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TNCN

Features

The TNCN/TNCC range comprises many standard sizes of enclosure manufactured in 316L acid resistant stainless steel to give the maximum environmental protection. The main body is manufactured from minimum 1,5 mm thick sheet (depending on the box size). Cable entries can be drilled in all sides or through the gland plates if fitted. Entries may also be drilled through the rear face of the enclosure.

Several boxes of different sizes can be mounted together as a compact unit.

If you should have a particular requirement Technor also can offer tailor made boxes. Sales staff will be happy to advise on this.

- Flexibel product range with many standard sizes. Tailor made sizes upon request.
- Ingress protection to meet the harsh environment with IP66 as standard. IP67 and IP68 upon request.
- Wide temperature range (-40°C to +60°C)
- Drainage flange to prevent penetration of water.
- Standard hinged doors held to the enclosure by screws. Quick locks or screws only as an option for the largest boxes,and standard for the smallest boxes.
- Many cable entries possibilities. Gland plates and MCT frames upon request.
- Several earthing alternatives.
- May be used as a connection box for intrinsically safe circuits.
- High voltage terminal- and bus bar systems may be supplied.
- May be used as connection box for flameproof equipment.
- Self-regulating anti-condensating heating cable may be fitted.
- Glass or Lexan windows in lid/door may be fitted.
- High operational reliability and cost efficiency, reduced lifetime maintenance costs.
- ATEX, IECEx, CSA and GOST

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Applications

The TNCN range of boxes and enclosures are designed to meet the harsh environment of the North Sea, and are ideal for Petrochemical and Marine applications and for all kind of industry where an explosive atmosphere may be present. Thousands of Technor Junction boxes are installed on- and off-shore during the last years. If you should have a particular need our sales staff will be happy to advise on this.

General specifications

Material	Acid resistant stainless steel SS316
IP Rating	66 standard (67 and 68 upon request)
Temperature	-40°C to +40°C (T5) -40°C to +60°C (T6/T4) Option: -40°C to +200°C
Approvals	DNV-2001-OSL-ATEX-0176 IECEx DNV 09.005U IECEx DNV 09.004 CSA 2036776 and GOST
Standards	IEC/EN 60079-0, IEC/EN 60079-7 IEC/EN 61241-0, IEC/EN 61241-1
Ex-Code	Ex e II T6/T4 / Ex [ia] IIC T6 Ex tD A21 T85°C - T110°C Ⓔx II 2 GD and EPL Gb/Db
Lid/Door gasket	Neoprene (temp. -40°C to +100°C) Silicone (temp. -40°C to +200°C)
Surface treatment	Acidized Pickling as standard Electropolished as an option
Material thickness	Min. 1,5 mm (depending on the box size)
Earthing	Internal earth bar/bracket External earth bracket
Drain plug	Optional

Terminal box maximum heat dissipation – number of terminals

An ignition temperature is the temperature at which a hot surface will cause an ignition to occur in a given atmosphere. Dependent on the type of gas or dust, the maximum temperature that the surface of the terminal box can reach without a spontaneous ignition is known as the ‘T Class’. The maximum surface temperature must always be lower than the ignition temperature of the atmosphere in which it is used.

The terminal boxes within the TNCN range has been assigned a maximum heat dissipation relating to the ambient temperature and T Class. The TNCN range offers T6 and T4 protection:

T4 = Maximum 135°C (Internal wiring must have a temperature rating of at least 110°C)

T6 = Maximum 85°C

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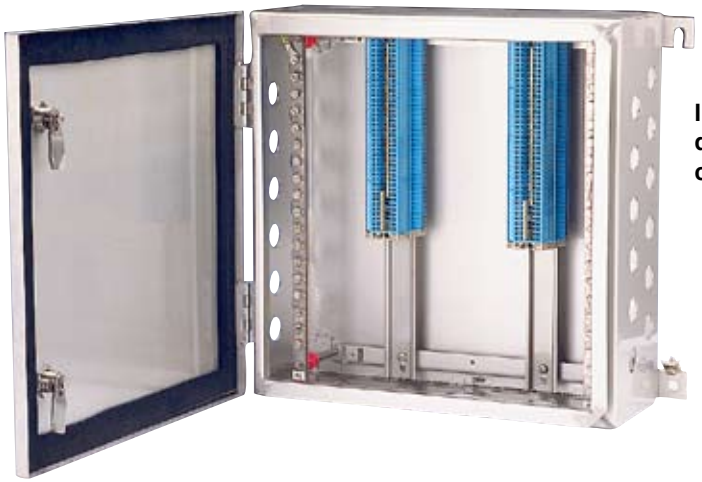
Maximum heat dissipation	
Box size	Max. dissi-pated power at Ta=40°C
1210XX	6 W
1515XX	15 W
2828XX	30 W
2838XX	40 W
3020 XX	30 W
3838XX	40 W
3845XX	50 W
3857XX	65 W
5757XX	90 W
5776XX	120 W
7676XX	180 W
7695XX	200 W
9595XX	240 W
76114XX	240 W
95114XX	240 W
95152XX	240 W
95200XX	240 W

Table 1. Intermediate sizes between the sizes listed in the table may use the dissipated power of the nearest smaller size.

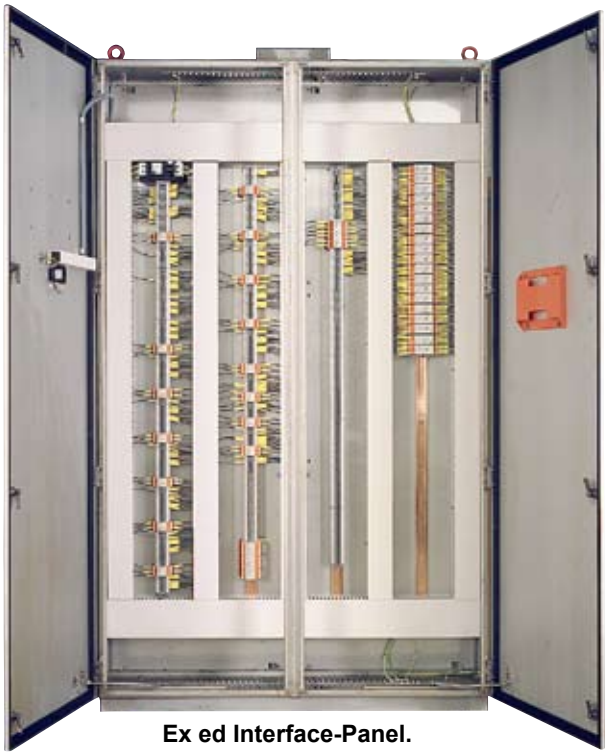


Internal arrangements are delivered according to customers specifications.

Theoretical values are calculated based upon typical configurations. Maximum power must not be exceeded in any given terminal box. Maximum current per terminal must be calculated using the Maximum Heat Dissipation (table 1).

For some applications it may be necessary to have a variety of terminal sizes. The following tables and examples demonstrate how this is achieved. The power heat dissipation determines the maximum number of terminals permissible for any size of terminal box, based on a 100% load.

In example 2, the total load has exceeded the maximum 100% value. Therefore, the required size and number of terminals cannot be fitted within this terminal box. If load exceeds maximum value simply select a larger size terminal box within the range and repeat the process until the total load value is within 100% value.



Ex ed Interface-Panel.

Example 1 (TNCN 282815)

Terminal/ conductor size (mm^2)	Current (Amps)	Number of terminals	Load = 100% maximum
1,5	10	18 (of max 33)	54,54%
2.5	16	8 (of max 33)	24,24%
4	20	6 (of max 33)	18,18%
		Total load	**96,96%**

Example 2 (TNCN 282820)

Terminal/ conductor size (mm^2)	Current (Amps)	Number of terminals	Load = 100% maximum
1,5	10	18 (of max 33)	54,54%
2.5	16	10 (of max 33)	30,30%
4	20	6 (of max 33)	18,18%
		Total load	**103,02%**

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Typical Terminal Load Configuration

Note: In the shaded area you can add as many terminals as physically possible provided the maximum load of 100% is not exceeded.

For loads on terminals below 4A the quantity will be limited by the available space inside the box. There is no restriction in the numbers of terminals. The temperature class will then be T6 (85°C). Care must be taken to ensure that the size of the choosen enclosure can accommodate the cable bending radius.

Terminal size (mm²)					
1210XX	1,5	2,5	4	6	
Current (A) 10	15				
16	6	10			
20		6	10		
25			6	10	

	Terminal size (mm²)					
1515XX	1,5	2,5	4	6	10	
Current (A) 10	37					
16	16	25				
20		16	25			
25			16	25		
31				18		
35					21	
43					15	

	Terminal size (mm²)							
2828XX	1,5	2,5	4	6	10	16	35	
Current (A) 10	33							
16	13	33						
20		21	33					
25			21	33				
31				30				
35					27			
43					17			
52						17		
65						11		
96							11	

	Terminal size (mm²)							
3820XX	1,5	2,5	4	6	10	16	35	
Current (A) 10	25							
16	10	16						
20		10	17					
25			11	16				
31				11				
35					15			
43					9			
52						10		
65						6		
96							6	

	Terminal size (mm²)							
3838XX	1,5	2,5	4	6	10	16	35	
Current (A) 10	33							
16	13	22						
20		14	23					
25			14	22				
31				14				
35					20			
43					12			
52						13		
65						8		
96							8	

	Terminal size (mm²)							
3845XX	1,5	2,5	4	6	10	16	35	
Current (A) 10	41							
16	16	27						
20		17	29					
25			18	27				
31				18				
35					25			
43					16			
52						16		
65						10		
96							10	

	Terminal size (mm²)							
3857xx	1,5	2,5	4	6	10	16	35	
Current (A) 10	54							
16	21	36						
20		23	38					
25			24	36				
31				24				
35					32			
43					20			
52						21		
65						13		
96							13	

	Terminal size (mm²)									
5776XX	1,5	2,5	4	6	10	16	35	50	95	150
Current (A) 10	102									
16	36	37								
20		24	38							
25			24	36						
31				24						
35					32					
43					21					
52						22				
65						14				
96							14			
120							9	10		
135								8	15	
210									6	7

	Terminal size (mm²)									
7695XX	1,5	2,5	4	6	10	16	35	50	95	150
Current (A) 10	153									
16	60	62								
20		40	64							
25			40	60						
31				40						
35					54					
43					35					
52						37				
65						24				
96							23			
120							15	18		
135								14	25	
210									10	12

	Terminal size (mm²)									
5757XX	1,5	2,5	4	6	10	16	35	50	95	150
Current (A) 10	75									
16	30	50								
20		32	52							
25			33	50						
31				33						
35					45					
43					29					
52						30				
65						19				
96							19			
120							12	12		
135								10	16	
210									6	7

	Terminal size (mm²)									
95114XX	1,5	2,5	4	6	10	16	35	50	95	150
Current (A) 10	184									
16	72	75								
20		48	77							
25			48	72						
31				48						
35					64					
43					42					
52						45				
65						28				
96							28			
120							18	21		
135								17	30	
210									12	15

	Terminal size (mm²)										
95152XX	1,5	2,5	4	6	10	16	35	50	95	150	185
Current (A) 10	96										
16	36	61									
20		40	63								
25			40	61							
31				40							
35					54						
43					35						
52						38					
65						24					
96							24				
120							15	18			
135								14	26		
210									10	13	
234										10	16
250										9	15

	Terminal size (mm²)												
100200XX	1,5	2,5	4	6	10	16	35	50	95	150	185	240	300
Current (A) 10	50												
16	32	50											
20		32	51										
25			32	50									
31				32									
35					43								
43					28								
52						30							
65						19							
96							20						
120							12	15					
135								12	22				
210									9	11			
234										10	12	15	
250										8	13		

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TNCN Measurement Table – Range of stocked boxes

Type	Width (cm)	Height (cm)	Depth (cm)	Volume (dm^3)	Weight (kg)
121009**	12	10	9	1,08	1,5
151510**	15	15	10	2,25	2,5
202010	20	20	10	4,00	3,00
202015	20	20	15	6,00	3,5
204015	20	40	15	12,00	5,4
282815	28	28	15	11,76	5,2
282827	28	28	27	21,17	7,0
302015	30	20	15	9,00	5,0
383815	38	38	15	21,66	8,1
383827	38	38	27	38,99	10,3
384515	38	45	15	25,65	8,9
385715	38	57	15	32,49	10,7
575715	57	57	15	48,74	16,4
575730	57	57	30	97,47	21,4
577620	57	76	20	86,64	21,7
769520	76	95	20	144,4	32,9

The boxes are delivered as standard with left hinged doors held to the enclosure by screws. Quick locks, screws only, or other systems can be delivered upon request.
** No hinges – screws only

Entry matrix

The table is guidance for the maximum quantity of glands for installation in 1 face (the Width column in the table) on TNCN junction boxes.

Note! Recommended quantity is 2/3 of guided quantity. MCT-frames can be fitted in boxes with a minimum depth of 20 cm.

Possible entry faces on TNCN

Width	Depth	M20	M25
15	10	6	4
	15	12	8
	20	14	9
	27	24	17
19	10	10	6
	15	18	10
	20	20	15
	27	33	22
20	10	9	6
	15	18	13
	20	22	15
	27	36	25
25	10	11	7
	15	21	15
	20	28	18
	27	40	30
30	10	14	9
	15	27	18
	20	36	22
	27	57	36
35	10	17	11
	15	33	23
	20	40	27
	27	64	44
38	10	18	11
	15	36	25
	20	48	30
	27	72	50
40	10	20	12
	15	38	25
	20	42	30
	27	72	50
45	10	21	14
	15	42	32
	20	50	33
	27	84	60
57	10	27	20
	15	54	38
	20	63	42
	30	108	74
76	10	38	26
	15	75	45
	20	100	70
	27	144	105

The quantity is based upon glands with cross corner 41 mm (M25) and 34 mm (M20).

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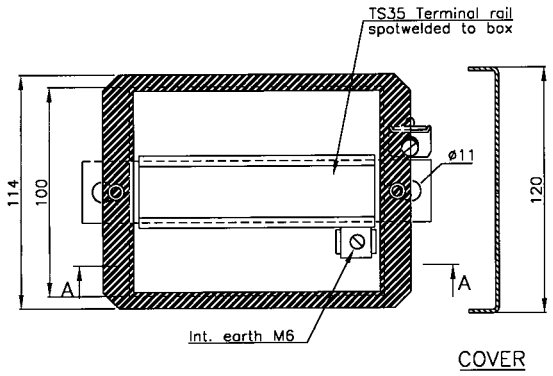
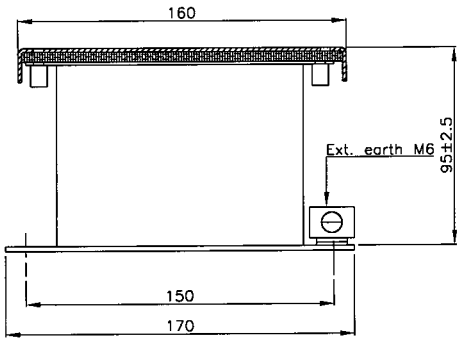
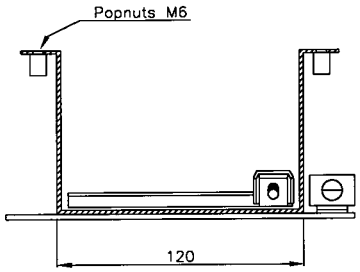
General Arrangement Drawings

TNCN 121009-2

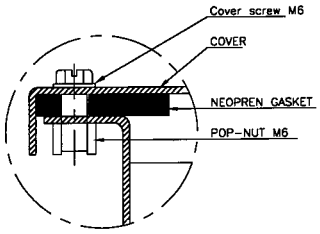


COVER





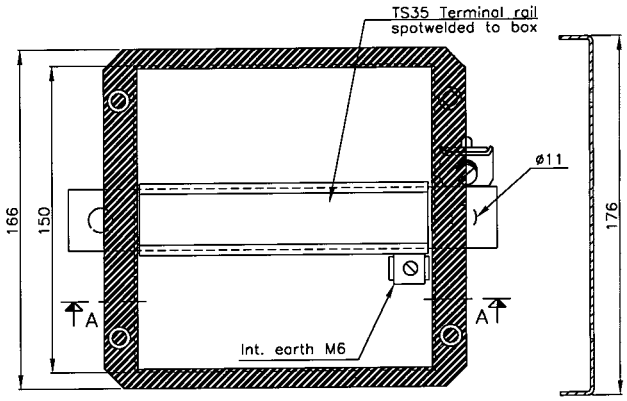
SECTION A-A



Pop-nut detail
Standard with 2/4 screws

All dimensions in mm.

TNCN 151510-2



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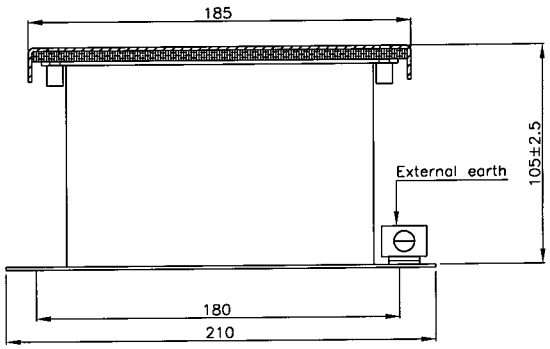

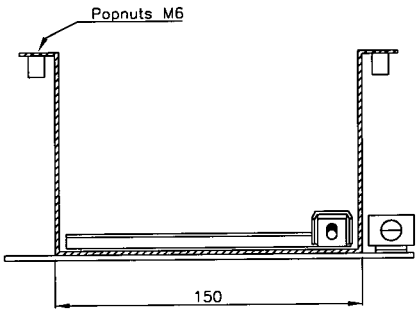

SECTION A-A

Type Key: TNCN • • • • • • -2

- Box depth *
- Box height
- Box width

Box dimensions in cm.

NOTES:

X = Box width -80 mm.
Y = x/2, only for boxes wider than 270mm (TNCN 28XXXX-2).
• = The real box depth is, depending on box size, 5-10 mm larger than the depth seen from the type description.
•• = Not for TNCN 151510-2 og TNCN 121009-2.

All dimensions in mm.

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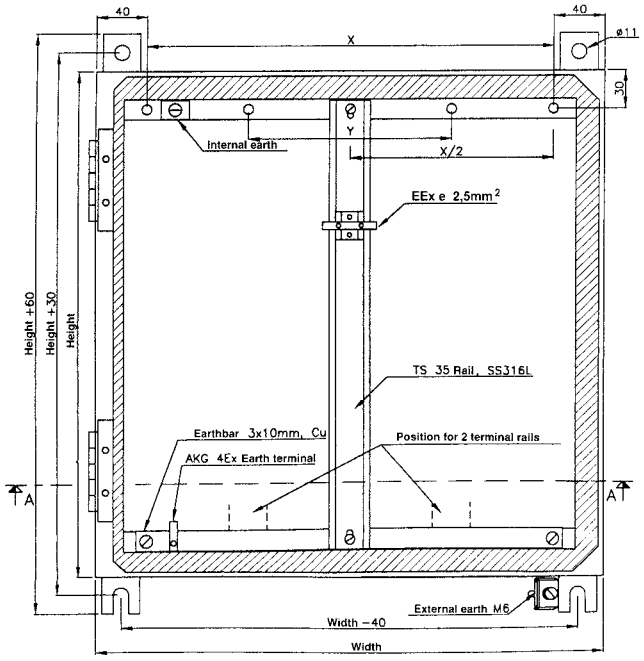
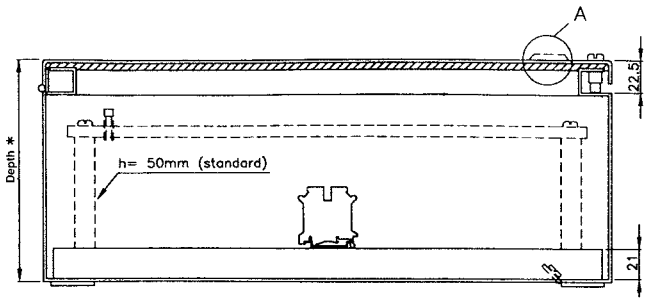
Standard TNCN EEx e II
Sizes up to and incl. TNCN XX56XX-2

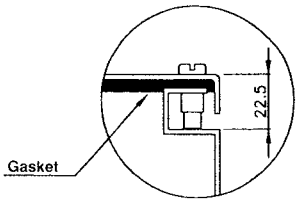




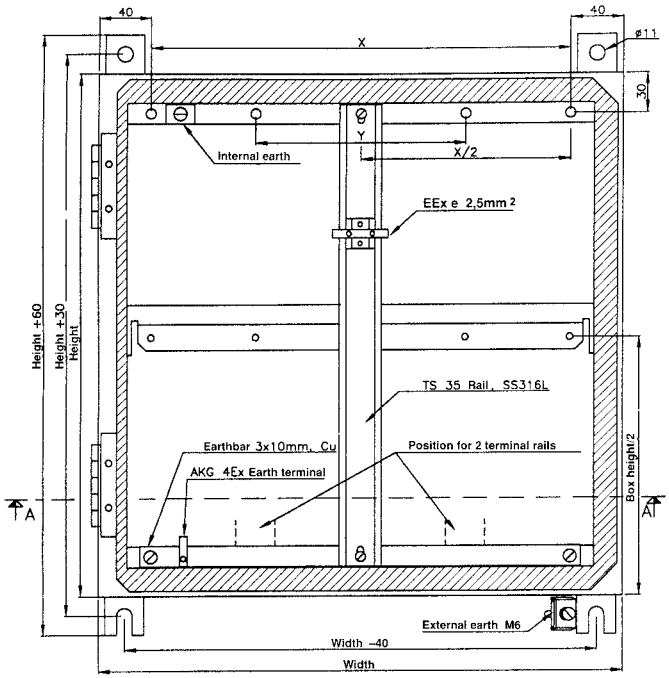
SECTION A-A

LOCKING DETAILS

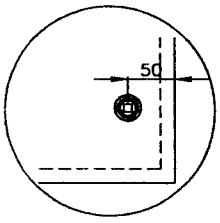
Standard with screws



Standard TNCN EEx e II
Sizes from TNCN XX57XX-2

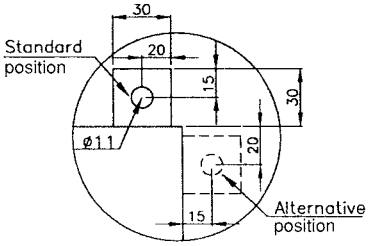


Option with quicklocks**



Detail A from above

EXTERNAL MOUNTING BRACKETS



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Hazardous area information & terminology

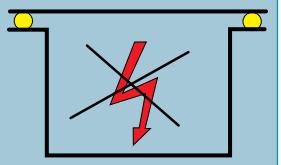
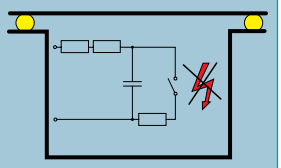
ATEX Directive

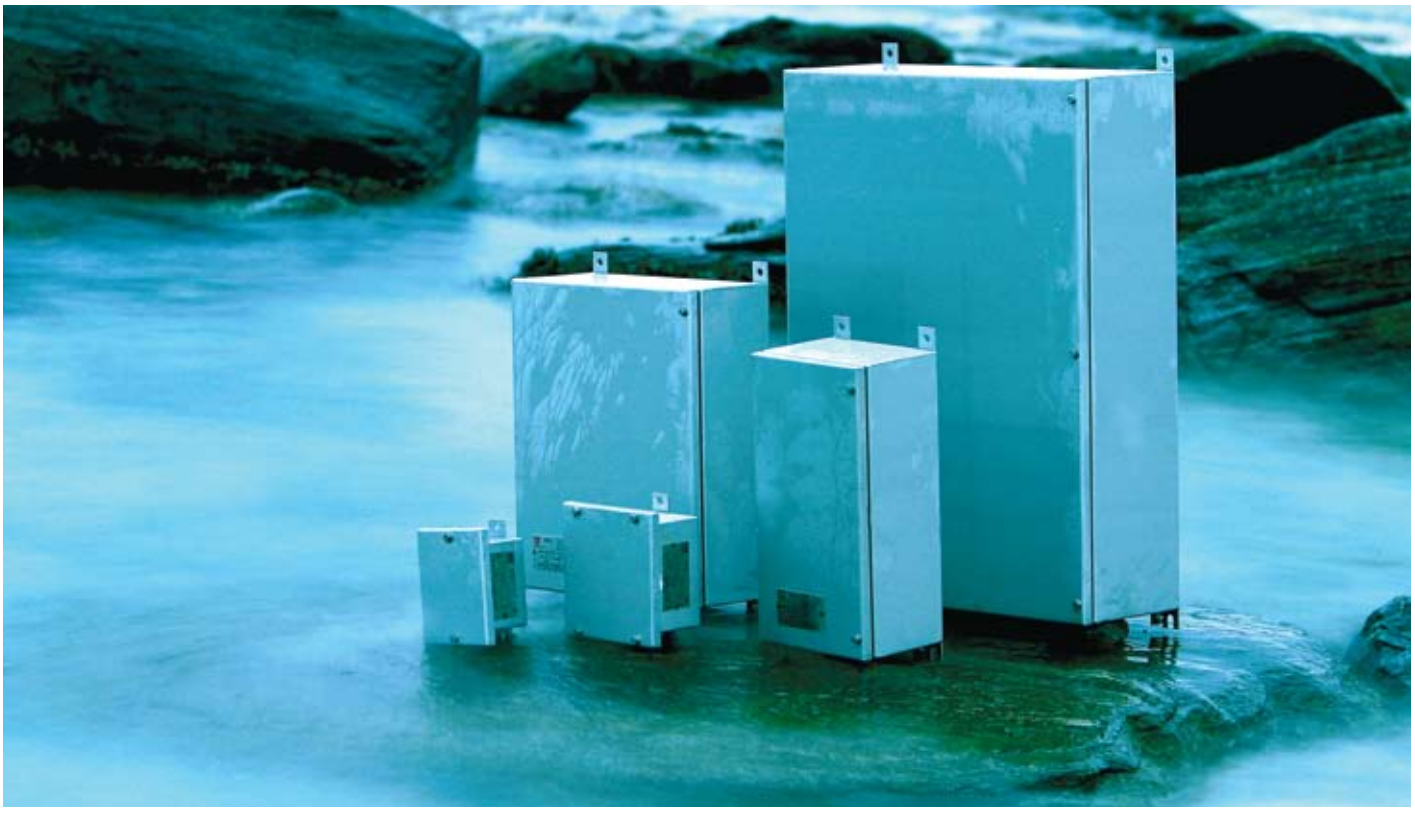
The ATEX Directive, derived from the French “Atmosphères EXplosibles” and formally known as 94/9/EC, contains the ESR (Essential Safety Requirements) to which electrical equipment and protective systems used within potentially explosive atmospheres must conform.

The new ATEX Directive currently in place within the European Union was made mandatory on 1st July 2003. Primarily intended for manufacturers of hazardous area equipment for use in the presence of flammable gases, vapours, fumes or dusts, the new directive requires a quality management system to be implemented.

Procedures for the design, manufacture and verification of products are to be approved by a notified body (i.e. DNV, NEMKO, etc.) and all equipment conforming to the new directive will feature CE and Ex Marking.

Zone Classification with the presence of GAS	
Zone 1 (Category 2)	An area in which explosive gas is likely to be present during normal operation of the plant.
Zone 2 (Category 3)	An area in which explosive gas is not continuously present, but may exist for a short period of time.

Applicable EX protection	
Ex e Protection for electrical components that do not spark under normal working conditions but where measures are applied to prevent high temperatures and the occurence of arcs and sparks internally.	
Ex ia Protection for equipment containing intrinsically safe circuits, which are incapable of causing an explosion in the surrounding atmosphere, that is where current and voltage in normal operation would not produce enough spark energy or heat to ignite any potentially explosive gases.	



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