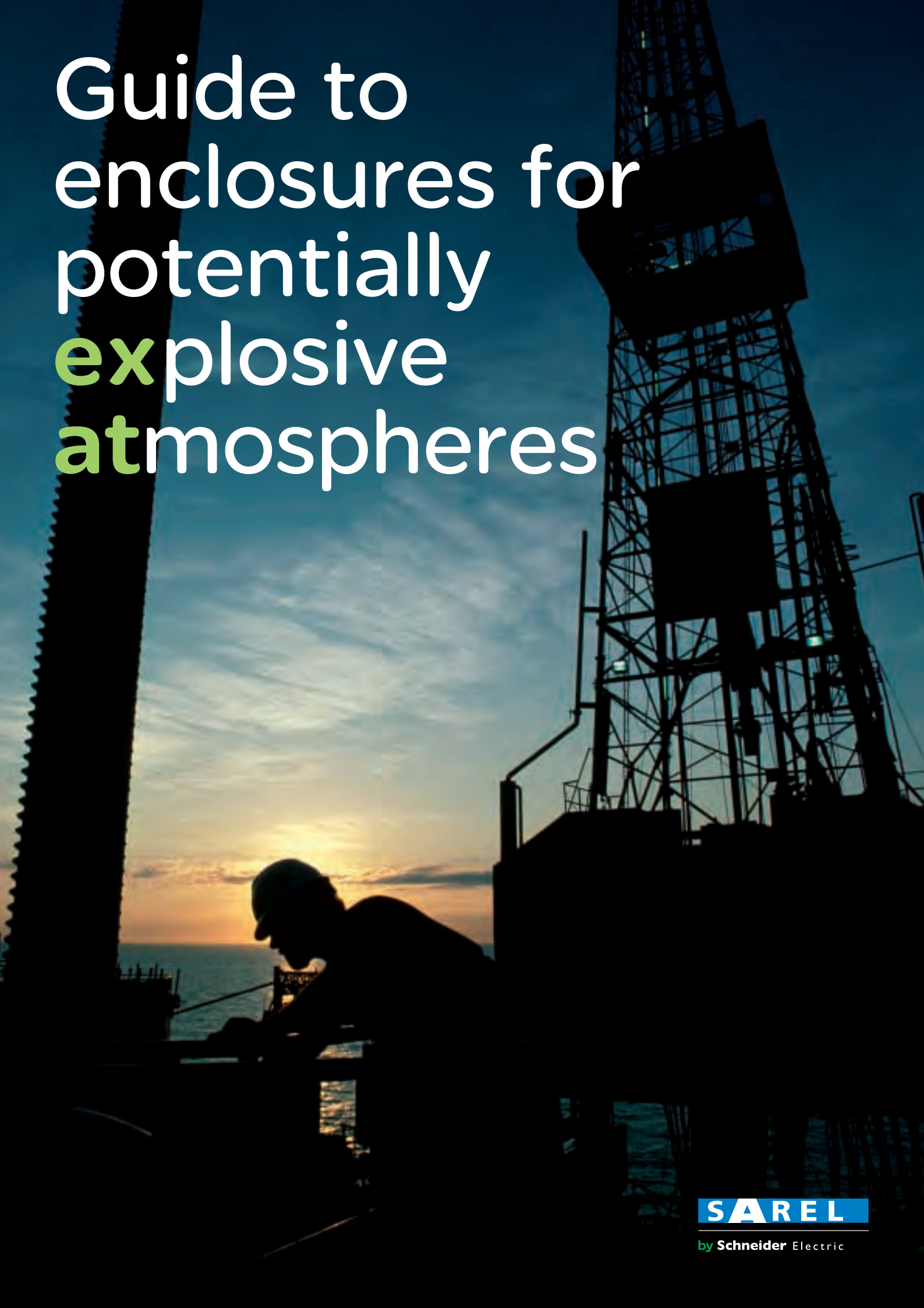
Guide to enclosures for potentially explosive atmospheres



SAREL

by Schneider Electric

Guide to enclosures for potentially **ex**plosive **at**mospheres

The safety of every application, in every environment, thanks to ATEX-certified steel, stainless steel and polyester wall-mounting enclosures.

SAREL
by Schneider Electric

The specialist in sealed equipment

> Since 1956, SAREL has been dedicated to creating, producing and selling enclosure systems. These provide physical protection for the production and installation of equipment for industrial automation, electrical distribution and VDI networks in all environmental conditions.

> SAREL is amongst the world's leaders in the field of industrial boxes, wall-mounting enclosures, monobloc and suitable floor-standing enclosures and control desks, offered in all kind of materials (steel, stainless steel, polyester and thermoplastic), and in the field of switchgear, boxes and installation accessories. SAREL is the confirmed specialist in sealed equipment.

To best meet the needs of professionals:

Attentiveness, proximity, innovation and presence.

Production launch

The choice of a worldwide leader

Command of five industrial lines of work

> To efficiently meet the needs of professionals in the fields of electricity, automation, electronics and VDI and telecom networks, SAREL guarantees, through its Quality Assurance department, command of the industrial lines of work required to manufacture its products.

> Distributed over four sites, covering a total surface area of 55,000 m^2, the industrial activities take place in different workshops. Each workshop houses specialised production lines, with functions and equipment for specific production, dedicated to:

Production line

- Sheet metal work.
- Injection and extrusion of plastics.
- Stainless, brushed and micro-beaded sheet metal work.
- Transformation of thermosetting plastics.
- Logistics.

Packaging

Logistics platform

Table of Contents

Potentially explosive atmospheres: important information

What is ATEX?

> It is a term commonly used to describe potentially explosive atmospheres (ATmosphères EXplosibles in French) and standards for protection systems and equipment.

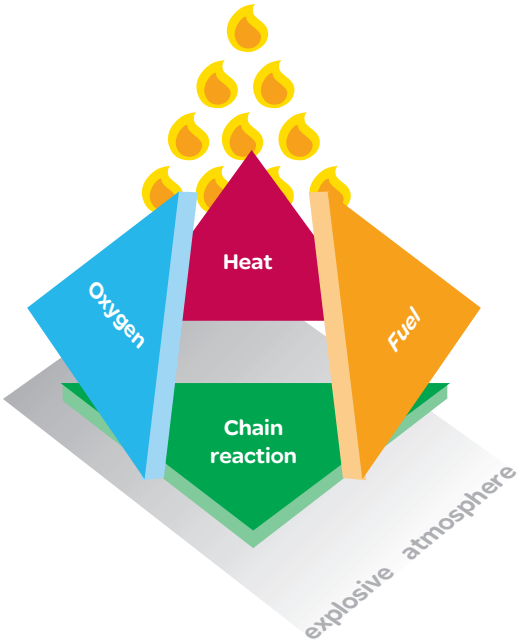
> Two European directives, ATEX 99/92/CE and ATEX 94/9/CE, and international standards IEC 60079 and IEC 61241, harmonized with EN European standards, apply to this field.

Product directive 94/9/CE: defines the manufacturers' obligations.

Personal protection directive 99/92/CE: defines the users' obligations.

How is an potentially explosive atmosphere defined according to ATEX?

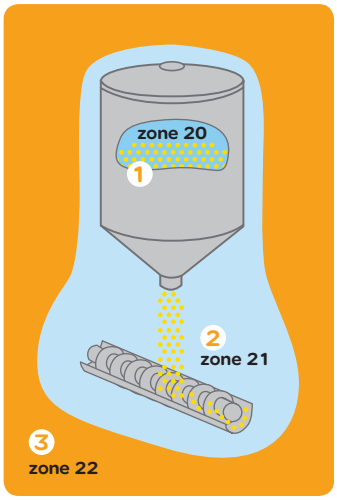
> An potentially explosive atmosphere is defined as a mix of flammable substances in the form of gas, vapour, dust (cloud or deposit) which, in air and under normal atmospheric conditions, can completely or partially catch fire in the form of an explosion when exposed to a source of ignition.



Classification of an explosive atmosphere

They are classified into groups and zones according to directive 99/92/CE and IEC standards as follows:

destination	categories/presence of potentially explosive atmosphere	hazardous zones	atmosphere
group I mines	M1 and M2	gas and dust (G & D)	
group II surface industries	1 permanent or frequent	**zone 0**: gas and vapour	G
		zone 20: mist and dust	D
	2 occasional	**zone 1**: gas and vapour	G
		zone 21: mist and dust	D
	3 rare	**zone 2**: gas and vapour	G
		zone 22: mist and dust	D



Equipment for potentially explosive atmospheres

> Since 1st July 2003, European directive ATEX 94/9/CE has made it compulsory to use certified electric or non-electric equipment when it must be installed in zones with potentially explosive atmospheres (gas or dust).

> Certification must be provided by a body which is notified according to the same directive.

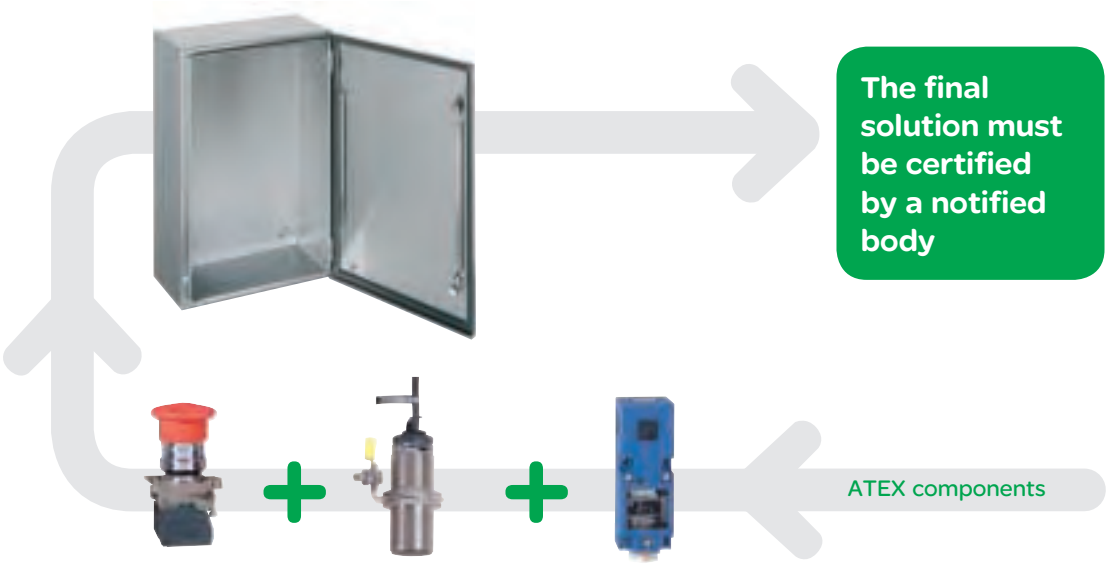
> The body notifies its assessment of the quality of the production and certifies that the product complies with the health and safety demands defined in the directive and the international standards.

> The certificate shows the category of the product by marking, and thus the zone and atmosphere in which it can be used.

> The standards define the following types of protection for electric equipment:

electrical equipment				
CENELEC	**IEC**	**gas: symbol of the types of protection**	**CENELEC/IEC**	**powder: symbol of the types of protection**
EN 60079-0	IEC 60079-0	general rules	IEC/EN 61241-0	general rules
EN 50015	IEC 60079-6	**o**-oil immersion	IEC/EN 61241-1	**tD**-protection by enclosures
EN 50016	IEC 60079-2	**p**-pressurised enclosures	IEC/EN 61241-4	**pD**-protection by pressurisation
EN 50017	IEC 60079-5	**q**-powder filling	IEC/EN 61241-11	**iD**-protection by intrinsic safety
EN 60079-1	IEC 60079-1	**d**-flameproof enclosures	IEC/EN 61241-18	**mD**-protection by encapsulation
EN 60079-7	IEC 60079-7	**e**-increased safety		
EN 50020	IEC 60079-11	**i**-intrinsic safety		
EN 60079-15	IEC 60079-15	**n**-type of protection “n”		

> Enclosures are certified as components. They will be assembled with other ATEX electrical, pneumatic and hydraulic components, among others to form a final solution which, in turn, must be ATEX-certified and subject to a declaration of conformity.



Degree of protection

In hazardous areas, equipment is required to offer a minimum degree of protection of IP54, but it can be tested or certified with a higher degree of protection.

Fields of application of SAREL ATEX enclosures

Three types of enclosures

> All the wall-mounting enclosures presented in this brochure comply with standards for protection against the increased risk of explosion in atmospheres charged with gas (G) and/or dust (D).

> The SAREL offer, designed to be used in group II, is classified as category 2.

destination	categories/presence of potentially explosive atmosphere	hazardous zones	atmosphere
group I mines	M1 and M2	gas and dust (G and D)	
group II surface industries	1 permanent or frequent	**zone 0**: gas and vapour	G
		zone 20: mist and dust	D
	2 occasional	**zone 1**: gas and vapour	G
		zone 21: mist and dust	D
	3 rare	**zone 2**: gas and vapour	G
		zone 22: mist and dust	D

Zone of application of SAREL ATEX wall-mounting enclosures

> Category 2 products can be used as category 3.

> Our products are qualified for increased safety “e” (Ex e) but not for explosion-proof safety “d” (Ex d).

> The wall-mounting enclosures have the following marks:
Ex II 2 GD Ex e II Ex tD A21 IP66 according to directive 94/9/CE and standards EN 60079-0 (2004), EN 60079-7 (2006), EN 61241-0 (2005) and EN 61241-1 (2004).

> The wall-mounting enclosures offer a degree of protection IP66 according to EN 60529, exceeding the recommendations of the ATEX directive.

> Certification of our production sites and inspection procedures guarantees observance and consistency of the quality level.

Description of the marking label affixed to ATEX certified wall-mounting enclosures

0163: No. of the body

Ex: : ATEX symbol according to the directive

II: Surface industries

2: Product category

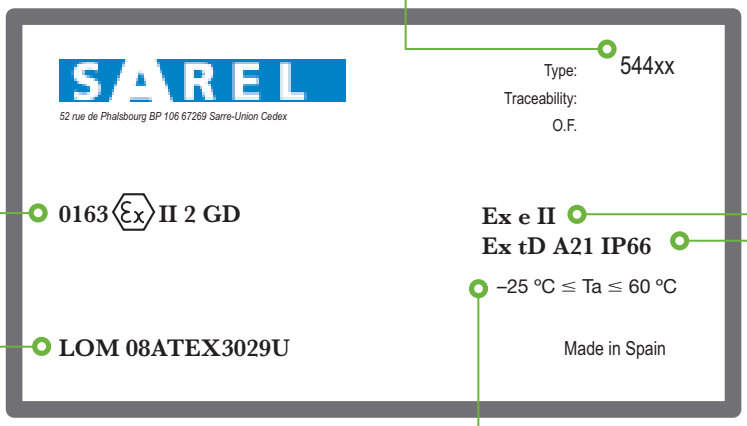
GD: Gas and dust

Ex: Product compliant with IEC 60679 (gas)

e: Increased safety

II: Surface industries

Product range



No. of the CE certificate

Ta: Ambient temperature

Ex: Product compliant with IEC 61241 (dust)

tD: Protection by tD enclosure according to IEC 61241-1

A21: Zone 21

IP66: Degree of protection

Download our ATEX certificates over the internet.

Three types of material to support all your applications

Industrial environments, equipment rooms

Steel

solution

Laboratories, food and beverage industries, specific demands in terms of hygiene and corrosion

Stainless steel

solution

Seaside, petrochemicals, highly corrosive environments

Polyester
reinforced with fibreglass

solution

Spacial 3D.ATEX steel wall-mounting enclosure:

> **The Spacial 3D.ATEX steel wall-mounting enclosure** is certified by the LCIE with no. LCIE 02ATEX0037U and supplementary certificate no. LCIE 02ATEX0037U/01 (component certificate).

> 10 sizes: from 300 × 200 × 150 mm to 1000 × 800 × 300 mm.

> Degree of protection: IP66.

> Ambient temperature limits: –25 °C ≤ Ta ≤ +40 °C.

> Protection against external mechanical impact: IK10.

> Structured finish, epoxy-polyester powder paint, colour grey RAL 7032.

Download our ATEX certificates over the internet.

Spacial.ATEX stainless steel wall-mounting enclosure:

> **The Spacial.ATEX stainless steel wall-mounting enclosure** is ATEX-certified by the LOM with no. LOM 08ATEX3029U (component certificate).

> 7 sizes: from 300 × 200 × 150 mm to 1000 × 800 × 300 mm.

> Degree of protection: IP66.

> Ambient temperature limits: –25 °C ≤ Ta ≤ +60 °C.

> Protection against external mechanical impact: IK10.

> Scotch-Brite® polished finishing.

Thalassa.ATEX polyester wall-mounting enclosure:

> **The Thalassa.ATEX polyester wall-mounting enclosure** is certified by the LOM with no. LOM 08ATEX3041U (component certificate).

> 7 sizes: from 307 × 255 × 164 mm to 1056 × 852 × 350 mm.

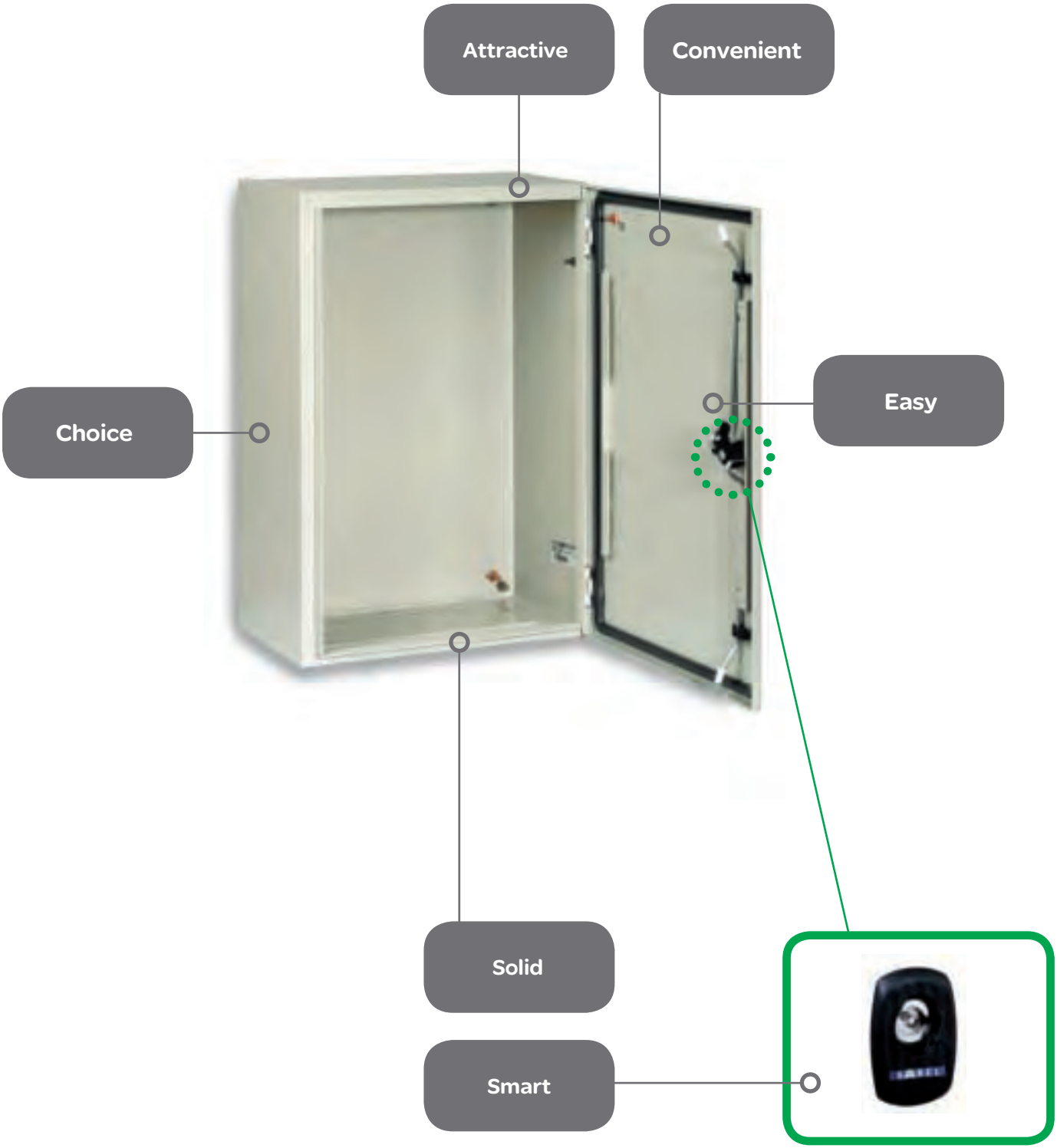
> Degree of protection: IP66.

> Ambient temperature limits: –25 °C ≤ Ta ≤ +60 °C.

> Protection against external mechanical impact: IK10.

> Black colour.

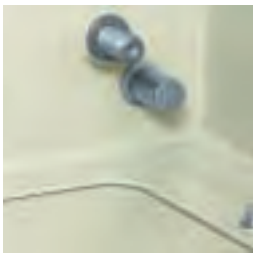
Spacial 3D.ATEX steel wall-mounting enclosure



Spacial 3D steel wall-mounting enclosure compliant with the ATEX directive

Blind nut for external earth connection.

The earthing studs are welded to the door and in the body.



The chassis is mounted on four backstuds with 10 mm shoulders.

The four fixing holes are blocked by four crimped blind nuts.

Attractive

> Sheet steel wall-mounting enclosure.

> Structured finish, colour grey RAL 7032.

> Single-piece body with a cross-shaped structure.

Choice

> Solid door: 10 references.

> Plain chassis.

> Silkscreened chassis.

> Microperforated chassis.

> Telequick perforated chassis.

> Symmetrical chassis.

Solid

> Protection against external mechanical impact: IK10.

> Degree of protection: IP66. Polyurethane seal.

> Double folded gutter-shaped front profile of the body.

Specific ATEX marking.

Smart

> 3 mm double-bar lock as standard.

> For heights exceeding 600 mm, 3 closure points with single operating point.

Easy

> The door can be removed and turned over to open towards the left.

Convenient

> Large variety of common accessories with the Spacial 3D range.

> Reusable packaging.

Delivered in a reusable cardboard box with assembly instructions enclosed.

Spacial 3D.ATEX steel wall-mounting enclosure

Product sheet

Download our ATEX certificates and product sheets over the internet.

The Spacial 3D.ATEX range of steel wall-mounting enclosures is certified by the LCIE with no. LCIE 02ATEX0037U and supplementary certificate no. LCIE 02ATEX0037U/01 (component certificate).

The wall-mounting enclosures have the following marks:
Ⓔx II 2 GD Ex e II Ex tD A21 IP6X according to directive ATEX 94/9/CE and standards EN 60079-0 (2004), EN 60079-7 (2006), EN 61241-0 (2005) and EN 61241-1 (2004).

Technical features

> Degree of protection: IP66 (wall-mounting enclosures with single door)
- Polyurethane sealing gasket.

> Protection against external mechanical impact: IK10.

> Optimised closing and opening.

> Perforated rails on the door: 2 vertical rails from H = 400 mm, 2 vertical rails and 2 horizontal rails from W = 800 mm.

> Removable and reversible door, opens to 120°. Simple reversal of linkage.

> Maximum load: 50 kg/m^2.

> Standard wall-mounting enclosure supplied with a double-bar lock.

> Equipotential connection between the door and the body by means of the M6 × 16 earthing screw.

> Space optimisation: 4 M8 × 25 shouldered backstuds for mounting the chassis and the step slides leaving a space of 10 mm behind them.

> Cable gland plate with grid pattern to facilitate drilling and assure maximum access.

> Structured finish, epoxy-polyester powder paint, colour grey RAL 7032.

> Compared with the universal Spacial 3D wall-mounting enclosure, the Spacial 3D.ATEX enclosure has:

> The 4 fixing holes blocked by 4 crimped blind nuts.

> One crimped M8 blind nut for an external earth connection (earth braid not supplied).

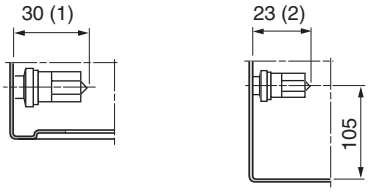
> Ambient temperature limits:
–25 °C ≤ Ta ≤ +40 °C.

Spacial 3D.ATEX steel wall-mounting enclosure

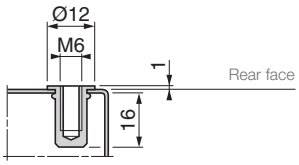
Dimensions

A: enclosure height
B: enclosure width
C: enclosure depth

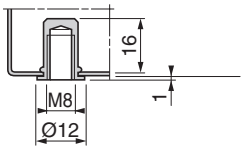
(1) 4 M8 × 25 mm backstuds.
(2) 2 M6 × 17.5 mm earthing studs.
(3) Stud centre-to-centre distance.
(4) Direct mounting hole centre-to-centre distance.
(5) Crimped blind nut for external earth.



Detail (1) Detail (2)

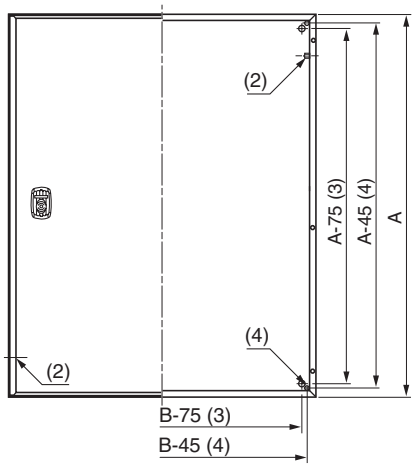


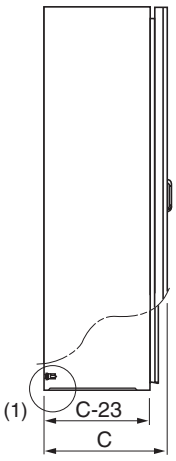
Detail (4)
4 crimped blind nuts for direct mounting

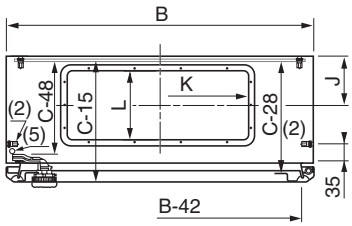


Detail (5)
1 crimped blind nut for the external earth

1-door enclosure





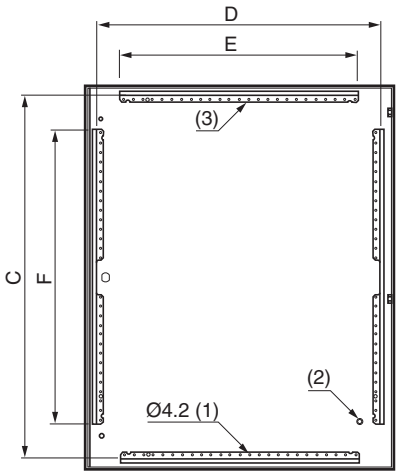


enclosure (mm)		cable-gland plate				
width	depth	dimensions (mm)	no	J	K	L
200	150	140 × 80	1	57	115	55
300	200	245 × 130	1	80	220	105
400	200-250	345 × 130	1	80	320	105
500	250	445 × 130	1	80	420	105
600	250	545 × 130	1	80	520	105
600	300	495 × 220	1	126	470	195
800	300	345 × 130	2	80	320	105

Perforated rails on the door

enclosure (3) (mm)		perforated rails on door (mm)			
		vertical		horizontal	
height	width	F	D	E	C
400	300	320	237	-	-
400	400	320	337	-	-
500	400	370	337	-	-
600	400	370	337	-	-
600	600	370	537	-	-
700	500	470	437	-	-
800	600	570	537	-	-
1000	800	770	737	620	949

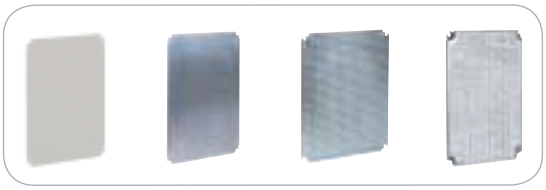
(3) The doors of enclosures that are smaller than 800 × 600 mm do not have horizontal wire guides.



(1) Perforations with a pitch of 25 mm.
(2) 1 M6 × 17.5 mm earthing stud.

Spacial 3D.ATEX steel wall-mounting enclosure

Table for choosing enclosures and main accessories


exernal dimensions (mm)			enclosure reference	mounting plates references				symmetrical mixed chassis	step slides	inner door
height	width	depth		plain	silkscreened	microperforated	telequick			
300	200	150	86515	55715	-	50415	55415	-	-	-
300	300	200	86503	55702	-	50402	55402	55002	51720	-
400	300	200	86518	55712	55362	55412	55417	55017	51720	55617
400	400	200	86519	55719	55369	50419	55419	55019	51720	-
500	400	200	86523	55723	55373	50423	55423	55023	51720	55620
600	400	250	86527	55726	55376	50426	55426	55026	51725	55626
600	600	250	86529	55729	55379	50429	55429	55029	51725	-
700	500	250	86535	55735	55385	50435	55435	55035	51725	55634
800	600	300	86557	55756	55396	50456	55456	55056	51730	55656
1000	800	300	86561	55760	-	50460	55460	55060	51730	56660

Composition accessories

Wall fixing lugs

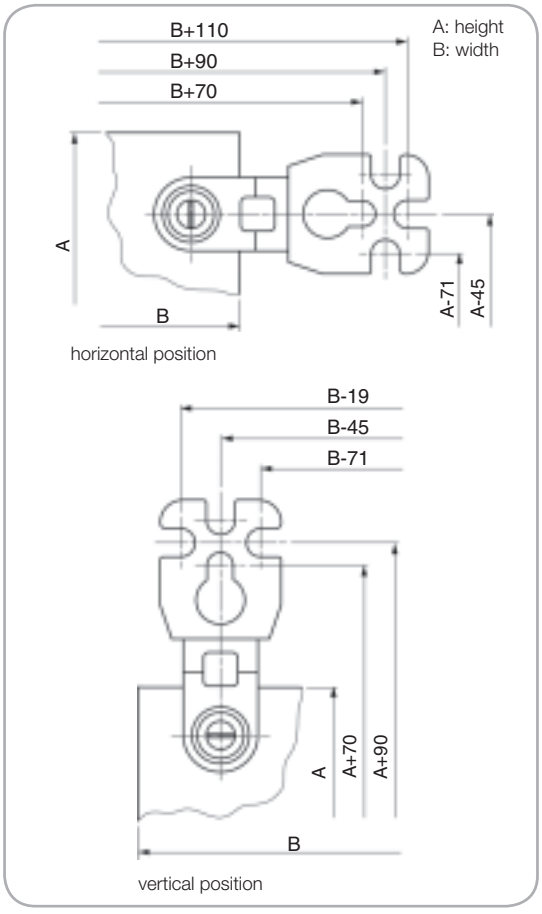
> Set of 4 wall fixing lugs, by order only.

> Mounted directly on the rear of the enclosure, either in horizontal or vertical position:
- Maximum load:
  – horizontal position: 180 kg,
  – vertical position: 350 kg.

> Two types of lugs, steel and stainless steel, for a wall separation of 10 mm.

> Supplied with fixing screws and seals.

reference	material
51206	steel
51207	stainless steel



Spacial 3D post fixing device

> For indoor installations on posts with a maximum circumference of 675 mm (maximum diameter: 215 mm).

> Material: galvanised steel.

> Mounting of the rail in the inserts in the bottom of the enclosure with 8 mm screws.

> Supplied with fixings and assembly instructions.

> Maximum load: 100 kg.

reference	for enclosure width (mm)
80950	300
80951	400
80952	500
80953	600
80954	800

Spacial 3D steel wall-mounting enclosure locking system

Shape inserts

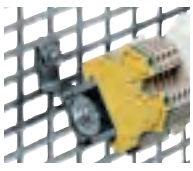
reference	description
51325	6 mm square
51326	7 mm square
51327	8 mm square
51328	3 mm double bar
51329	5 mm double bar
51330	CNOMO 6.5 mm triangle
51331	6 mm triangle

Handles with keys

reference	description
51325	1242 E
51326	405
51327	421
51328	455
51329	2331 A
51330	2433 A
51331	3113 A

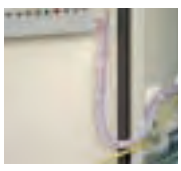
Other accessories can be found in the SAREL catalogue (please consult us).

19" chassis



Terminal fixing supports

DIN rails



Cable management devices

Door rails