICE RATING	8-#20, 4-#16 I	13-#22D M	14-#20, 1-#16 I	12-#22D, 1-#12, 2-#8 M	16-#16 II
					15-18 18-#20 I
CONTACTS	19	22	22	26	32
LAYOUT					
# OF CONTACTS	15-19	13-35	17-99	15-AC	17-26
SERVICE RATING	19-#20 I	22-#22D M	21-#20, 2-#16 I	24-#22, 2-#16 M	26-#20 I
					19-32 32-#20 I

# LAYOUT BY NUMBER OF CONTACTS

View of Mating-Face of Pin Insert



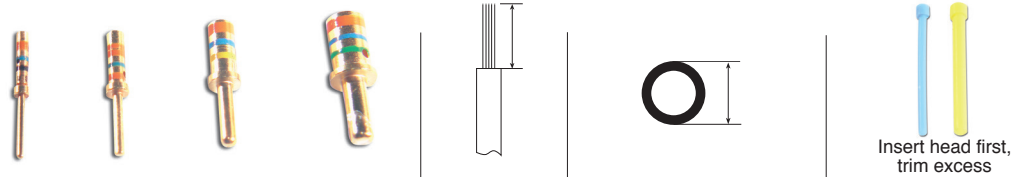
CONTACTS	37	39	41	55
LAYOUT				
# OF CONTACTS	15-35	17-2	21-39	17-35
SERVICE RATING	37-#22D M	38-#22D, 1-#8 M	37-#20, 2-#16 I	55-#22D M

CONTACTS	66	79
LAYOUT		
# OF CONTACTS	19-35	21-35
SERVICE RATING	66-#22D M	79-#22D M

CONTACTS

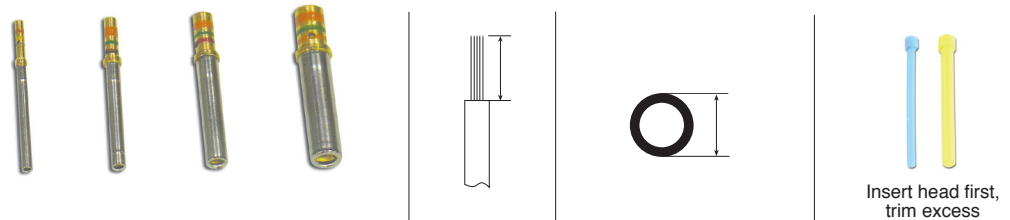
PINS



CONTACT SIZE	WIRE SIZE AWG	PIN CONTACT PART NUMBER	COLOR BANDS			WIRE STRIP LENGTHS	WIRE RANGE		WIRE HOLE FILLER	COLOR
			1	2	3		MIN.	MAX.		
22D	22,24,26 & 28	M39029/58-360	Orange	Blue	Black	.125 (3.18)	.030 (0.76)	.054 (1.37)	MS27488-22-2	Black
20	20,22 & 24	M39029/58-363	Orange	Blue	Orange	.188 (4.77)	.040 (1.02)	.083 (2.11)	MS27488-20-2	Red
16	16,18 & 20	M39029/58-364	Orange	Blue	Yellow	.188 (4.77)	.065 (1.65)	.109 (2.77)	MS27488-16-2	Blue
12	12 & 14	M39029/58-365	Orange	Blue	Green	.188 (4.77)	.097 (2.46)	.142 (3.61)	MS27488-12-2	Yellow
10	10 & 12	M39029/58-528	Green	Red	Gray	.355 (8.51)	.135 (3.42)	.162 (4.12)	M85409/81-10	Green
8 Power	8	10-497448-075	-	-	-	.470 (11.94)	.135 (3.42)	.162 (4.12)	MS27488-8-3	Red
8 Power	10	10-497448-095	-	-	-	.470 (11.94)	.135 (3.42)	.162 (4.12)	MS27488-8-3	Red

For fibre optic (MIL-T-29504/4 for size 16 contacts) or thermocouple contacts, please contact us.

SOCKETS



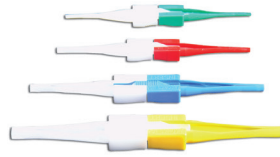
CONTACT SIZE	WIRE SIZE AWG	PIN CONTACT PART NUMBER	COLOR BANDS			WIRE STRIP LENGTHS	WIRE RANGE		WIRE HOLE FILLER	COLOR
			1	2	3		MIN.	MAX.		
22D	22,24,26 & 28	M39029/56-348	Orange	Yellow	Gray	.125 (3.18)	.030 (0.76)	.054 (1.37)	MS27488-22-2	Black
20	20,22 & 24	M39029/56-351	Orange	Green	Brown	.188 (4.77)	.040 (1.02)	.083 (2.11)	MS27488-20-2	Red
16	16,18 & 20	M39029/56-352	Orange	Green	Red	.188 (4.77)	.065 (1.65)	.109 (2.77)	MS27488-16-2	Blue
12	12 & 14	M39029/56-353	Orange	Green	Orange	.188 (4.77)	.097 (2.46)	.142 (3.61)	MS27488-12-2	Yellow
10	10 & 12	M39029/56-527	Green	Red	Violet	.355 (8.51)	.135(3.42)	.162(4.12)	M85049/81-10	Green
8 Power	8	10-497446-075	-	-	-	.470 (11.94)	.135 (3.42)	.162 (4.12)	MS27488-8-3	Red
8 Power	10	10-497446-095	-	-	-	.470 (11.94)	.135 (3.42)	.162 (4.12)	MS27488-8-3	Red

For fibre optic (MIL-T-29504/4 for size 16 contacts) or thermocouple contacts, please contact us.

All dimensions in inches (millimeters in parenthesis)



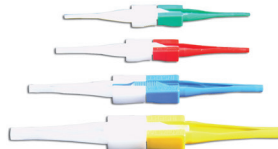
PINS



Contact Size	Hand-Crimp Tool	Power-Crimp Tool	Turret Heads	Use Locator Color	Plastic Insertion/Extraction Tool	Insertion Tip Color	Extraction Tip Color	Metal Insertion Tool	Color Band	Metal Extraction Tool	Color Band	
22D	M22520/2-01	WA22††	M22520/2-09	-	M81969/14-01	Green	White	MS27495A22M	Black	MS27495R22M	Black	White
20	M22520/1-01	WA27F††	M22520/1-04	Red	M81969/14-10	Red	Orange	MS27495A20	Red	MS27495R20	Red	White
16	M22520/1-01	WA27F††	M22520/1-04	Blue	M81969/14-03	Blue	White	MS27495A16	Blue	MS27495R16	Blue	White
12	M22520/1-01	WA27F††	M22520/1-04	Yellow	M81969/14-04	Yellow	White	DAK95-12B	-	DRK95-12B	-	-
10	TP-201423 or 1716P-1	-	-	-	M81969/14505	Grey	White	M81969/8-11	Green	M81969/8-12	Green	White
8 8 AWG Power	-	400B-1	414DA-8N (die) 4691 (positioner)	-	M81969/14-12 (extraction only)	-	Green	-	-	DRK264-8	-	-
8 10 AWG Power	M3SP-6	400B-1	414DA-10N (die) 4691 (positioner)	-	M81969/14-12 (extraction only)	-	Green	-	-	DRK264-8	-	-

†† Contact us for more tool accessories.

SOCKETS



Contact Size	Hand-Crimp Tool	Power-Crimp Tool	Turret Heads	Use Locator Color	Plastic Insertion/Extraction Tool	Insertion Tip Color	Extraction Tip Color	Metal Insertion Tool	Color Band	Metal Extraction Tool	Color Band	
22D	M22520/2-01	WA22††	M22520/2-07	-	M81969/14-01	Green	White	MS27495A22M	Black	MS27495R22M	Black	White
20	M22520/1-01	WA27F††	M22520/1-04	Red	M81969/14-10	Red	Orange	MS27495A20	Red	MS27495R20	Red	White
16	M22520/1-01	WA27F††	M22520/1-04	Blue	M81969/14-03	Blue	White	MS27495A16	Blue	MS27495R16	Blue	White
12	M22520/1-01	WA27F††	M22520/1-04	Yellow	M81969/14-04	Yellow	White	DAK95-12B	-	DRK95-12B	-	-
10	TP-201423 or 1716P-1	-	-	-	M81969/14505	Grey	White	M81969/8-11	Green	M81969/8-12	Green	White
8 8 AWG Power	-	400B-1	414DA-8N (die) 4691 (positioner)	-	M81969/14-12 (extraction only)	-	Green	-	-	DRK264-8	-	-
8 10 AWG Power	M3SP-6	400B-1	414DA-10N (die) 4691 (positioner)	-	M81969/14-12 (extraction only)	-	Green	-	-	DRK264-8	-	-

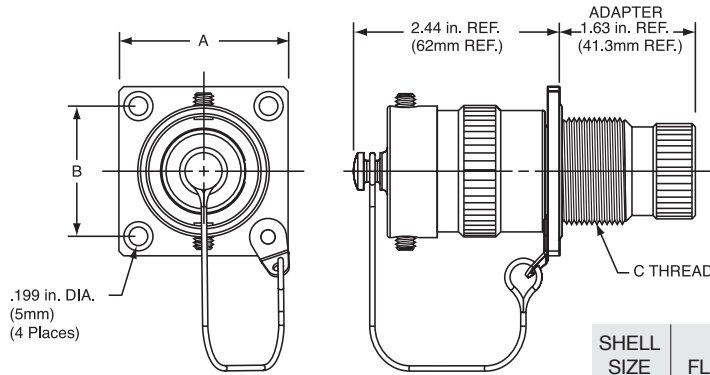
†† Contact us for more tool accessories.

All dimensions in inches (millimeters in parenthesis)

DIMENSIONS

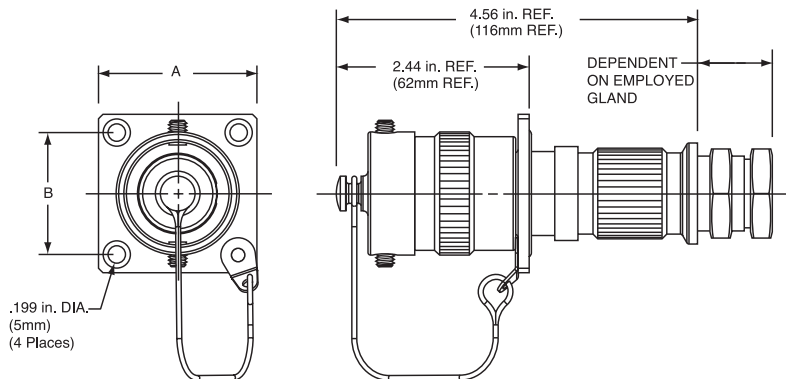
RECEPTACLE

EXM-A02 - BOX MOUNT RECEPTACLE



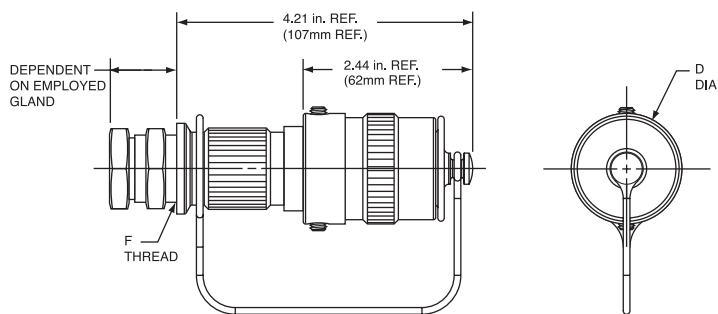
SHELL SIZE	A FLANGE DIM.	B MOUNTING DIM.	C-THREAD ADAPTER PG TYPE
9	1.772 (45.0)	1.299 (33.0)	(M25)
11	1.772 (45.0)	1.299 (33.0)	(M25)
13	2.008 (51.0)	1.535 (39.0)	(M32)
15	2.008 (51.0)	1.535 (39.0)	(M32)
17	2.126 (54.0)	1.693 (43.0)	(M40)
19	2.126 (54.0)	1.693 (43.0)	(M40)
21	2.126 (54.0)	1.693 (43.0)	(M40)

EXM-A01 - IN-LINE RECEPTACLE



SHELL SIZE	A FLANGE DIM.	B MOUNTING DIM.
9	1.772 (45.0)	1.299 (33.0)
11	1.772 (45.0)	1.299 (33.0)
13	2.008 (51.0)	1.535 (39.0)
15	2.008 (51.0)	1.535 (39.0)
17	2.126 (54.0)	1.693 (43.0)
19	2.126 (54.0)	1.693 (43.0)
21	2.126 (54.0)	1.693 (43.0)

EXM-A06 - STRAIGHT PLUG



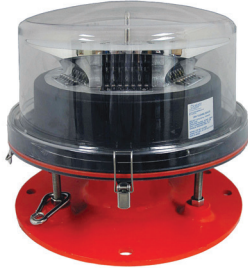
SHELL SIZE	D DIAMETER ±0.625 (1.5875)	F CABLE GLAND ENTRY THREAD (METRIC)
9	1.3125 (33.3375)	M16X1.5mm
11	1.4375 (36.5125)	M16X1.5mm
13	1.5625 (39.6875)	M20X1.5mm
15	1.6875 (42.8625)	M25X1.5mm
17	1.8175 (46.0375)	M25X1.5mm
19	1.9375 (49.2125)	M32X1.5mm
21	2.0625 (52.3875)	M32X1.5mm

All dimensions in inches (millimeters in parenthesis)

Dialight offers SafeSite LED signaling for hazardous locations. These products are rated Class I, Div 2, are ATEX Certified and IP65 / IP66 / NEMA 4X-rated. They last longer than incandescent, are resistant to shock and vibration, use less energy and have a weather/ corrosion-resistant lamp assembly and housing. The optically-designed lens is unique, enhancing LED operation and providing 360-degree visibility.



**SAFESITE L-864 RED LED MEDIUM-INTENSITY BEACON**



Class 1 Div 2 Beacon	D164-B13-001
ATEX 120/230 VAC Beacon	D264-D13-001

**SAFESITE L-810 RED LED OBSTRUCTION LIGHTS**



VOLTAGE	CLASS 1, DIV 2		ATEX	
	SINGLE-UNIT	DUAL-UNIT	SINGLE-UNIT	DUAL-UNIT
120VAC	860-2R01-001	860-2R01-002	860-9R01-001	860-9R01-002
230VAC	860-2R02-001	860-2R02-002	860-9R02-001	860-9R02-002

**SAFESITE 860 SERIES LED STEADY-BURN VISUAL SIGNAL LIGHTS**



CLASS 1, DIV 2 - SINGLE-UNIT					
VOLTAGE	RED	WHITE	GREEN	YELLOW	BLUE
120VAC	860-2R01-001	860-2W01-001	860-2G01-001	860-2Y01-001	860-2B01-001
230VAC	860-2R02-001	860-2W02-001	860-2G02-001	860-2Y02-001	860-2B02-001

CLASS 1, DIV 2 - DUAL-UNIT					
VOLTAGE	RED	WHITE	GREEN	YELLOW	BLUE
120VAC	860-2R01-002	860-2W01-002	860-2G01-002	860-2Y01-002	860-2B01-002
230VAC	860-2R02-002	860-2W02-002	860-2G02-002	860-2Y02-002	860-2B02-002

**SAFESITE FLS SERIES LED FLASHING VISUAL SIGNAL LIGHTS**

CLASS 1, DIV 2 - SINGLE-UNIT					
VOLTAGE	RED	WHITE	GREEN	YELLOW	BLUE
120VAC	FLS-2R01-001	FLS-2W01-001	FLS-2G01-001	FLS-2Y01-001	FLS-2B01-001
230VAC	FLS-2R02-001	FLS-2W02-001	FLS-2G02-001	FLS-2Y02-001	FLS-2B02-001

CLASS 1, DIV 2 - SINGLE UNIT				
RED	WHITE	GREEN	YELLOW	BLUE
FLS-2R01-001	FLS-2W01-001	FLS-2G01-001	FLS-2Y01-001	FLS-2B01-001



**SAFESITE 860 SERIES LED VISUAL SIGNAL LIGHTS WITH FLAT BASE**




CLASS 1, DIV 2 - SINGLE-UNIT 120VAC		
RED	YELLOW	BLUE
860-2R01-005	860-2Y01-005	860-2B01-005

**SAFESITE FLS SERIES LED FLASHING SIGNAL LIGHTS WITH FLAT BASE JUNCTION BOX**

CLASS 1, DIV 2 - SINGLE-UNIT 120VAC		
RED	YELLOW	BLUE
FLS-2R01-005	FLS-2Y01-005	FLS-2B01-005

**STEP 1:** Read manufacturer's assembly instructions before assembling connectors. Use assembly instructions to identify the various component parts and to check for any missing parts.

**STEP 2:** Cut cable jacket and sheathing squarely and to correct length, using only approved wire strippers. In preparing the individual wires for assembly, leave allowances in length for reaching the outermost circle of contact cavities in the conductors. The insulation should be cut progressively longer as it extends out from the center of the cable or harness to ensure sufficient length.

**STEP 3:** Follow cable stripping lengths  see page 298 for effective cable gland sealing. All conductors should be fit into contact wire wells correctly. A practice layout should be done.

**STEP 4:** Prior to starting termination of wires, it is essential to layout cables and harnesses in a specific order in accordance with the wiring diagram. Proper layout will eliminate the need for twisting and crossover of conductors. If the wiring layout is not correct, the termination operation will be difficult or even impossible and the chance of errors will increase. Cable and harness assemblies with a spiral layout must also be matched carefully to the correct contacts in both the male and female inserts.

**STEP 5:** Some cables will have a "basket weave" armor under the outer jacket (sheath) and over the inner jacket. Since many regulatory entities require that the armor be grounded at the source end, it is beneficial to ground the armor via a spare contact within the connector. Following the removal of a sufficient amount of outer jacket (see Table 1), an ample amount of armor can be clipped away, but not all. An adequate amount should remain so that a small cross-section conductor, short in length, can be woven into the remaining armor weave and either soldered or covered with mastic-impregnated heat shrink, creating an intimate bond to the armor. At the opposite end of the short piece of wire, a contact should be crimped and inserted into the insert.

**STEP 6:** Use only correctly-sized and provided Exd glands to ensure resistance to moisture and other contaminates.

**STEP 7:** Use only the proper crimping tools that have been set or calibrated with precision gauges.

**STEP 8:** Ensure that all contacts are the correct size before attempting to assemble in insert cavities. This is particularly important when both power and control contact types are used in the same connector.

**STEP 9:** Ensure that ground contacts are correctly located.

**STEP 10:** Seat all contacts properly so that they will not be damaged or become disengaged during connector mating operation.

**STEP 11:** Use only the proper insertion tools and ensure that they are aligned axially when pushing contact into their fully-seated position.

**STEP 12:** When the inserts have more cavities than the conductors, plug unused cavities with furnished contacts.

**STEP 13:** After all terminated contacts are inserted in their respective cavities and inspected, the cable adapter or insert clamp nut should be tightened with a wrench. This assembly operation should be done by placing the components in a vise with smooth-faced jaws, using a strap wrench.

**STEP 14:** When handling cables, use adequate support to prevent damage to the internal wires. Exd glands are intended for sealing purposes and should not be used as a cable grip.

**STEP 15:** If for any reason terminated conductors have to be removed from an insert because of an assembly error or change in circuitry, be sure to remove the cable gland or cable adapter first before extracting the contact and reinserting it.

**STEP 16:** If one of the connector poles is a ground wire, make sure that it is grounded properly before the connector actually is engaged.

**STEP 17:** When connectors with the same configuration are to be mounted closer together, different or alternate key arrangements should be used to prevent mismatching and possible damage to the electrical system.

**STEP 18:** Always inspect all parts of connector assembly operations before putting connector into operation.

**STEP 19:** Crimping and terminating of conductors to contacts must be done carefully. Make certain that all wire strands are fully bottomed in contact wells by checking through provided inspection hole.

**STEP 20:** Never attempt to straighten bent contacts. Straightening will not be done properly and the contact plating most likely will be marred. This will result in a high-resistance connection and will expose the base material to possible corrosion.

**STEP 21:** Potting of the connector where required should be the very last step prior to fastening the grommet and nut on the cable adapter. 'Ringing out' of the contacts with their mate should be done prior to potting.

**STEP 22:** It is recommended that all receptacles be potted while coupled to their mating connector.

**STEP 23:** Each assembly operator should also inspect. Worn, damaged, or defective tools should be reported immediately.

Assembly workmanship is a significant factor in the quality of terminating multiple-contact connectors. Quality cannot be "inspected" into connectors; it must be built-in during each assembly operation.

#### THE FOLLOWING INSTRUCTIONS APPLY TO EQUIPMENT COVERED BY CERTIFICATE NUMBER: SIRA 07ATEX1229X

The equipment may be used with flammable gases and vapors with apparatus group(s) IIA, IIB, & IIC and with temperature classes T6, T5, T4, T3, T2 & T1.

The equipment is only certified for use in ambient temperatures in the range -20°C to +40°C and should not be used outside this range.

#### THE PRODUCT COMPLIES WITH THE FOLLOWING STANDARDS:

EN 60079-0:2006	General requirements for electrical apparatus for explosive gas atmospheres
EN 60079-1:2007	Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosures "d" (Plus Cor 1) (IEC 60079-1:2003)
EN 60079-7:2003	Electrical apparatus for explosive gas atmospheres - Part 7: Increased safety "e" (IEC 60079-7:2001)
EN 61241-0:2006	General requirements for electrical apparatus for use in the presence of combustible dust
EN 61241-1:2004	Electrical apparatus for use in the presence of combustible dust. Protection by enclosures "tD"

Installation shall be carried out by suitably-trained personnel in accordance with the applicable code of practice e.g. EN 60079- 14. It is the end user's responsibility to ensure that the product, as specified and confirmed by the product label, is suitable for its intended application.

Inspection and maintenance of this equipment shall be carried out by suitably-trained personnel in accordance with the applicable code of practice e.g. EN 60079-17.

Repair of this equipment shall be carried out by suitably-trained personnel in accordance with the applicable code of practice e.g. EN 60079-19.

#### THE CERTIFICATION OF THIS EQUIPMENT RELIES UPON THE FOLLOWING MATERIALS USED IN ITS CONSTRUCTION:

Connector Material:	ASTM B211 or B221 6061-T6 Aluminum
O-ring Seal Material:	Buna Rubber w/ Durometer of 70 SHORE A
Potting Compound:	Resinlab #EP1056LV

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised.

Aggressive substances: e.g. acidic liquids or gases that may attack metals or solvents that may affect polymeric materials. Suitable precautions: e.g. regular checks as part of routine inspections or establishing from the material's data sheets that it is resistant to specific chemicals.

### SPECIAL CONDITIONS FOR SAFE USE:

The "X" suffix to the certificate number relates to the following special condition(s) for safe use:

1. The plugs and receptacles shall only be used with suitable, certified cable glands capable of a temperature range at their point of mounting of -20°C to 90.1°C.
2. Cables fitted to the plugs and receptacles shall be suitable for a continuous operating temperature of at least 90°C.
3. Plugs are not permitted to remain energized when not engaged to the receptacles, as per EN 60079-0; clause 20.2
4. The plugs and receptacles are not to be energized when fitted with the environmental blanking caps.
5. An explosion-proof receptacle cap must be fitted to the receptacles to be re-energized when they are not mated to a plug.
6. The connector does not incorporate an external earth facility. It is the responsibility of the user or installer to ensure adequate internal earth continuity by means of terminating ground wire to spare contact within the insert patterns for both plug and receptacles to allow for continuity.
7. The panel mount receptacles shall only be used where the temperature at the point of entry in service on the associated enclosure is between -20°C to +105°C.

### CONTACT PREPARATION INSTRUCTIONS

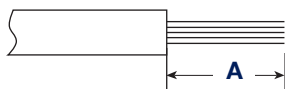
#### CRIMP TOOLS

M22520 series is recommended. See Tool Table on [page 292](#) for choice of turret head and selection setting according to contact size, part number and wire gauge size.



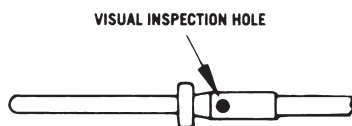
#### WIRE STRIPPING

Strip insulation from end of wire to be crimped. (See table for proper stripping dimensions.) Do not cut or damage wire strands.



WIRE SIZE	A
22, 22M, 22D	.125 (3.18)
20	.188 (4.77)
16	.188 (4.77)
12	.188 (4.77)
8 (power)	.470 (11.94)

#### CONTACT CRIMPING



**STEP 1:** Insert stripped wire into contact crimp pot. Wire must be visible through inspection hole.

**STEP 2:** Using correct crimp tool and locator, cycle the tool once to be sure the indentors are open. Insert contact and wire into locator. Squeeze tool handles firmly and completely to ensure a proper crimp. The tool will not release unless the crimp indentors in the tool head have been fully-actuated.

**STEP 3:** Release crimped contact and wire from tool. Ensure the wire is visible through inspection hole in contact.

All dimensions in inches (millimeters in parenthesis)



## CONNECTOR ASSEMBLY


### ASSEMBLING AN INLINE PLUG AND INLINE RECEPTACLE CONNECTORS

**STEP 1:** Slide the EX gland onto the cable about 12 inches, threaded-end last.

**STEP 2:** Slide the cable adapter onto the cable up to the EX gland, large-diameter first.

**STEP 3:** Slide the coupling nut onto the cable up to the cable adapter, grub screw end first.

**STEP 4:** Group all conductors according to size to facilitate orderly termination. Spiral layouts must also be matched carefully to the correct contacts in both the male and female inserts.

**STEP 5:** Working on one conductor at a time, strip the insulation off per the wire stripping length (See page 298) and terminate a contact to it, using a properly-adjusted crimp tool, following crimp instruction  (See page 298.) Repeat the process for each conductor.

**STEP 6:** Make sure the grub screws are fully-retracted, then slide the coupling nut up onto the plug shell until seated against its mating shoulder.

**STEP 7:** Thread the cable adapter onto the plug shell and hand-tighten.

**STEP 8:** Thread the EX gland onto the cable adapter and hand-tighten.

**STEP 9:** Using a strap wrench, fully tighten the cable adapter onto the plug shell.

**STEP 10:** Position the cable correctly. Using a hex wrench, tighten the EX gland. The seal must grip the outer jacket of the cable when the cable gland is tightened. Tighten back nut (or conduit receptor) to entry body. Ensure seal makes full contact with cable sheath. Tighten an extra 1½ turns (up to 2½ turns for minimum cable).

### PREPARING A BULKHEAD RECEPTACLE CONNECTOR FOR ENCLOSURE MOUNTING

All receptacle shells have contact positioning inserts that are permanently installed by the factory.

**STEP 1:** Slide the bulkhead adapter up onto the cable or conductor group, knurled-end first.

**STEP 2:** Terminate each conductor with its proper contact.

**STEP 3:** Populate the insert with contacts by poking each of the wired contacts into its respective insert cavity, following an electrical schematic for the system being wired.

**STEP 4:** Slide the bulkhead adapter down the conductors and screw it onto the panel mount receptacle.

**STEP 5:** Use a strap wrench to tighten the bulkhead adapter until it is fully tightened to shoulder.

**STEP 6:** Referring to Amphe-EX potting instructions, stand the assembly vertically, conductors pointing up, and fill the adapter with cement to a level 1/16-inch below the top of the adapter. After curing, this assembly is now permanently cemented, non-separable and non-repairable, and can be mounted to the bulkhead.

**STEP 7:** It is best to fit the connector to the bulkhead at a time when the free end of the cable is not terminated to the electrical system. If this is not possible, then it is necessary to rotate the connector assembly counter-clockwise to wind the cable/conductors so that when the assembly is threaded into a bulkhead in the subsequent instruction, the cable/conductors regain their most natural lay once the connector is mounted to the bulkhead. (Rotations required to be determined by end-user).

**STEP 8:** Position the protective cover's lanyard tab over one of the mounting holes and screw a fastener through it. Apply the remaining fasteners to the other three holes with torque suitable for screw size used.

**STEP 9:** Install the protective cover and tighten fully.

**STEP 10:** Secure both grub screws to prevent unauthorized removal.

## POTTING INSTRUCTIONS

All cable adapters other than ones suited for mating with an EX-certified gland must be filled with encapsulant (potted). The material certified for use in filling this connector line is Dexter-Hysol Product #ES4412.

The user or installer shall consider the performance of these materials with regard to attack by aggressive substances that may be present in the hazardous area.

This material is a two-component casting system with a 1:1 volumetric mix ratio. It has low exothermic qualities, peak at only 102°F during cure in two hours at 140°F. The product is available in premeasured "mix & dispense" packaging.

**CONNECTOR ASSEMBLY**

**BULKHEAD ADAPTER**

Bulkhead adapters should be filled to a maximum of 1/16-inch below the top of the adapter.

Care must be exercised so that the potting compound does not contaminate the bulkhead threads or spill onto the outer surfaces of the receptacle flange.

In preparation for potting, the receptacle is to be mated to its corresponding plug, so that all contacts are mated and in their optimal post-potted position.

When potting, the receptacle flange should be rigidly fixtured in a horizontal position. This fixture must be capable of holding the mated connector pair in that position for a minimum of two hours at room temperature.

The exiting conductor/cable should be fixtured inline above the connector pair during the entire curing process.

**SIRA PRODUCT LABELING INFORMATION**

Information below must be attached to connectors via a nonremovable label.

Amphenol Industrial Sidney NY 13838  
USA Part Number, Size Ref Work Order Number; Date Code



0518

II 2 GD

EEx dIIC T6 / Ex tD A21 IP68 (Plug and Receptacles)  
EEx de IIC T6 / Ex tD A21 IP68 (Panel mount receptacles filled with cement)  
Sira 07ATEX1229X "max volts, max amp. Current rating per pin"  
Do not separate when energized  
Do not open when an explosive gas or dust atmosphere is present

**MIXING/POTTING INSTRUCTIONS**

1. CAUTION: Wear goggles or other eye protection during all operations.
2. The potting compound is premeasured in "burst bag" packaging. This packaging consists of a single plastic bag that is compartmentalized into two chambers, each containing one part of the two-part compound. The segregating feature is called a 'burst seal'.
3. Lay the bag on a flat surface. Using either end of the bag that is parallel to the burst seal, start coiling/rolling the bag so that the compound in that half of the bag is pushed up against the burst seal.
4. Squeeze and apply pressure to the rolled side of the bag so that the compound bursts through the burst seal and joins the compound on the other side of the bag. Unroll the bag.
5. Mix the entire contents by alternately squeezing the bag and working it across the edge of a table to fully move the entire contents back and forth between chambers. Work the material in this manner, continuously, for a minimum of four minutes.
6. Once mixed, squeeze all the contents away from one corner of the bag, fully clearing that corner of the bag of all compound.
7. Make a 3/16-inch pouring spout by snipping off the bag's cleared corner.
8. To minimize air entrapment, slowly pour the compound into the back end of the bulkhead adapter to a level shown in Figure Z.
9. Set the bag containing the remaining compound aside, so that it may cure. After cure, the bag may be disposed of safely with common consumer refuse. CAUTION: As the remaining compound cures, the bag will become hot.

**HYSOL VOLUME PER BULKHEAD ADAPTER**

SHELL SIZE	FILL LENGTH INSIDE ADAPTER (INCHES)	ADAPTER DIAMETER (INCHES)	INTERNAL VOLUME (IN ^ 2)	INTERNAL VOLUME (OUNCES)
9	1.064	0.652	0.355	0.197
13	1.064	0.927	0.718	0.398
15	1.064	0.927	0.718	0.398
17	1.064	1.242	1.289	0.714
19	1.064	1.242	1.289	0.714
21	1.064	1.242	1.289	0.714

**Note:** This is the maximum volume of cement needed without considering volume claimed by the conductors



## WHAT IS A ZONE?

The IEC has defined three areas of hazardous gas or vapor release as follows:

ZONE 0	ZONE 1	ZONE 2
<p>Explosive atmosphere is continuously present.</p> <p>Zone in which an explosive mixture of gas, vapor or mist is continuously present.</p>	<p>Explosive atmosphere is often present.</p> <p>Zone in which an explosive mixture of gas, vapor or mist is likely to occur during normal operations.</p>	<p>Explosive atmosphere may be present.</p> <p>Zone in which an explosive mixture of gas, vapor or mist is not likely to occur in normal operation and if it occurs, it will only exist for a short time (leaks or maintenance).</p>

### COMPARING IEC ZONES AND NEC® DIVISIONS



### DETERMINING A “ZONE” REQUIRES ANSWERING 4 ESSENTIAL QUESTIONS

- What is emission level of gas/vapor?
  - continuous
  - first level emission (released during normal operation)
  - second level emission (released during abnormal operation)
- What type of openings currently exist?
  - continuously-open
  - normally closed
  - weatherproof
  - emergency open only
- What is ventilation?
  - very good
  - good
  - poor
- What is level of ventilation?
  - high
  - average
  - weak

### CHARTS COMPARING IEC VS. NEC®/CEC

Chart 1 – Area Classification – IEC vs. NEC®/CEC (Class/Division/Group)

INFLAMMABLE MATERIAL	IEC/CENELEC				NEC®/CEC		
	PROTECTION	ZONE	GROUP	SUBDIVISION	CLASS	DIVISION	GROUP
Gases & Vapors							
Acetylene	D and/or E	1 or 2	II	C	I	1 or 2	A
Hydrogen	D and/or E	1 or 2	II	C + H <sup>2</sup>	I	1 or 2	B
Propylene Oxide							
Ethyl Oxide, Butadiene	D and/or E	1 or 2	II	B	I	1 or 2	B
Cyclopropane							
Ethyl Ether, Ethylene	D and/or E	1 or 2	II	B	I	1 or 2	C
Acetone, Benzene,							
Butane, Propane,	D and/or E	1 or 2	II	A	I	1 or 2	D
Hexane, Paint Solvents							
Natural Gas							

## CHARTS COMPARING IEC VS. NEC®/CEC

### CHART 2 – IEC VS. NEC® TEMPERATURE CLASSIFICATION COMPARISON

CLASSIFICATION		
TEMPERATURES IN °C (°F)	IEC	NORTH AMERICA
85° (185°)	T6	T6
100° (212°)	T5	T5
120° (248°)	T4	T4A
135° (275°)		T4
160° (320°)	T3	T3C
165° (329°)		T3B
180° (356°)		T3A
200° (392°)		T3
215° (419°)		T2D
230° (446°)	T2	T2C
260° (500°)		T2B
280° (536°)		T2A
300° (572°)		T2
450° (842°)	T1	T1

### CHART 3 – SAFE EQUIPMENT OPERATING TEMPERATURE

SPONTANEOUS IGNITION TEMPERATURE OF THE GASES (T°)	TEMPERATURE CLASS OF THE EQUIPMENT					
	T6 85° (185°)	T5 100° (212°)	T4 135° (275°)	T3 200° (392°)	T2 300° (572°)	T1 450° (842°)
85° (185°) ≤ T° ≤ 100° (212°)	Explosion danger	Explosion danger	Explosion danger	Explosion danger	Explosion danger	Explosion danger
100° (212°) < T° ≤ 135° (275°)	Explosion danger	Explosion danger	Explosion danger	Explosion danger	Explosion danger	Explosion danger
135° (275°) < T° ≤ 200° (392°)	Explosion danger	Explosion danger	Explosion danger	Explosion danger	Explosion danger	Explosion danger
200° (392°) < T° ≤ 300° (572°)	Equipment safe to use	Equipment safe to use	Equipment safe to use	Explosion danger	Explosion danger	Explosion danger
300° (572°) < T° ≤ 450° (842°)	Equipment safe to use	Equipment safe to use	Equipment safe to use	Equipment safe to use	Explosion danger	Explosion danger
450° (842°) ≤ T°	Equipment safe to use	Equipment safe to use	Equipment safe to use	Equipment safe to use	Equipment safe to use	Equipment safe to use

**Note:** the temperatures given in °C (°F)

- Explosion danger
- Equipment safe to use

### CHART 4 – IEC-NEC® GAS GROUPS

IEC	NEC®/CEC	Gas or Vapor
II C	A	Acetylene
II C	B	Hydrogen
II B	C	Ethylene
II B	C	Ethyl Ether
II B	C	Cyclopropane
II B	C	Butadene 1-3
II A	D	Propane
II A	D	Ethane
II A	D	Butane
II A	D	Benzene
II A	D	Pentane
II A	D	Heptane
II A	D	Acetone
II A	D	Methyl Ethyl
II A	D	Methyl Alcohol
II A	D	Ethyl Alcohol

### CHART 5 – IEC-NEC® EQUIPMENT STANDARDS

EQUIPMENT	IEC	CENLEC	NEC® (UL)	CEC (CSA)	
Fixed Luminaries for General Use			UL 844	C22.2 No. 4	
			UL 844 UL 781	C22.2 No. 4 C22.2 No. 137	
Portable Equipment	60 079.0	EN 50 014 EN 50 018 And /or EN 50 019	UL 844 UL 783		
Floodlights and Lamps	60 079.1 60 079.7	EN 60 598.1	UL 844 UL 1570		-
Luminaries with Fluorescent Lamps	60 598.1		UL 844 UL 1571		C22.2 No. 4 C22.2 No. 9
Luminaries with Incandescent Lamps	60 079.0	EN 50 014	UL 1010 UL 1982	C22.2 No. 159 N/A	
	60 079.1	EN 50 018			
	60 079.7	and/or 019			
	60 309.1	EN 60 309.1			
	60 309.2	EN 60 309.2			
Power Outlets	60 079.0	EN 50 014	UL 508 UL 98 UL1087 UL894	C22.2 N/A C22.2 No. 5.2 C22.2 No. 25&30	
	60 079.1	EN 50 018			
	60 079.7	and/or 019			
	60 947.1	EN 60 947.1			
	60 947.3	EN 60 947.3			
	60 947.3	EN 60 947.3			

## CHARTS COMPARING IEC VS. NEC®/CEC

**CHART 6 – PROTECTION TECHNIQUES BY IEC, NEC® AND CEC**

PROTECTION METHOD	IDENTIFICATION LETTERS	GROUP DIVISION	PERMITTED ZONE	PRINCIPLE
Flameproof	d	2	1 or 2	Containment
Intrinsic Safety (Zone 0)	ia	1 or 2	0, 1, 2	Energy-Limited
Intrinsic Safety (Zone 1)	ib	2	1 or 2	Energy-Limited
Pressurization	p	1 or 2	1 or 2	Expels Vapor
Increased Safety	e	2	1 or 2	No Arcs
Immersed in Oil	o	1 or 2	1 or 2	Arc Immersion
Filled with Powder/Sand	q	2	1 or 2	Arc Immersion
Encapsulated	m	2	1 or 2	Hermetic Seal
Apparatus with “n” protection	n	2	2	No Sparking

\*Includes non-sparking (nA), restricted breathing (nR), hermetically-sealed non-incendive (nC)

## UNDERSTANDING IEC MARKINGS

**Ex**  
**Explosion-Protected**  
 Meets IEC Standards  
 Eex = Meets CENELEC Standards  
 AEX = Equipment conforms to NEC®

**d**  
**Type of Protection**  
 d = Flameproof

**II**  
**II Gas Group -**  
 Surface Gases

**c**  
**Gas Subdivision**  
 Group c = Hydrogen

**T6**  
**Temperature Class**  
 T6 = Max 85°C (185°F)

**Ex**  
 Distinctive CENELEC mandatory marking for equipment useable in explosive atmospheres. Sometimes broadly used for IEC Ex equipment.

### MAIN PROTECTION TECHNIQUES

#### FLAMEPROOF “D”



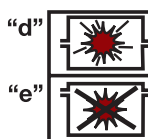
- Contain internal explosion
- Control external temperature of enclosure
- Similar to NEC® explosion-proof

#### INCREASED SAFETY “E”



- High-impact-resistant enclosures – FRP, GRP, sheet steel/aluminum
- Will not hold static charge
- Use approved components
- Control internal and external temperature
- Maintain minimum of IP54 ingress protection
- No arcs or sparks

#### FLAMEPROOF PLUS INCREASED SAFETY “DE”



- Location of arcing has “d” protection (flameproof)
- Connection terminals have “e” protection (increased safety)
- Typical use in switches, lighting, power outlets – where arcs can normally occur
- Control internal and external temperature

#### NON-SPARKING “N”



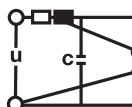
- Equipment has no normally-arcing parts
- Thermal effects incapable of ignition
- nA = non-sparking
- nR = restricted breathing
- nC = hermetically-sealed non-incendive

#### PRESSURED APPARATUS “P”



- Expels ignitable vapor/gas
- Maintains positive enclosure pressure

#### PRESSURED APPARATUS “P”



- Incapable of releasing energy to cause an explosion

**NOTE:** Temperature given in °C (°F)

## EXAMPLES OF ZONE CLASSIFICATION SITUATIONS

ZONE 0	ZONE 1	ZONE 2	NON-HAZARDOUS ZONE
<p>Zone Example 1</p> <p><b>CONDITIONS</b></p> <ol style="list-style-type: none"> <li>All-manual ventilation</li> <li>Zone 0</li> <li>Zone 1</li> <li>Non-hazardous area                             <ul style="list-style-type: none"> <li>Open-air mixing tank</li> <li>No mechanical ventilation</li> <li>Products stored in work area</li> </ul> </li> </ol>	<p>Zone Example 2</p> <p><b>CONDITIONS</b></p> <ol style="list-style-type: none"> <li>Hood over tank</li> <li>Zone 0</li> <li>Zone 1</li> <li>Zone 2</li> <li>Non-hazardous area</li> <li>Mechanical ventilation</li> <li>Stored products separated from work area</li> </ol>	<p>Zone Example 3</p> <p><b>CONDITIONS</b></p> <ol style="list-style-type: none"> <li>Tank closed</li> <li>Mechanical ventilation</li> <li>Zone 0</li> <li>Zone 2</li> <li>Non-hazardous area                             <ul style="list-style-type: none"> <li>Operations control outside zones</li> </ul> </li> </ol>	

## EXAMPLES OF CLASS 1, DIVISION 1 AND 2 SITUATIONS

ZONE 0	ZONE 1	ZONE 2	NON-HAZARDOUS ZONE
<p>Division Example 1</p> <p><b>CONDITIONS</b></p> <ol style="list-style-type: none"> <li>Class 1, Division 1 hazard exists during normal operating conditions                             <ul style="list-style-type: none"> <li>Open-air mixing</li> <li>Products stored in work area</li> </ul> </li> <li>Area classified based on properties of vapors present</li> <li>Electrical equipment must use approved Div. 1 NEC® protection techniques and wiring methods</li> </ol>	<p>Division Example 2</p> <p><b>CONDITIONS</b></p> <ol style="list-style-type: none"> <li>Division 2 area can exist where vapors normally exist in closed system or containers</li> <li>Division 1 and 2 areas separated by barrier or space                             <ul style="list-style-type: none"> <li>Hazardous areas properly documented</li> <li>Div. 2 must use approved NEC® wiring methods and products</li> </ul> </li> <li>Stored products outside Div. 1 work area</li> <li>Non-hazardous area</li> </ol>	<p>Division Example 3</p> <p><b>CONDITIONS</b></p> <ol style="list-style-type: none"> <li>Closed tank and piping confines Div. 1</li> <li>Yellow area qualifies as Div. 2</li> <li>Stored products not present</li> <li>Purged/pressurized control room qualifies as “non-hazardous” is sealed off from Div. 2 area</li> <li>Electrical equipment in Div. 2 must use approved Div. 2 protection techniques and products</li> </ol>	