



ATEX SYSTEMS

INVENTIONS IN PROGRESS, SINCE 1904



Palazzoli

F.P.B.



2003-2004



Palazzoli
F.P.B.



Palazzoli S.p.A.
Chairman

An important step.

The desire to develop components for electrical systems with an unmistakable identity and technical value has always been intrinsic in Palazzoli's work. It is obvious that this desire has been fulfilled with success and innovative ability since 1904.

The primary feature of Palazzoli products, both past and present, is the high of performance over the years.

And the satisfaction, equally long-lasting, of the end client is one of the fundamental values to which Palazzoli has always referred, in the awareness of its priority as a growth factor.

Motivation of the personnel and a highly professional approach have been and continue to be strategic elements of success and the creation of value in the Palazzoli world.

Starting from these basics, of which it is proud, Palazzoli intends to continue to implement all the initiatives that encourage the improvement and growth of the skills, creativity, intelligence and active participation of all its collaborators.

With these convictions, and sharing these values, I have taken over the baton for the race towards Palazzoli's hundred years.

I have faith that the Team will celebrate them in good health, in its own interest and that of its clients.

Eng. Luigi Moretti



100 years of innovative and successful products.

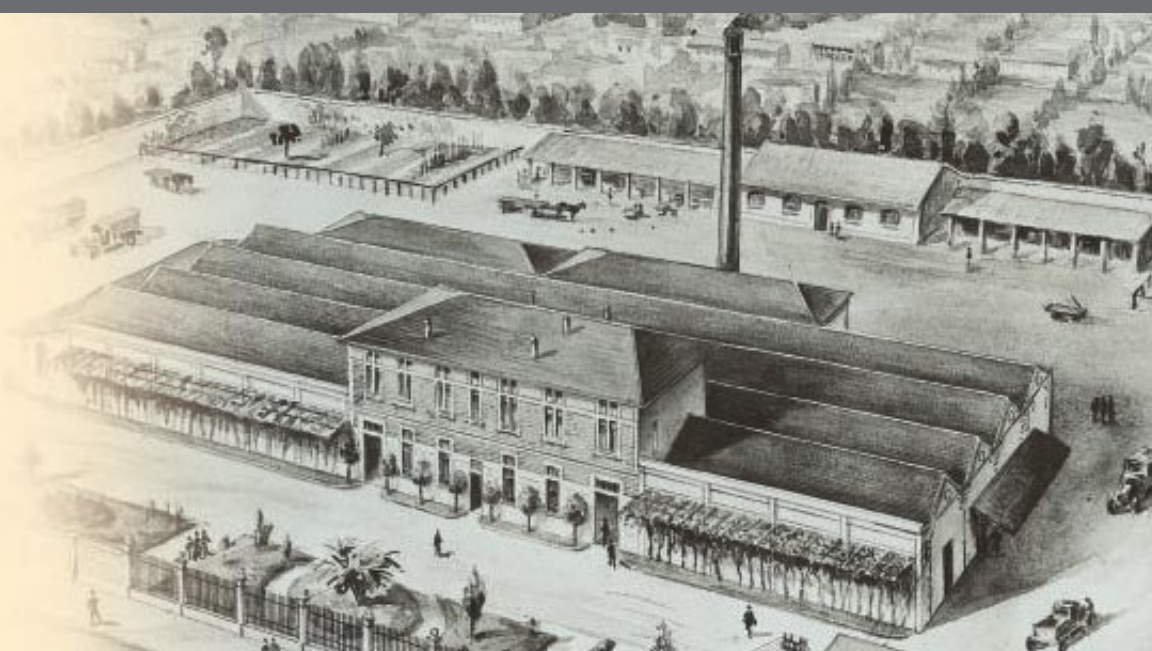
FROM 50 M² TO 130,000 Km²



In 1904, in the days of candlelit homes and gas streetlights, Federico Palazzoli, born 1881, had a brilliant idea: electricity would be Italy's future. 50,000 liras of share capital, a small room, two service counters and the Palazzoli company opens business by specializing in the production of electrical appliances, selling electrical supplies and outfitting motor-drive and lighting industrial systems.

It was not easy at the beginning. The lack of manual labour and firms capable of supplying the necessary semi-processed goods, as well as the ruthless competition, held up production. How was this problem to be solved? By facing it head on with all the energy, creativity and dedication imaginable. It is the one thing that has never changed during the company's 100 years.

Today, the more than 2,200 articles in the catalogue cover many of the daily needs of millions of people in the world. From the garage light bulb to a complex industrial warehouse system, and from a fishing boat's light to the lighting equipment of a transatlantic liner: there's no risk in claiming that Palazzoli has conquered 130,000 km² of the Earth's surface area.



A CONSTANT FACTOR: THE IMPORTANCE OF HUMANITY.

The evolution of Palazzoli products is directly connected to the evolution in materials. The updating of these products has nonetheless been of interest to a company which has always aimed at experimentation and quality. The introduction of new materials brought about massive reconstruction of machinery, equipment, divisions...

From the beginning: the foundries were recreated for the production of cast iron, later adapted for processing light alloys with the advent of aluminium. The first applications of bakelite which allowed for insulation with constant features, reduced size, lowered tolerances, dating back to 1930. 1971 marked the arrival of polyester resin reinforced with glass fibre. Thermosetting and insulating plastic materials begin to dictate with their high performance electrical and mechanical properties. This brought about substantial transformations in moulding and in equipment.

Leaving aside the technologically-oriented modifications, the most constant and determining factor was man's intellectual contribution. On all levels and performances. Entrepreneurial flexibility has always distinguished the Palazzoli management; engineering intelligence is the foundation of technological innovation; the preparation and application of skills are the key ingredients of the company's success.



100 years of innovative and successful products.

EXCELLENCE IS STANDARD FOR US

In Palazzoli, every innovation becomes a reference standard in the sector. For example: the blue used by the company from its beginnings to make its products recognizable has become the sector colour par excellence, automatically associated with the electrical equipment used in industrial contexts. Even today, despite the fact that regulations prescribe different colours. It is a “colourful” note which speaks well of Palazzoli’s excellence. There are numerous revolutionary products that have not only become standards in the electrical technology world, but have introduced new concepts in design research. “Reference” products/concepts.



A luminaire by the name of “turtle”. Its structural design is still up-to-date, such that similar models are still present on the market today.

Modular distribution boards, or rather the possibility of assembling types of different enclosures according to shape, size and usage. The idea’s basic modularity concept is a testing ground for many product lines that are different from the distribution boards.



Industrial interlocked socket-outlets for heavy-duty use, for quick-wiring and assembly in a clean aesthetic line. A breakthrough which preserves the safety concepts from the past.

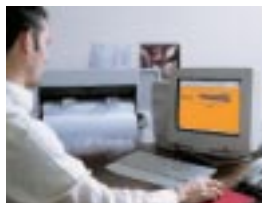
Industrial connectors and plugs. The first ones were created without screws to allow assembly of the various components and cable clamping.

A new structural concept with a dual advantage: rapid installation and all of the security of carrying out repeatable and non-subjective operations. A new standard.



Industrial interlocked socket-outlets with fuse monitoring. A new standard for the interface has been established for the expert and novice user alike: the monitoring system of the drive fuses which safely and easily identifies when replacement of fuses is necessary, following their intervention.

Made-to-measure customer service.



Nothing is more difficult than satisfying man's needs. Translated into entrepreneurial terms, nothing is more difficult than satisfying the needs of the individual customer and his specific problem. Palazzoli has focused on creating "personalized" dialogue as a means of identifying demands and their solutions.

Within the range, the customer has a complete variety of possible solutions for his problems. Technical assistance is a guarantee for adjusting custom-made applications in the two intervention ranges: ad hoc selection and creating products from square one. Service is always active due to the vast knowledge and skill. Contact with the technical and design department is guaranteed by the Technical and Sales Service telephone line. Available to our designers for the benefit of our customers: software systems for developing projects, technical and commercial library, and a digital library for technical design.

Our Internet website is constantly updated with the latest innovations; it allows precise reference to the catalogue and constant contact with the company. More than a virtual presence; a concrete presence! We like to think of it as an updated, online version with Mr. Palazzoli, in his brown suit and Tuscan cigar.



GENERAL CATALOGUE SOFTWARE in Italian, English, French, Spanish and German

This is a practical tool that helps you select and buy Palazzoli products. The drawings, photographs and technical characteristics shown give an instant view in order to immediately evaluate the items according to the use required. The catalogue is present on our website at www.palazzoli.it. The software is free. Call the **TECHNICAL AND SALES SERVICE**, or visit our website: www.palazzoli.it.

ASC COMPOSER

Construction Site Distribution Board Designing And Estimation.

Simple design software for use with TER socket-outlets. Using a series of basic configurations and automatic controls, this software ensures rapid planning with a list of necessary components and their price.

SB COMPOSER

Distribution Board Designing and Quotations.

This is a rapid and guided design software program, which helps you make PRIMA, TER, ULYSSE, TAIS and ALUPRES distribution boards. After learning all the functions, you can design quickly and easily and print your quotation request.



PRICE LIST ON FLOPPY DISK

The price list format is easily downloaded from our website at <http://www.palazzoli.it>. The price list on 3" 1/2 floppy disks is available on request for all Palazzoli's customers.

www.palazzoli.it

INTERNET SERVICE

Palazzoli is on the web at www.palazzoli.it offering a full range of on-line services. These services are completely free: just register yourself to use them immediately.

TECHNICAL AND SALES SERVICE

Highly qualified specialist staff is available to answer any queries.

The service is available 24 hours a day, and is reached **via fax** at the number + 39 030 2015217.



4 volumes for specific solutions.

Installation systems



INDUSTRIAL DISTRIBUTION BOARDS,
SOCKET-OUTLETS AND PLUGS



ENCLOSURES, CONTROL UNITS AND FITTINGS



MEASURING INSTRUMENTS



CONTROL, PROTECTION AND SIGNALLING DEVICES



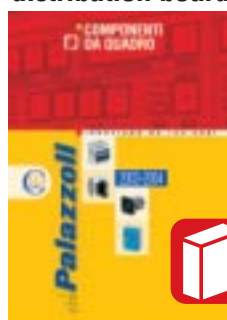
SMALL DEVICES FOR CONTROL,
ENERGY USE AND SIGNALLING



LIGHTING APPLIANCES



Components for distribution boards



MEASURING INSTRUMENTS



CONTROL DEVICES FOR STANDARD USE



CONTROL DEVICES FOR HEAVY-DUTY USE

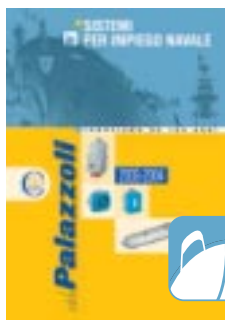


PROTECTION DEVICES



Solutions for every applicative need.

Systems for marine use



FIXED INTERLOCKED SOCKET-OUTLETS

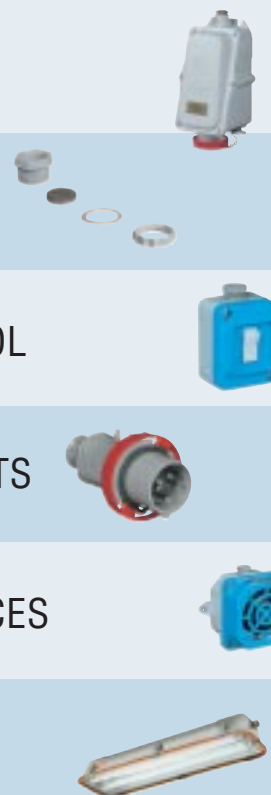
ENCLOSURES AND FITTINGS

SMALL DEVICES FOR ENERGY USE AND CONTROL

FIXED AND MOBILE PLUGS AND SOCKET-OUTLETS

CONTROL, PROTECTION AND SIGNALLING DEVICES

LIGHTING APPLIANCES



Atex systems



STRAIGHT PLUGS AND FIXED INTERLOCKED SOCKET-OUTLETS

ENCLOSURES AND FITTINGS

CONTROL, PROTECTION AND SIGNALLING DEVICES

SMALL DEVICES FOR CONTROL, ENERGY USE AND SIGNALLING

LIGHTING APPLIANCES



How to read the catalogue.

As illustrated in the previous pages, the new catalogue is composed of 4 specialized volumes that identify the products according to their application.

Inside each volume, you'll find various "surfing tools" to guide you in choosing the best solution for your needs. Once you have identified the product, it is possible to access a complete series of technical, regulatory and commercial information to easily satisfy any design needs. The following reading guide will allow you to easily manage all of the information found in the catalogue. Enjoy your read!



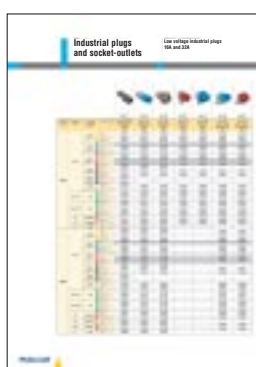
Subindexes

Show in detail all the technical, regulatory and dimensional information grouped by product families.



Commercial pages

Comprehensively show all the information needed for choosing the products.



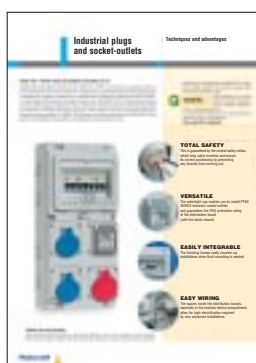
Quick selection table

They speed up the choice for those who already know Palazzoli products.



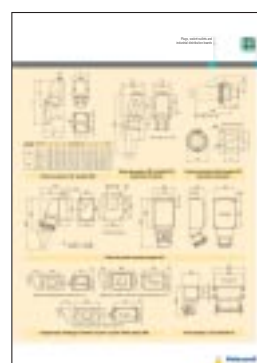
Technical pages

Show in detail all the technical, regulatory and dimensional information grouped by product families.



Techniques and advantages

The products are described with their strong points. Certain typical applications are suggested.



Dimensions page

Dimensioned technical diagrams.

Menu band facilitating “surfing” within the catalogue

Symbol of the volume

Product category description

Page content description

Category reference colour

15° angled wall-mounting watertight fixed socket-outlets - IP67

Plugs, socket-outlets and industrial distribution boards

Identification of new products

Product photograph

Specific product description

Table containing the technical information needed for selection

TER SERIES
Watertight angled wall-mounting socket-outlets, low voltage IP67

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P++	4	487124	1/10
			3P++	4	487134	1/10
			3P+N++	4	487144	1/10
		220 200-250	2P++	6	487126	1/10
			3P++	9	487139	1/10
			3P+N++	9	487149	1/10
32	50-60	380 380-415	2P++	6	487129	1/10
			3P++	6	487136	1/10
			3P+N++	6	487146	1/10
		110 100-130	2P++	4	487224	1/10
			3P++	4	487234	1/10
			3P+N++	4	487244	1/10
50/60	380/440	220 200-250	2P++	6	487226	1/10
			3P++	9	487239	1/10
			3P+N++	9	487249	1/10
		380 380-415	2P++	9	487229	1/10
			3P++	6	487236	1/10
			3P+N++	6	487246	1/10
50/60	380/440	3P++	3	487233	1/10	

Characteristic logo identifying the material of which the product is made

Additional information such as:

- equipment
- specifications
- uses
- complementary items
- spare parts

Quick selection table pages 14-15
Technical data pages 290-291
Dimensions page 295

Applicative example

Fittings on page 180

Angled wall-mounting socket-outlets on pages 44-45

90° angled plugs on page 25

Wall-mounting appliance inlets on pages 26-29

Straight connectors on pages 30-33

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45 **Palazzoli**

Page references to the quick selection tables and technical pages

Composition and/or application examples

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small devices for control, energy use and signalling



SMALL DEVICES
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INDUSTRIAL PLUGS

CEE-Ex Series
page 14

new



Plugs for potentially
explosive atmospheres

Painting department



Welding centres



**16A, 32A, 63A and 125A
low voltage industrial plugs
for potentially explosive atmospheres**

Fixed interlocked
socket-outlets
and plugs



page 22

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	CEE-Ex Series Watertight straight plugs IP67
16	50-60	110 100-130	2P++	4	477203EX
			3P++	4	477213EX
			3P+N++	4	477223EX
		220 200-250	2P++	6	477303EX
			3P++	9	477313EX
			3P+N++	9	477323EX
		380 380-415	2P++	9	477403EX
			3P++	6	477413EX
			3P+N++	6	477423EX
		500 480-500	3P++	7	477513EX
			3P+N++	7	477523EX
32	50-60	110 100-130	3P++	4	477216EX
			3P+N++	4	477226EX
		220 200-250	2P++	6	477306EX
			3P++	9	477316EX
		380 380-415	3P++	6	477416EX
			3P+N++	6	477426EX
		500 480-500	3P++	7	477516EX
63	50-60	220 200-250	3P++	9	477317EX
		380 380-415	3P++	6	477417EX
			3P+N++	6	477427EX
		500 480-500	3P++	7	477517EX
125	50-60	220 200-250	3P++	9	477318EX
		380 380-415	3P++	6	249538EX
			3P+N++	6	259538EX
		500 480-500	3P++	7	249550EX



ULYSSE-Ex SERIES
Wall-mounting interlocked
socket-outlets, in
insulating modular
enclosure made of
thermosetting material
with double protection
rating - IP66 and IP67
EEx nR
page 21



SERIE TAIS-Ex
Wall-mounting
interlocked
socket-outlets in
thermosetting
insulating modular
enclosure - IP67
EEx nR
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SERIE ALUPRES-Ex
Wall-mounting
interlocked
socket-outlets in
aluminium alloy
modular enclosure
IP67 - EEx nR
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Industrial plugs

Watertight straight plugs - IP67
for potentially explosive atmospheres



CEE-Ex SERIES
ATEX low voltage
watertight
straight plugs
IP67
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T6		
Area 2	Area 22	

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P++	4	477203EX	10
			3P++	4	477213EX	1
			3P+N++	4	477223EX	1
		220 200-250	2P++	6	477303EX	50
			3P++	9	477313EX	10
			3P+N++	9	477323EX	1
		380 380-415	2P++	9	477403EX	1
			3P++	6	477413EX	20
			3P+N++	6	477423EX	20
		500 480-500	3P++	7	477513EX	10
			3P+N++	7	477523EX	1
32	50-60	110 100-130	3P++	4	477216EX	10
			3P+N++	4	477226EX•	1
		220 200-250	2P++	6	477306EX	10
			3P++	9	477316EX	10
		380 380-415	3P++	6	477416EX	20
			3P+N++	6	477426EX	20
		500 480-500	3P++	7	477516EX	10

• Supplied on request

Characteristics:

nickel-plated and rounded pins for easy insertion.
Non-slip grip.
32A single block plugs with two-screw terminals.
Thick body and grip in anti-tracking, antistatic and self-extinguishing resin.
GWT: 850°C - UL94: V2.
Unlosable gaskets in non-ageing elastomer.
See table below for cable diameters.

Uses:

suitable for frequent uses where there are risks of knocks, squashing, vibrations, chemical agents, liquids and dust.
Only use with fixed interlocked socket-outlets Ex nR in this catalogue.

Insertable cable diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P++	8.1	13
	3P++	8.8	14
	3P+N++	10	15.3
32	2P++	11.5	17.3
	3P++	12.5	19.3
	3P+N++	14	21.3

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page 93



CEE-Ex SERIES
ATEX low voltage
watertight
straight plugs
IP67
EEx nA

Protection against explosions			
		II 3GD	
		EEx nA T6	
Area 2			Area 22

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
63	50-60	220 200-250	3P+÷	9	477317EX	4
		380 380-415	3P+÷	6	477417EX	10
			3P+N+÷	6	477427EX	10
		500 480-500	3P+÷	7	477517EX	10
125	50-60	220 200-250	3P+÷	9	477318EX	1
		380 380-415	3P+÷	6	249538EX	2
			3P+N+÷	6	259538EX	2
		500 480-500	3P+÷	7	249550EX	2

Characteristics:

nickel-plated and rounded pins for easy insertion.
Non-slip grip.
32A single block plugs with two-screw terminals.
Thick body and grip in anti-tracking, antistatic and self-extinguishing resin.
GWT: 850°C - UL94: V2.
Unlosable gaskets in non-ageing elastomer.
See table below for cable diameters.

Uses:

ideal for frequent use where there are risks of knocks, squashing, vibrations, chemical agents, liquids and dust.
Only use with fixed interlocked socket-outlets Ex nR in this catalogue.

Insertable cable diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
63	2P+÷	17.3	26
	3P+÷	19.3	28.5
	3P+N+÷	21.3	31.3
125	2P+÷	26	39.3
	3P+÷	28.5	43.3
	3P+N+÷	31.3	31.3

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FIXED INTERLOCKED SOCKET-OUTLETS



For potentially explosive
atmospheres in
thermosetting material



For potentially explosive
atmospheres in
thermosetting material

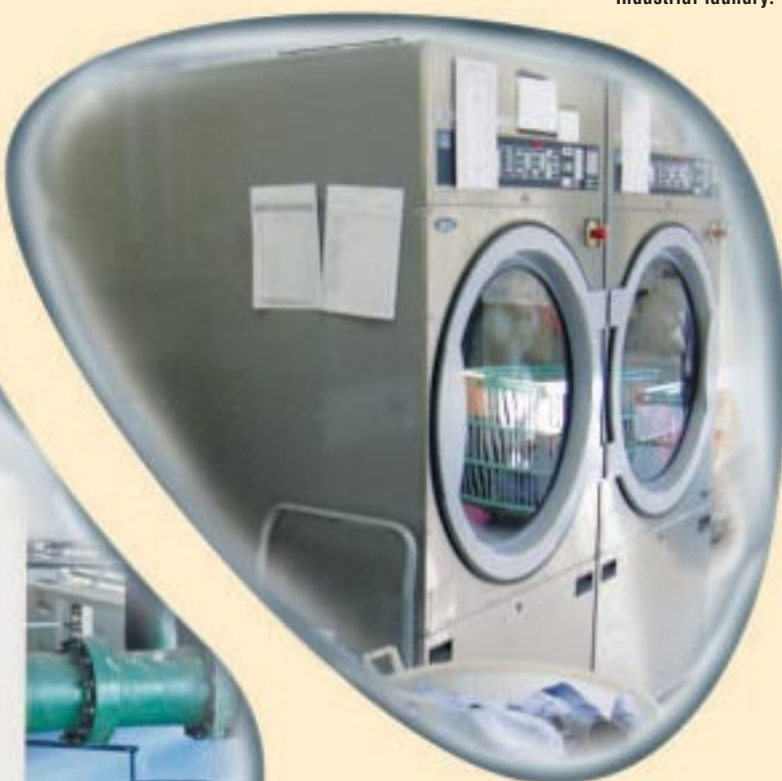


For potentially
explosive atmospheres
in aluminium alloy

Heating plant.



Industrial laundry.



16A, 32A, 63A and 125A fixed interlocked socket-outlets for potentially explosive atmospheres

Fixed interlocked socket-outlets and plugs



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page 33

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	ULYSSE-Ex Series With fuses Thermosetting IP66/IP67	ULYSSE-Ex Series With min. circuit breaker Thermosetting IP66/IP67	ULYSSE-Ex Series Direct supply Thermosetting IP66/IP67	TAIS-Ex Series With fuses Thermosetting IP67	TAIS-Ex Series With min. circuit breaker Thermosetting IP67	TAIS-Ex Series Direct supply Thermosetting IP67	ALUPRES-Ex Series With fuses Aluminium IP67	ALUPRES-Ex Series With min. circuit breaker Aluminium IP67
16	50-60	110 100-130	2P++	4	400124EX	403124EX		472610EX	474210EX		472233EX	474633EX
			3P++	4	400134EX	403134EX		472710EX	474310EX		472243EX	474643EX
			3P+N++	4	400144EX	403144EX		472810EX	474410EX		472253EX	474653EX
		220 200-250	2P++	6	400126EX	403126EX	408126EX	472620EX	474220EX	470126EX	472333EX	474733EX
			3P++	9	400139EX	403139EX		472720EX	474320EX		472343EX	474743EX
			3P+N++	9	400149EX	403149EX		472820EX	474420EX		472353EX	474753EX
		380 380-415	2P++	9	400129EX	403129EX		472630EX	474230EX		472433EX	474833EX
			3P++	6	400136EX	403136EX	408136EX	472730EX	474330EX	470136EX	472443EX	474843EX
			3P+N++	6	400146EX	403146EX	408146EX	472830EX	474430EX	470146EX	472453EX	474853EX
		500 480-500	3P++	7	400137EX			472750EX			472543EX	
			3P+N++	7	400147EX			472840EX			472553EX	
32	50-60	110 100-130	3P++	4	400234EX	403234EX		472711EX	474711EX		472246EX	474246EX
			3P+N++	4	400244EX	403244EX		472811EX	474811EX		472256EX	474256EX
		220 200-250	2P++	6	400226EX	403226EX	408226EX	472621EX	474621EX	470226EX	472336EX	474336EX
			3P++	9	400239EX	403239EX		472721EX	474721EX		472346EX	474346EX
		380 380-415	3P++	6	400236EX	403236EX	408236EX	472731EX	474731EX	470236EX	472446EX	474446EX
			3P+N++	6	400246EX	403246EX	408246EX	472831EX	474831EX	470246EX	472456EX	474456EX
		500 480-500	3P++	7	400237EX			472751EX			472546EX	
63	50-60	220 200-250	3P++	9	400339EX	403339EX		472722EX	474722EX		472347EX	474347EX
			3P++	6	400336EX	403336EX	408336EX	472732EX	474732EX	470336EX	472447EX	474447EX
		380 380-415	3P+N++	6	400346EX	403346EX	408346EX	472832EX	474832EX	470346EX	472457EX	474457EX
		500 480-500	3P++	7	400337EX			472752EX			472547EX	
125	50-60	220 200-250	3P++	9							472348EX	
			3P++	6							472418EX	
		380 380-415	3P+N++	6							472428EX	
		500 480-500	3P++	7							472518EX	

Fixed interlocked socket-outlets

Techniques and advantages

ULYSSE-Ex SERIES – WATERTIGHT FIXED INTERLOCKED SOCKETS-OUTLETS IN THERMOSETTING MATERIAL FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

This is an advanced and patented system of interlocked socket-outlets used for making superior performance distribution boards. The range consists of 16A, 32A and 63A interlocked socket-outlets, blind and watertight enclosures and quick attachment mounting plates for rapidly making distribution boards. The interlock system not only protects persons from shocks and the opening arc, but also performs the vital function of preventing explosions by making socket-outlet and plug connection non-sparking. The interlocking mechanism in zinc-plated steel offers the highest guarantee against breakage and wear for greater safety. Segregated in restricted breathing housing, the interlock is in the AC23 and AC3 category with Icc up to 10kA and allows direct motor control. In addition to the CEI EN 50021 Standard governing Ex n electrical constructions, the interlocked socket-outlets are in compliance with Standards CEI EN 60309, CEI EN60947, CEI EN60742.

Made of reinforced thermosetting material, these “indestructible” products have been designed for outdoor installations (GWT 960°C -20J). Their reinforced



**greater
safety**

geometry ensures a very robust form, insulating resistance, outstanding resistance

to extremes of heat and fire, as well as to chemical agents, humidity, the prolonged action of UV rays and atmospheric agents. Its non-deformability in the most extreme temperatures maintains restricted breathing even when installed outdoors in difficult atmospheres.



INSTANT WIRING

All the socket-outlets have been prewired with peeled and numbered cables 70 cm long. The fact that you don't need to open the socket-outlet saves 30% of the wiring time.



WEATHERPROOF

This unique model with double protection rating IP66 and IP67 guarantees resistance against violent jets of water (IP66) and accidental immersions (IP67).



ERGONOMIC CONTROL

Both design and experience have led to a new semi-spherical control which is easily operated using gloves and can be locked in position 0 and 1.



AREA 2

Area in which an explosive atmosphere due to gas is not likely to occur during normal operation, and if it occurs, it will exist infrequently and only for a short time.

**EEx n interlocked
socket-outlets
must be used.**

Fuel deposit.



AREA 22

Area in which an explosive atmosphere, due to inflammable clouds of dust, is not likely to occur during normal operation, and if it occurs, it will exist only for a short time.

**EEx n interlocked
socket-outlets
must be used.**

Granaries.



AREA NE

Area without an explosive atmosphere.

**EEx n interlocked
socket-outlets are
recommended.**

Garage.



APPLICATIONS:

Fuel deposits, pharmaceutical and chemical industries, oil refineries, petrol stations, heating plants, large kitchens, painting rooms, garages, both in areas 2 (compulsory) and areas NE (recommended); carpenteries, plastic-laminated board working, sugar-works, mills, farmyards, barns both in areas 22 (compulsory) and areas NE (recommended).

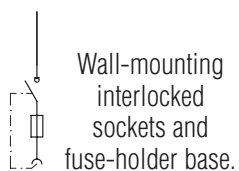
Fixed interlocked socket-outlets

ULYSSE-Ex Series
the system



Enclosures with inlet holes and blind cover, IP66 and IP67

16A and 32A

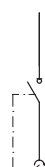


Wall-mounting interlocked sockets and fuse-holder base.

63A



Wall-mounting socket-outlets with miniature circuit breaker and mechanical interlock



Wall-mounting interlocked socket-outlets



Quick attachment plates in anti-corrosion painted zinc-plated steel - up to 4 housings



Plate in thermosetting resin - up to 2 housings

- IP66 and IP67 protection rating.
- Rated currents: 16A; 32A; 63A
- Module dimensions (b x d) :
 - 16A and 32A = 125x327 mm.
 - 63A = 250x327 mm.
- Accessories for all 16A, 32A and 63A socket-outlets.

Watertight fixed interlocked socket-outlets for potentially explosive atmospheres and fuse-holder base in thermosetting material - IP66 and IP67

Fixed interlocked socket-outlets and plugs



ULYSSE-Ex SERIES
ATEX wall-mounting interlocked socket-outlets and fuse-holder base, in insulating modular enclosure made of thermosetting material with double protection rating IP66 and IP67 - EEx nR



Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P++	4	400124EX	1
			3P++	4	400134EX	1
			3P+N++	4	400144EX	1
		220 200-250	2P++	6	400126EX	4
			3P++	9	400139EX	1
			3P+N++	9	400149EX	1
		380 380-415	2P++	9	400129EX	1
			3P++	6	400136EX	4
			3P+N++	6	400146EX	4
		500 480-500	3P++	7	400137EX	1
			3P+N++	7	400147EX	1
32	50-60	110 100-130	3P++	4	400234EX	1
			3P+N++	4	400244EX	1
		220 200-250	2P++	6	400226EX	4
			3P++	9	400239EX	1
		380 380-415	3P++	6	400236EX	4
			3P+N++	6	400246EX	4
		500 480-500	3P++	7	400237EX	1



Equipment:
supplied with Pg29 cable gland.

Characteristics:
Fittings in non-sparking, non-loosening, closed fuse-holders with interlock which blocks replacement when power is on. Only use 10.3x38 fuses for 16A socket-outlets and 14x51 for 32A socket-outlets and 22x58 for 63A socket-outlets (not supplied). Fuses with higher or lower In than socket-outlet In cannot guarantee correct protection and can cause overheating. Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removals and for temperature variations greater than expected.

Uses:
Use only with Ex nA plugs in this catalogue.

Complementary items:
straight plugs on pages 14-15.



ULYSSE-Ex SERIES
ATEX wall-mounting interlocked socket-outlets and fuse-holder base, in insulating modular enclosure made of thermosetting material with double protection rating IP66 and IP67 - EEx nR



Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
63	50-60	220 200-250	3P++	9	400339EX	1
			3P++	6	400336EX	4
		380 380-415	3P+N++	6	400346EX	4
			3P++	7	400337EX	1

Insertable cable diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P++	8.1	13
	3P++	8.8	14
	3P+N++	10	15.3
32	2P++	11.5	17.3
	3P++	12.5	19.3
	3P+N++	14	21.3
63	2P++	17.3	26
	3P++	19.3	28.5
	3P+N++	21.3	31.3

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Fixed interlocked socket-outlets

Watertight fixed interlocked socket-outlets for potentially explosive atmospheres with or without miniature circuit breaker, thermosetting IP66 and IP67 



ULYSSE-Ex SERIES
ATEX wall-mounting interlocked socket-outlets with miniature circuit breaker and mechanical interlock, in insulating modular enclosure made of thermosetting material with double protection rating IP66 and IP67 - EEx nR



Protection against explosions	
 	II 3GD
EEx nR T5	
Area 2	Area 22

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P++	4	403124EX	1
			3P++	4	403134EX	1
			3P+N++	4	403144EX	1
		220 200-250	2P++	6	403126EX	4
			3P++	9	403139EX	1
			3P+N++	9	403149EX	1
		380 380-415	2P++	9	403129EX	1
			3P++	6	403136EX	4
			3P+N++	6	403146EX	1
32	50-60	110 100-130	3P++	4	403234EX	1
			3P+N++	4	403244EX	1
		220 200-250	2P++	6	403226EX	1
			3P++	9	403239EX	1
		380 380-415	3P++	6	403236EX	4
			3P+N++	6	403246EX	4
63	50-60	220 200-250	3P++	9	403339EX	1
			3P++	6	403336EX	1
		380 380-415	3P+N++	6	403346EX	1

For switch specifications, see page 95.



Equipment:
supplied with Pg29 cable gland.

Characteristics:
Corrosion resistant non-loosening terminals. Anti-tracking, anti-static and self-extinguishing resin body. GWT: 850°C - UL94: V2. Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removals and for temperature variations greater than expected.

Uses:
Use only with Ex nA plugs in this catalogue.

Complementary items:
straight plugs on pages 14-15.



ULYSSE-Ex SERIES
ATEX wall-mounting interlocked socket-outlets, in insulating modular enclosure made of thermosetting material with double protection rating IP66 and IP67 - EEx nR



Protection against explosions	
 	II 3GD
EEx nR T5	
Area 2	Area 22

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	220 200-250	2P++	6	408126EX	1
		380 380-415	3P++	6	408136EX	1
			3P+N++	6	408146EX	1
32	50-60	220 200-250	2P++	6	408226EX	1
		380 380-415	3P++	6	408236EX	1
			3P+N++	6	408246EX	1
63	50-60	380 380-415	3P++	6	408336EX	1
			3P+N++	6	408346EX	1

Insertable cable diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P++	8.1	13
	3P++	8.8	14
	3P+N++	10	15.3
32	2P++	11.5	17.3
	3P++	12.5	19.3
	3P+N++	14	21.3
63	2P++	17.3	26
	3P++	19.3	28.5
	3P+N++	21.3	31.3

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Quick attachment enclosures and plates for distribution boards for potentially explosive atmospheres - IP66 and IP67

Fixed interlocked socket-outlets and plugs



ULYSSE-Ex SERIES

ATEX enclosures with blind cover, in thermosetting material with double protection rating IP66 and IP67

EEx nR

Protection against explosions	
 	II 3GD
EEx nR T6	
Area 2	Area 22

External dimensions b x h x d (mm)	Maximum available power (W)	No. lower entries	Palazzoli Code	Pack Q.ty
125x175x128	14	1-Pg21	415001EX	4
250x175x128	20	2-Pg21	415002EX	2



Equipment:

coupling.
Gaskets for interlocked socket-outlets.

Characteristics:

Ex n enclosures can be used for housing a certain number of non-sparking components (terminals) to prevent higher dissipated power than the value for each enclosure. For this purpose, consider the power dissipated from each type of connection.



ULYSSE SERIES

Quick attachment plates in zinc-plated steel and anti-corrosion paint for distribution boards

Dimensions b x h (mm)	No. of installable devices	Palazzoli Code	Pack Q.ty
125x500	1	415901	1
250x500	2	415902	1
375x500	3	415903	1
500x500	4	415904	1



Equipment:

small plates for side coupling of plates.



ULYSSE SERIES

Support plate in thermosetting material for distribution boards

Dimensions b x h (mm)	No. of installable devices	Palazzoli Code	Pack Q.ty
125x540	1	415801	1
250x540	2	415802	1



Equipment:

built-in threaded metal dowels, supplied with screws and stainless steel washers for fastening devices.

Complementary items:
coupling piece art. 538791 on page 29.

Various technical accessories



ULYSSE SERIES

EN50022 rail for fastening modular devices in enclosures with blind covers

For enclosures with dimensions (mm)	No. of EN50022 modules (17.5mm)	Palazzoli Code	Pack Q.ty
125x175x128	5	415011	1
250x175x128	12	415012	1

Uses:

for fastening modular devices (e.g. supply/junction terminal blocks).



ULYSSE-Ex SERIES

Kit with ATEX fitting for coupling enclosures - EEx nR

Fitting diameter	Assembly hole (mm)	Palazzoli Code	Pack Q.ty
Pg21	38	415000EX	1

Uses:

the distribution board can be made by side coupling the boxes.

Fixed interlocked socket-outlets

Techniques and advantages

TAIS-Ex SERIES – WATERTIGHT FIXED INTERLOCKED SOCKETS-OUTLETS IN THERMOSETTING MATERIAL FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

This is the most complete series of interlocked socket-outlets in reinforced thermosetting material used for making heavy-duty distribution boards. It is the most comprehensive range around, consisting of 16A, 32A, and 63A interlocked socket-outlets, watertight blind mounting plates for making highly customised distribution boards. The interlock system not only protects persons from shocks and the opening arc, but also performs the vital function of preventing explosions by making socket-outlet and plug connection non-sparking. Segregated in restricted breathing housing, the interlock is in the AC23 and AC3 category with Icc up to 10kA and allows direct motor control. In addition to the CEI EN 50021 Standard governing Ex n electrical constructions, the interlocked socket-outlets are in compliance with Standards CEI EN 60309, CEI EN 60947, CEI EN 60742.

Made of reinforced thermosetting material, these “indestructible” products have been designed for outdoor installations (GWT 960°C -20J). Their reinforced



**greater
safety**

geometry ensures a very robust form, insulating resistance, outstanding resistance to extremes of heat and fire, as well as to chemical agents, humidity, the prolonged action of UV rays and atmospheric agents. Its non-deformability in the most extreme temperatures maintains restricted breathing even when installed outdoors in difficult atmospheres.



COMPACT

The socket-outlets with 16A fuses are only 92 mm wide, so you can install distribution boards with 2 socket-outlets on 20 cm columns.



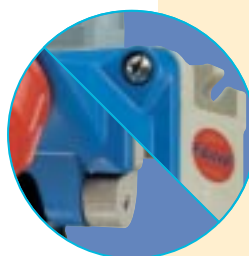
SAFE

The ceramic fuse-holder base and GWT 960°C self-extinguishing thermosetting socket insert (for 63A and 125A) guarantee safety in excess heat even in extreme conditions.



RELIABLE

The contact holder insert fixed onto the aluminium plate supporting the bottom box guarantees mechanical reliability even when the plug has to be inserted frequently.



EASIER MAINTENANCE

The stainless steel screws are fixed into brass inserts, so that they can be unscrewed years later. The front panel is hinged onto the bottom box.



AREA 2

Area in which an explosive atmosphere due to gas is not likely to occur during normal operation, and if it occurs, it will exist infrequently and only for a short time.

**EEx n interlocked
socket-outlets
must be used.**

Metworking industries.



AREA 22

Area in which an explosive atmosphere, due to inflammable clouds of dust, is not likely to occur during normal operation, and if it occurs, it will exist only for a short time.

**EEx n interlocked
socket-outlets
must be used.**

Woodworking industry.



AREA NE

Area without an explosive atmosphere.

**EEx n interlocked
socket-outlets are
recommended.**

Farming.



APPLICATIONS:

Fuel deposits, pharmaceutical and chemical industries, oil refineries, petrol stations, heating plants, large kitchens, painting rooms, garages, both in areas 2 (compulsory) and areas NE (recommended); carpenteries, plastic-laminated board working, sugar-works, mills, farmyards, barns both in areas 22 (compulsory) and areas NE (recommended).

Fixed interlocked socket-outlets

Fixed watertight interlocked socket-outlets and fuse-holder base in thermosetting material for potentially explosive atmospheres - IP67 



TAIS-Ex SERIES
ATEX wall-mounting
interlocked socket-outlets
with fuse-holder base,
in modular insulating
thermosetting material
enclosure - IP67
EEx nR

Protection against explosions		
		II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P+±	4	472610EX	1
			3P+±	4	472710EX	1
			3P+N+±	4	472810EX	1
		220 200-250	2P+±	6	472620EX	10
			3P+±	9	472720EX	4
			3P+N+±	9	472820EX	1
		380 380-415	2P+±	9	472630EX	1
			3P+±	6	472730EX	10
			3P+N+±	6	472830EX	10
		500 480-500	3P+±	7	472750EX	1
			3P+N+±	7	472840EX	1
32	50-60	110 100-130	3P+±	4	472711EX	1
			3P+N+±	4	472811EX*	1
		220 200-250	2P+±	6	472621EX	1
			3P+±	9	472721EX	1
		380 380-415	3P+±	6	472731EX	1
			3P+N+±	6	472831EX	1
		500 480-500			472751EX	1

• Supplied on request

Equipment:
Pg 21 cable glands for
16A socket-outlets and Pg
29 for 32A socket-outlets



Characteristics:
Fittings in non-sparking, non-loosening, closed fuse-holders with interlock which blocks replacement when power is on. Only use NDZ (E16) fuses for 16A socket-outlets, DIII (E33) for 32A and 63A socket-outlets (not supplied). Fuses with higher or lower In than socket-outlet In cannot guarantee correct protection and can cause overheating. Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removals and for temperature variations greater than expected.

Uses:
its highly compact design makes it ideal for installations in small spaces (e.g. on pillars, on machines...). Use only with Ex nA plugs in this catalogue.

Complementary items:
straight plugs
on pages 14-15.



TAIS-Ex SERIES
ATEX wall-mounting
interlocked socket-outlets
and fuse-holder base
in insulating modular
enclosure made of
thermosetting material
IP67 - EEx nR

Protection against explosions		
		II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
63	50-60	220 200-250	3P+±	9	472722EX	1
		380 380-415	3P+±	6	472732EX	1
			3P+N+±	6	472832EX	1
		500 480-500	3P+±	7	472752EX	1

• Supplied on request

Equipment:
Pg 29 cable glands
for 63A socket-outlets
2P+± and 3P+±
Pg 36 for 3P+N+±

Insertable cable diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P+±	8.1	13
	3P+±	8.8	14
	3P+N+±	10	15.3
32	2P+±	11.5	17.3
	3P+±	12.5	19.3
	3P+N+±	14	21.3
63	2P+±	17.3	26
	3P+±	19.3	28.5
	3P+N+±	21.3	31.3

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Watertight fixed interlocked socket-outlets and miniature circuit breaker in thermosetting material, for potentially explosive atmospheres - IP67

Fixed interlocked
socket-outlets
and plugs



TAIS-Ex SERIES
ATEX wall-mounting
socket-outlets with
miniature circuit breaker,
mechanical interlock and
signal lamp, in
modular insulating
thermosetting material
enclosure IP67
EEx nR



Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P+÷	4	474210EX	1
			3P+÷	4	474310EX•	1
			3P+N+÷	4	474410EX•	1
		220 200-250	2P+÷	6	474220EX	1
			3P+÷	9	474320EX	1
			3P+N+÷	9	474420EX•	1
		380 380-415	2P+÷	9	474230EX•	1
			3P+÷	6	474330EX	1
			3P+N+÷	6	474430EX	1
32	50-60	110 100-130	3P+÷	4	474711EX•	1
			3P+N+÷	4	474811EX•	1
		220 200-250	2P+÷	6	474621EX	1
			3P+÷	9	474721EX	1
		380 380-415	3P+÷	6	474731EX	1
			3P+N+÷	6	474831EX	1
63	50-60	220 200-250	3P+÷	9	474722EX	1
			3P+÷	6	474732EX	1
		380 380-415	3P+N+÷	6	474832EX	1

• Supplied on request.

Equipment:

Pg 29 cable glands for
16A, 32A, 63A socket-
outlets 2P+÷ and 3P+÷
Pg 36 for 63A socket-
outlets 3P+N+÷



Characteristics:
Corrosion resistant
non-loosening terminals.
Anti-tracking, anti-static and
self-extinguishing resin
body. 850°C - UL94: V2.
Unlosable gaskets in non-
ageing elastomer fastened
to a non-deformable rigid
base to ensure restricted
breathing even after
frequent removals and for
temperature variations
greater than expected.

Uses:

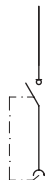
Use only with Ex nA plugs
in this catalogue.

Complementary items:

straight plugs
on pages 14-15.



TAIS-Ex SERIES
ATEX wall-mounting
interlocked socket-outlets
in modular insulating
thermosetting material
enclosure - IP67
EEx nR



Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	220 200-250	2P+÷	6	470126EX•	1
			3P+÷	6	470136EX•	1
		380 380-415	3P+N+÷	6	470146EX•	1
32	50-60	220 200-250	2P+÷	6	470226EX•	1
			3P+÷	6	470236EX•	1
		380 380-415	3P+N+÷	6	470246EX•	1
63	50-60	380 380-415	3P+÷	6	470336EX•	1
			3P+N+÷	6	470346EX•	1

• Supplied on request

Equipment:

Pg 21 cable glands
for 16A socket-outlet
and Pg 29 for 32A
socket-outlet Pg 29
cable glands for 63A
socket-outlets 2P+÷
and 3P+÷ Pg 36
for 3P+N+÷

Insertable cable diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P+÷	8.1	13
	3P+÷	8.8	14
	3P+N+÷	10	15.3
32	2P+÷	11.5	17.3
	3P+÷	12.5	19.3
	3P+N+÷	14	21.3
63	2P+÷	17.3	26
	3P+÷	19.3	28.5
	3P+N+÷	21.3	31.3

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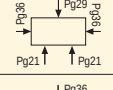
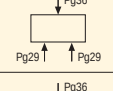
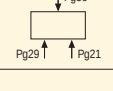
Fixed interlocked socket-outlets

Enclosures with blind cover for distribution boards for potentially explosive atmospheres, in thermosetting material – IP67 



TAIS-Ex SERIES
ATEX watertight enclosures with raised cover in thermosetting material - IP67

Protection against explosions		
		II 3GD
EEx nR T6		
Area 2		Area 22

External dimensions (mm)	Maximum available power (W)	Inlets	Palazzoli Code	Pack Q.ty
185x125x125	12		532667EX	6
250x125x125	18		532618EX	4
			532628EX	4
125x125x125	10		532016EX	8



Equipment:
532667EX: One Pg29 cable gland per inlet. Two Pg36 caps. Two Pg 21 fittings for connecting socket-outlets.
532618EX: One Pg36 cable gland per inlet. Two Pg 29 fittings for connecting socket-outlets.
532628EX: One Pg36 cable gland per inlet. One Pg21 fitting and one Pg29 fitting for connecting socket-outlets.
532016EX: 1 Pg36 fitting.

Complementary items:
socket-outlets from page 77 to page 82 couplings on page 90 base plate on page 88.

Characteristics:
Ex n enclosures can be used for housing a certain number of non-sparking components (terminals) to prevent higher dissipated power than the value for each enclosure. For this purpose, consider the power dissipated from each type of connection.

Fittings for distribution boards for potentially explosive atmospheres, in thermosetting material



SERIE TAIS-Ex
ATEX couplings with Pg thread for watertight enclosures - IP67
EEx nR



Pg	Assembly hole ø (mm)	For cables ø max (mm)	Palazzoli Code	Pack Q.ty
21	29	17	580242EX	50
29	38	24	580243EX	20
36	48	37	580244EX	10
29/36*	38 → 48	24	580203EX	20

* Fittings with reduction rings.

Characteristics:
they can couple enclosures to socket-outlets and enclosures to enclosures. They consist of a threaded sleeve coupling, polygonal nut and gaskets.

Complementary items:
socket-outlets from page 26 to page 27 enclosures on page 28.



TAIS-Ex SERIES
ATEX screwcaps with Pg thread IP67
EEx nR



Pg	Palazzoli Code	Pack Q.ty
21	580232EX	100
29	580233EX	20
36	580234EX	20

Characteristics:
they can close any unused holes on TAIS enclosures and boxes. Only use with corresponding Palazzoli polygonal nuts.

Characteristics:
they fasten the fittings to boxes or enclosures.

TAIS SERIES
Polygonal nuts with Pg thread



Pg	Palazzoli Code	Pack Q.ty
21	571221	50
29	571229	50
36	571236	50

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page 97

Metal mounting plates for ATEX enclosures with blind cover in thermosetting material

Fixed interlocked
socket-outlets
and plugs



TAIS SERIES
Mounting plates
in anti-corrosion
tropicalized steel plate, for
watertight enclosures.

For enclosures Code	Dimensions	Palazzoli Code	Pack Q.ty
532016EX	125x125	532716	20
532667EX	185x125	532717	20
532618EX, 532628EX	250x125	532718	20

Uses:
for fastening terminal blocks
or non-modular devices.

Single-pole connection and junction terminal blocks



new

CONTACT-Ex SERIES
Junction terminal
blocks for ATEX EEx nA
enclosures

Protection against explosions	
CE Ex	II 3GD
EEx nA T6	
Area 2	Area 22

Type No. holes per sect.	Voltage (V)	Enclosure material	For enclosures with dimensions (mm)	Palazzoli Code	Pack Q.ty
4x6 mm ²	380	Ceramic	125x125, 125x185	532745EX	20
4x6 mm ² *	500	Ceramic	125x125, 125x185	532747EX	10
			125x250	532748EX	20
6x6 mm ²	380	Ceramic	125x125, 125x185	532765EX	20
6x16 mm ² *	500	Ceramic	125x250	532768EX	10

* 10 mm² with flexible cables,
16 mm² with hard cables.

Complementary items:
TAIS boxes on page 28

Characteristics:
corrosion resistant non-
sparking and non-loosening
terminals for Ex nA
connections and junctions if
housed in boxes shown in this
catalogue. Anti-tracking
insulating enclosure. For
power dissipated from each
terminal, see page 41.

Support plates for distribution boards for potentially explosive atmospheres, in thermosetting material



TAIS SERIES
Plates for mounting
interlocked socket-outlets,
in thermosetting material

No. of installable devices	Module for devices (mm)	Plate size (mm)	Palazzoli Code	Pack Q.ty
2	2x92	185x501	538703	10
1	92/125	125x630	538711	10
2	125+125/125+92/92+125	250x630	538712	5

Equipment:
built-in threaded metal
dowels, supplied with
screws and stainless steel
washers for fastening
devices.

**greater
safety**
page 24

Characteristics:
they do not need an earth
connection.

Uses:
for fastening TAIS-Ex
distribution boards to the wall.

Complementary items:
interlocked socket-outlets
from page 26 to page 27
enclosures from page 28.



TAIS SERIES
Coupling piece for
plates in insulating
thermosetting material

For plates code	Palazzoli Code	Pack Q.ty
538703, 538711, 538712	538791	50

Uses:
these devices are snap-
fastened into their housings
on the base plates for
interlocked socket-outlets.

Technical data
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Dimensions
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Fixed interlocked socket-outlets

Techniques and advantages

ALUPRES-Ex SERIES – WATERTIGHT FIXED INTERLOCKED SOCKETS-OUTLETS IN ALUMINIUM ALLOY FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

This series of interlocked socket-outlets in die-cast aluminium allows for countless combinations of distribution boards. As the most comprehensive range on the market, it consists of 16A, 32A, 63A, and 125A, interlocked socket-outlets with blind and window modular enclosures and mounting plates for making complete combinations. The socket-outlets and switches are directly fixed onto the bottom box instead of the front panel. The interlock system not only protects persons from shocks and the opening arc, but performs the vital function of preventing explosions by making socket-outlet and plug connection non-sparking. Segregated in restricted-breathing housing, the interlock is in the AC23 and AC3 category with Icc up to 10kA and allows direct motor control.

In addition to the CEI EN 50021 Standard governing Ex n electrical constructions, the interlocked socket-outlets are in compliance with Standards CEI EN 60309, CEI EN 60947, CEI EN 60742.



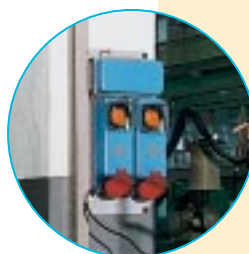
Made of die-cast aluminium alloy UNI 5076, these products are powder painted with polymerized non-scratch paint at 180°C, which also makes them suitable for environments with the presence of abrasive elements. A special chrome treatment applied before painting guarantees protection against corrosion. The walls have a minimum thickness of 3 mm, ensuring outstanding impact resistance (30 Joules).



greater resistance

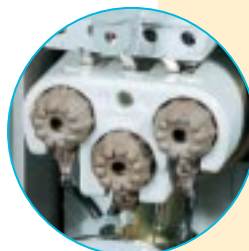
COMPACT

The socket-outlets with 16A fuses are only 92 mm wide, so you can install distribution boards with 2 socket-outlets on 20 cm columns.



SAFE

The ceramic fuse-holder base and GWT 960°C self-extinguishing thermosetting socket insert (for 63A and 125A) guarantee safety in extreme heat even in limited conditions. Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted-breathing even after frequent removal and for temperature variations greater than expected.



COMPLETE

The most widely used 16A versions with a fuse-holder base are supplied with a flange and cable gland for quick installation.



ROBUST

The even thicker enclosure guarantees high impact resistance of up to 30 J even in extreme temperatures (-40° C - +70°C).





AREA 2

Area in which an explosive atmosphere due to gas is not likely to occur during normal operation, and if it occurs, it will exist infrequently and only for a short time.

**EEx n interlocked
socket-outlets must
be used.**

Areas with mechanical sparks.



AREA 22

Area in which an explosive atmosphere, due to inflammable clouds of dust, is not likely to occur during normal operation, and if it occurs, it will exist only for a short time.

**EEx n interlocked
socket-outlets
must be used.**

Pharmaceutical industry.



AREA NE

Area without an explosive atmosphere.

**EEx n interlocked
socket-outlets are
recommended.**

Surface treatment division in weapon factories.



APPLICATIONS:

Fuel deposits, pharmaceutical and chemical industries, oil refineries, petrol stations, heating plants, large kitchens, painting rooms, garages, both in areas 2 (compulsory) and areas NE (recommended); carpenteries, plastic-laminated board working, sugar-works, mills, farmyards, barns both in areas 22 (compulsory) and areas NE (recommended).

Fixed interlocked socket-outlets

Watertight fixed interlocked socket-outlets and fuse-holder base for potentially explosive atmospheres in aluminium alloy - IP67



ALUPRES-Ex SERIES
ATEX wall-mounting
interlocked socket-outlets
with fuse-holder base, in
modular enclosure
in aluminium alloy - IP67
EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2		Area 22



Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P++	4	472233EX	1
			3P++	4	472243EX	1
			3P+N++	4	472253EX	1
		220 200-250	2P++	6	472333EX	10
			3P++	9	472343EX	5
			3P+N++	9	472353EX	1
		380 380-415	2P++	9	472433EX	1
			3P++	6	472443EX	10
			3P+N++	6	472453EX	10
		500 480-500	3P++	7	472543EX	1
			3P+N++	7	472553EX	1
32	50-60	110 100-130	3P++	4	472246EX	1
			3P+N++	4	472256EX	1
		220 200-250	2P++	6	472336EX	1
			3P++	9	472346EX	1
		380 380-415	3P++	6	472446EX	1
			3P+N++	6	472456EX	1
		500 480-500	3P++	7	472546EX	1
			3P++	7	472546EX	1
63	50-60	220 200-250	3P++	9	472347EX	1
		380 380-415	3P++	6	472447EX	1
			3P+N++	6	472457EX	1
		500 480-500	3P++	7	472547EX	1
125	50-60	220 200-250	3P++	9	472348EX	1
		380 380-415	3P++	6	472418EX	1
			3P+N++	6	472428EX	1
		500 480-500	3P++	7	472518EX	1



Equipment:
flange with 1" gas cable gland for 32A socket-outlets.
flange with 1" 1/4 gas cable gland for 63A socket-outlets.
flange with 1" 1/2 gas cable gland for 125A socket-outlets.

Characteristics:
fuses: NDZ (E16) for 16A socket-outlets DIII (E33) for 32A and 63A socket-outlets. ACR GR00 for 125A socket-outlets (not supplied).
Fittings in non-sparking, non-loosening, closed fuse-holders with interlock which blocks replacement when power is on.
Upper passage: FO window 16A socket-outlets, F1 for 32A and 63A socket-outlets and F3 window for 125A socket-outlets.
63A and 125A socket-outlets with IP55 protection rating.

Uses:
its highly compact design makes it ideal for installations in small spaces (e.g. on pillars, on machines.).
Only use with Ex nA plugs in this catalogue.

Complementary items:
straight plugs
on pages 14-15.

Protection against explosions

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P++	8.1	13
	3P++	8.8	14
	3P+N++	10	15.3
32	2P++	11.5	17.3
	3P++	12.5	19.3
	3P+N++	14	21.3
63	2P++	17.3	26
	3P++	19.3	28.5
	3P+N++	21.3	31.3
125	2P++	26	39.3
	3P++	28.5	43.3
	3P+N++	31.3	45

Quick selection table
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page 98

Watertight fixed interlocked socket-outlets and miniature circuit breaker for potentially explosive atmospheres in aluminium alloy - IP67

Fixed interlocked socket-outlets and plugs



ALUPRES-Ex SERIES
Wall-mounting socket-outlets with miniature circuit breaker, mechanical interlock, ATEX signal lamp, in modular enclosure made of aluminium alloy
IP67
EEx nR



Protection against explosions		
		II 3GD
		EEx nR T5
		Area 2 Area 22

Rated current (A)	Frequency (Hz)	Rated voltage (V)	Poles	Ref. h	Palazzoli Code	Pack Q.ty
16	50-60	110 100-130	2P+±	4	474633EX•	1
			3P+±	4	474643EX•	1
			3P+N+±	4	474653EX•	1
		220 200-250	2P+±	6	474733EX	1
			3P+±	9	474743EX•	1
			3P+N+±	9	474753EX•	1
		380 380-415	2P+±	9	474833EX•	1
			3P+±	6	474843EX	1
			3P+N+±	6	474853EX	1
32	50-60	110 100-130	3P+±	4	474246EX	1
			3P+N+±	4	474256EX•	1
		220 200-250	2P+±	6	474336EX	1
			3P+±	9	474346EX	1
		380 380-415	3P+±	6	474446EX	1
			3P+N+±	6	474456EX	1
63	50-60	220 200-250	3P+±	9	474347EX•	1
			3P+±	6	474447EX	1
		380 380-415	3P+N+±	6	474457EX	1

• Supplied on request

greater resistance
page 30

Equipment:
flange with 1" gas cable gland for 16A socket-outlet, flange with 1" gas cable gland for 32A socket-outlet, flange with 1 1/4" gas cable gland for 63A socket-outlet.

Characteristics:
upper side passage with F1 window.
63A socket-outlets with IP55 protection rating.
Non-loosening terminals that are corrosion resistant.
Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal and for temperature variations greater than expected.

Uses:
To be used only with the EX nA plugs found in this catalogue.

Complementary items:
straight plugs
on pages 14-15

Insertable cable diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P+±	8.1	13
	3P+±	8.8	14
	3P+N+±	10	15.3
32	2P+±	11.5	17.3
	3P+±	12.5	19.3
	3P+N+±	14	21.3
63	2P+±	17.3	26
	3P+±	19.3	28.5
	3P+N+±	21.3	31.3

Quick selection table
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Fixed interlocked socket-outlets

High capacity modular enclosures for distribution boards for potentially explosive atmospheres, in aluminium alloy - IP67



new

ALUPRES-Ex SERIES
Enclosures with ATEX window walls, in aluminium alloy, with mounting plates in tropicalized steel plate IP67 - EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T6		
Area 2	Area 22	

External dimensions (mm)	Maximum available power (W)	Entries No./Type	Palazzoli Code	Pack Q.ty
125x125x113	10		511914EX	20
	10		511915EX	10
185x125x113	12		511916EX	6
252x125x113	20		511918EX	6
	20		511919EX	6

greater resistance
page 30

Equipment:
windows with gaskets and screws.
Internal and external earth screws.
511914EX: No. 2 F1 blind flanges code 540091.
511915EX: No. 2 F1 blind flanges code 540091.
511916EX: No. 2 F1 blind flanges code 540091.
511918EX: No. 2 F1 blind flanges code 540091.
511919EX: No. 2 F1 blind flanges code 540091.

Characteristics:
the Ex n enclosures may be used for non-sparking components (terminals) indicated in this catalogue in a quantity as to not create a dispersed power level higher than the one relating to each casing. For this reason, the dispersed power of each type of connection must be considered.

Technical accessories for high capacity modular enclosures in aluminium alloy



ALUPRES SERIES
Flat closing aluminium alloy flanges with cable gland for enclosures with window walls - IP67

For windows type	Shade ring diameter	Gasket diameter min.	Gasket diameter max.	Threading type	Palazzoli Code	Pack Q.ty
F0 (insulating mat.)	16	9	12	1/2"	541010	50
F0 (insulating mat.)	20	14	16	3/4"	541020	50
F0	16	9	12	1/2"	541080	10
	20	12	16	3/4"	541090	20
	25.5	17	20	1"	541030	20
F1	16	9	12	1/2"	541011	20
	20	14	16	3/4"	541021	20
F0	16	9	12	1/2"	541040	10

Characteristics:
suitable for entry with threaded conduits.
Art. 541040 has an entry with 2 separate inlets.

Uses:
For closing open entries and implementing protection EEx nA.



ALUPRES SERIES
Raised closing flanges in aluminium alloy with cable gland, for enclosures with window walls - IP67

For windows type	Shade ring diameter	Gasket diameter min.	Gasket diameter max.	Threading type	Palazzoli Code	Pack Q.ty
F1	25.5	16	22	1"	540151	8
	36	25	26	1" 1/4	540141	8
F2	25.5	16	22	1"	540152	8
	36	25	26	1" 1/4	540142	8
F3	41.5	34	35	1" 1/2	540153	8
F4	41.5	25	35	1" 1/2	540154	4
F5	50	33	44	2"	540145	1
F6	70	63	64	2" 3/4	540156	1

Uses:
suitable for entry with threaded conduits. These make wiring easier as they increase the internal volume of the enclosure.
For closing open entries and implementing protection EEx nA.

Technical data
pages 94-96
Dimensions
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ALUPRES SERIES
Flat closing flanges
in steel for enclosures
with window walls - IP67

For windows type	Projection (mm)	Palazzoli Code	Pack Q.ty
F0 (insulating mat.)	5	540030	100
F1 (insulating mat.)	6	540031	50
F0	2.5	540090	10
F1	5.5	540091	10
F2	5.5	540032	30

Uses:

For closing open entrances and implementing the protection mode EEx nA.



ALUPRES SERIES
Raised closing flanges
in aluminium alloy
for enclosures with
window walls - IP67

For windows type	Projection (mm)	Palazzoli Code	Pack Q.ty
F1	32	540061	12
F2	32	540062	4

Uses:

These make wiring easier as they increase the internal volume of the enclosure.
For closing open entrances and implementing the protection mode EEx nA.

Support plates for distribution boards in aluminium alloy for potentially explosive atmospheres



ALUPRES SERIES
Plates in zinc-plated steel and painted for mounting socket-outlets in aluminium alloy enclosure

No of installable devices	Module for installable devices (mm)	Plate size (mm)	Palazzoli Code	Pack Q.ty
2	2x92	185x421	532826	2
2	2x125 / 125+92	250x558	532836	2
3	3x125	375x558	532846	2
3	125+2x92	310x558	532856	2
4	2x125+2x92 / 125+3x92	435x558	532866	2

Equipment:

designed with threaded holes and stainless steel screws for fastening fixtures.

Complementary items:
interlocked socket-outlets from page 32 to page 33 enclosures on page 34.



ALUPRES SERIES
Pair of small plates with screws for coupling steel plates

For plates code	Palazzoli Code	Pack Q.ty
532806, 532816, 532826, 532836, 532846, 532856	532895	20

Uses:

these increase the combinations of possible distribution board arrangements.

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WATERTIGHT JUNCTION BOXES

TAIS-Ex Series
TAIS MIGNON-Ex Series
page 38

ALUPRES-Ex Series
page 43



In thermosetting material

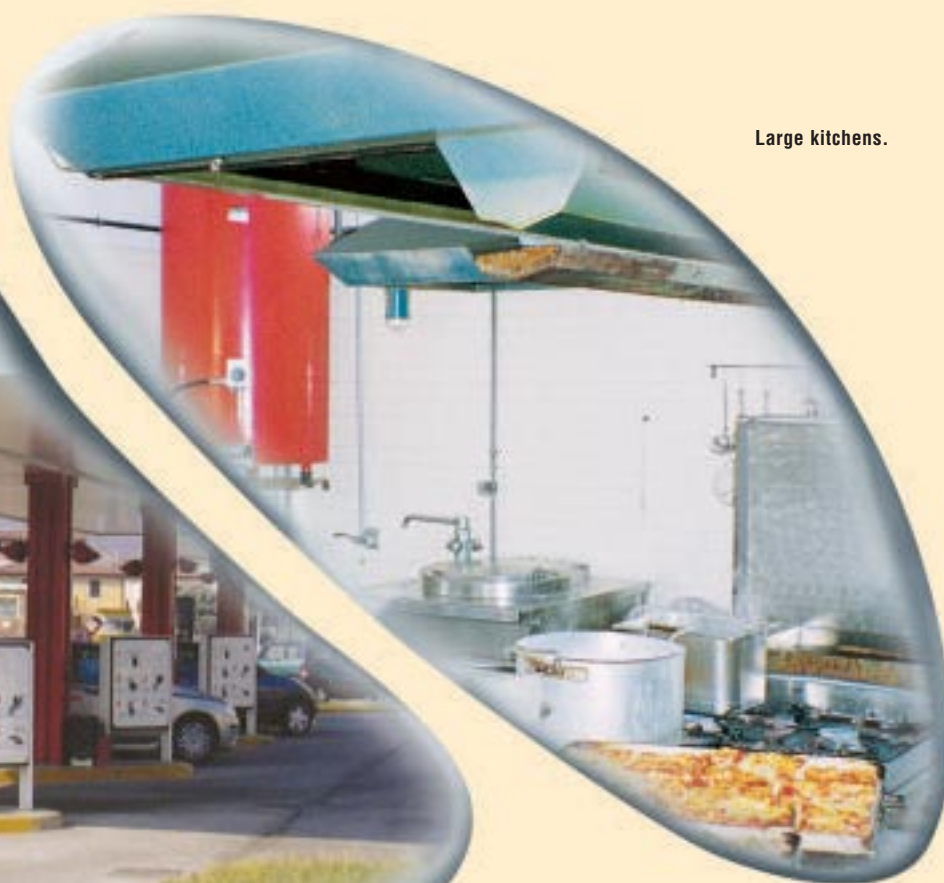


In aluminium alloy

Petrol stations.



Large kitchens.





TAIS-Ex SERIES – WATERTIGHT JUNCTION BOXES FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

The TAIS-Ex SERIES junction boxes in reinforced thermosetting material with glass fibre represent the state-of-the-art in industrial junctions. This series has been designed for wall-mounting or mounting on insulated machines. Available in two types: small boxes from 62x80x38 mm to 125x77x55 mm, ideal for small junctions on machines for industrial automation, and medium to large boxes from 92x92x68 to 370x500x190, suitable for junctions in wall-mounting installations for industrial systems. This series has been manufactured in compliance with the Standard CEI EN 60529 and CEI EN 50021.

Made of reinforced thermosetting material, these “indestructible” products have been designed for outdoor installations (GWT 960°C -20J). Their reinforced geometry ensures a very robust form, insulating resistance, outstanding resistance to extremes of heat and fire, as well as to chemical agents, humidity, the prolonged action of UV rays and atmospheric agents. Its non-deformability in the most extreme temperatures maintains restricted breathing intact even when installed outdoors in difficult atmospheres.



**greater
safety**



EASY FASTENING

The bottom boxes are equipped with threaded brass inserts that make opening and closing easy even after many years (e.g. for maintenance).



SAFE

Practically 100% resistant to most aggressive substances (hydrocarbons, oils, acids, bases, etc.) and extremely impact resistant, they are the only solution for industrial installations under 2.2 m high.



ETERNAL

Characterised by a reinforced structure with even thicker walls and a high IP65 protection rating, these practically maintenance-free boxes ensure excellent resistance against stress/vibrations, abrasion.

APPLICATIONS:

For building systems in fuel deposits, oil refineries, petrol stations, chemical industry, thermal power plants, large kitchens, rooms for painting, garages, both in areas 2 (compulsory) as well as NE areas (recommended), woodworking shops, plastic laminate manufacturing, sugar factories, mills, farmyards, hay storage barns in both areas 22 (compulsory) as well as NE areas (recommended).

Watertight junction boxes

Watertight junction boxes in thermosetting material IP65 for potentially explosive atmospheres 

new

TAIS-MIGNON-Ex SERIES
ATEX watertight wall-mounting
modular junction boxes
in thermosetting
material - IP65
EEx nA

Protection against explosions		
		II 3GD
EEx nA T6		
Area 2	Area 22	

External dimensions (mm)	Maximum available power (W)	Entries		Palazzoli Code	Pack Q.ty
		No.	Type		
62x80x38	8	 2	1/2" gas (ø16/12mm)	101021EX	50
		 3		101031EX	25
		 4		101041EX	25
		 6		101061EX	25
77x102x48	10	 6	3/4" gas (ø20/16mm)	101161EX	25

greater safety
page 37

Equipment:
cable glands with gaskets come in the same quantity as the no. of entries.

Characteristics:
stainless steel screws for fastening covers. The modular dimensions allow for combinations with watertight wall-mounting modular boxes. The Ex n enclosures may be used for non-sparking components (terminals) indicated in this catalogue in a quantity as to not create a dispersed power level higher than the one relating to each casing. For this reason, the dispersed power of each type of connection must be taken into consideration, taking $P=0.0048I$ as the maximum available power where I is the connection's operating current. Anti-tracking, anti-static and self-extinguishing resin body GWT: 850°C - UL94: V2. Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal and for temperature variations greater than expected.

new

TAIS MIGNON-Ex series
ATEX watertight wall-mounting
modular junction boxes,
with increased internal
capacity in thermosetting
material - IP65 - EEx nA

Protection against explosions		
		II 3GD
EEx nA T6		
Area 2	Area 22	

External dimensions (mm)	Maximum available power (W)	Entries		Palazzoli Code	Pack Q.ty
		No.	Type		
62x80x46	9	 2	1/2" gas (ø16/12mm)	101022EX	25
77x102x55	11	 2	3/4" gas (ø16/12mm)	101121EX	10

new

TAIS MIGNON-Ex series
ATEX watertight
wall-mounting modular
boxes in thermosetting
material - IP65
EEx nA

Protection against explosions		
		II 3GD
EEx nA T6		
Area 2	Area 22	

External dimensions (mm)	Maximum available power (W)	Entries		Palazzoli Code	Pack Q.ty
		No.	Type		
125x77x55	12	 2	3/4" gas (ø20/16mm)	101081EX	20

Technical data
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Dimensions
page 101

Multi-pole connection and junction terminal blocks

Enclosures
and fittings



new



CONTACT-Ex SERIES
ATEX junction terminal
blocks for watertight boxes
380V - EEx nA

Protection against explosions		
		II 3GD
		EEx nA T6
		Area 2 Area 22

Type No. poles per section	Palazzoli Code	Pack Q.ty
4x6 mm ²	101096EX	20

Characteristics:
they are fitted in the
TAIS-MIGNON boxes
with 77x102 dim. and 55x125
dim. without using screws.
Maximum dispersed
power 750mW.

new



CONTACT-Ex SERIES
ATEX junction terminal
blocks for watertight
boxes - 500V - EEx nA

Protection against explosions		
		II 3GD
		EEx nA T6
		Area 2 Area 22

Type No. poles per section	Palazzoli Code	Pack Q.ty
4x6 mm ²	101095EX	10

Characteristics:
they are fitted in the
TAIS-MIGNON boxes with
77x102 dim. and 55x125 dim.
without using screws.
Maximum dispersed power
750mW.

Watertight junction boxes with terminals in thermosetting material IP65 for potentially explosive atmospheres

new



TAIS-MIGNON-Ex SERIES
ATEX watertight wall-mounting
modular junction
boxes with mantle
terminals, in thermosetting
material - IP65
EEx nA

Protection against explosions		
		II 3GD
		EEx nA T6
		Area 2 Area 22

External dimensions (mm)	Terminals (mm)	Maximum available power (W)	Entries		Palazzoli Code	Pack Q.ty
			No.	Type		
62x80x38	4x6mm ²	8	2*	1/2" gas (ø16/12mm)	101025EX	50
			3		101035EX	25
			4		101045EX	20
77x102x48	5x6mm ²	10	6	3/4" gas (ø20/16mm)	101156EX	10
			6		101157EX	10

**greater
safety**
page 37

Equipment:
with 6 mm² non-loosening
mantle terminals.
Cable glands with gaskets
in the same quantity
as the no. of entries.

Characteristics:
stainless steel screws for
fastening covers, the Ex n
enclosures may be used for
non-sparking components
(terminals) indicated in this
catalogue in a quantity as to
not create a dispersed power
level higher than the one
relating to each casing. For this
reason, the dispersed power of
each type of connection must
be considered. Anti-tracking,
anti-static and self-extinguishing
resin body GWT: 850°C - UL94:
V2. Unlosable gaskets in non-
ageing elastomer fastened to
a non-deformable rigid base
to ensure restricted breathing
even after frequent removal
and for temperature variations
greater than expected.

Complementary items:
gas coupling fitting
on page 47.

Technical data
pages 99-100
Dimensions
page 101

Watertight junction boxes

Watertight junction boxes
in thermosetting material IP67 for
potentially explosive atmospheres 



new

TAIS-Ex SERIES
ATEX watertight wall-
mounting blind enclosures
with low cover, in
thermosetting material
IP67 - EEx nR

Protection against explosions			
		II 3GD	
		EEx nR T6	
Area 2		Area 22	

External dimensions (mm)	Maximum available power (W)	Palazzoli Code	Pack Q.ty
92x92x68	10	532035EX	10
125x92x68	12	532045EX	5
185x92x68	14	532055EX	5
125x125x100	13	532116EX	5
185x125x100	15	532117EX	4
250x125x100	20	532118EX	5

greater safety
page 37

Characteristics:
The versions with high covers allow the control devices to be inserted. The Ex n enclosures may be used for non-sparking components (terminals) indicated in this catalogue in a quantity as to not create a dispersed power level higher than the one relating to each casing. For this reason, the dispersed power of each type of connection must be considered.



new

TAIS-Ex SERIES
ATEX watertight wall-
mounting blind enclosures
with high cover, in
thermosetting material
IP67 - EEx nR

Protection against explosions			
		II 3GD	
		EEx nR T6	
Area 2		Area 22	

External dimensions (mm)	Maximum available power (W)	Palazzoli Code	Pack Q.ty
92x92x100	12	532005EX	16
125x92x100	14	532006EX	12
185x92x100	16	532015EX	8
125x125x125	15	532016EX	8
185x125x125	17	532017EX	8
250x125x125	22	532018EX	4



TAIS SERIES
Mounting plates in
anti-corrosion tropicalized
steel plate, for
watertight enclosures

For enclosures		Palazzoli Code	Pack Q.ty
Code	Dimensions		
532005EX, 532035EX	92x92	532705	10
532006EX, 532045EX	92x125	532714	10
532015EX, 532055EX	185x92	532715	5
532016EX, 532116EX	125x125	532716	20
532017EX, 532117EX	185x125	532717	20
532018EX, 532118EX	250x125	532718	20



new

CONTACT-Ex SERIES
ATEX junction terminal
blocks for watertight
enclosures - EEx nA

Protection against explosions			
		II 3GD	
		EEx nA T6	
Area 2		Area 22	

Type No. holes per sect.	Voltage (V)	Enclosure material	For enclosures with dimensions (mm)	Palazzoli Code	Pack Q.ty
4x6 mm ²	380	Ceramic	92x92	532725EX	10
		Thermoplastic	92x92	532735EX	20
4x16mm ² *	500	Ceramic	92x125, 92x185, 125x125, 125x185	532745EX	20
			92x185, 125x125, 125x185	532747EX	10
		Thermosetting	125x250	532748EX	20
6x4 mm ²			92x92	532755EX	1
6x6 mm ²	380	Ceramic	92x125, 92x185, 125x125, 125x185	532765EX	20
6x16mm ² *	500		125x250	532768EX	10

Characteristics:
Corrosion-resistant, non-sparking, non-loosening terminals, if used in the boxes found in this catalogue, are suitable for Ex nA junctions and joints. Anti-tracking insulating casing. For the dispersed power of each terminal, see page 41.

Technical data
pages 99-100
Dimensions
page 101

* 10 mm² with flexible cables,
16 mm² with hard cables.



new

TAIS-Ex SERIES
ATEX blind watertight
enclosures in
thermosetting
material, with
mounting plates
in tropicalized
steel plate - IP65
EEx nR

Protection against explosions	
CE Ex	II 3GD
EEx nR T6	
Area 2	Area 22

External dimensions b x h x d (mm)	Maximum available power (W)	Palazzoli Code	Pack Q.ty
185x185x140	20	531911EX	1
250x185x190	24	531931EX	1
250x250x190	28	531940EX	1
250x370x190	35	531942EX	1
370x500x190	60	531962EX	1

S greater
safety
page 37

Characteristics:
the Ex n enclosures may be used for non-sparking components (terminals) indicated in this catalogue in a quantity as to not create a dispersed power level higher than the one relating to each casing. For this reason, the dispersed power of each type of connection must be considered.

Multi-pole high power connection and junction terminal blocks

new

CONTACT-Ex SERIES
ATEX junction terminal
blocks with flat terminals
for watertight enclosures
EEx nA

Protection against explosions	
CE Ex	II 3GD
EEx nA T6	
Area 2	Area 22

Type Poles per section	Voltage (V)	For enclosures with min. dimensions (mm)	Palazzoli Code	Pack Q.ty
3x16 mm ²	500	92x92	159030EX	10
3x25 mm ²		125x125	159032EX	10
3x40 mm ²		155x155	159033EX	10
3x70 mm ²		185x185	159034EX	10
3x125 mm ²		220x220	159035EX	3
3x200 mm ²		295x295	159036EX	1
3x315 mm ²	500	373x373	159037EX	1
4x16 mm ²		125x125	159040EX	10
4x25 mm ²		155x155	159042EX	10
4x40 mm ²		185x185	159043EX	10
4x70 mm ²		220x220	159044EX	5
4x125 mm ²		295x295	159045EX	5
4x200 mm ²		373x373	159046EX	1

Characteristics:
in compliance with CEI EN60947-7-1 and CEI EN50021. Corrosion-resistant, non-sparking, non-loosening terminals, if used in the boxes found in this catalogue, are suitable for Ex nA junctions and joints. Anti-tracking insulating casing.

Complementary items:
TAIS enclosures on page 40

Dispersed power table

Section (mm ²)	Test current (A)	Cable section (mm ²)	Dispersed power (mW)
4	32	4	156
6	41	6	196
10	57	10	273
16	76	16	364
25	101	25	484
40	125	35	608
70	192	70	921
125	269	120	1291
200	309	185	1483
315	520	300	2496

Technical data
pages 99-100
Dimensions
page 101

Watertight junction boxes

Techniques and advantages

ALUPRES-Ex SERIES – WATERTIGHT JUNCTION BOXES IN ALUMINIUM ALLOY FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

This is a professional range of high performance metal boxes with very thick walls and a quality finish. It consists of two box types: small dimensions from Ø62mm to 155x155x73mm, ideal for small junctions on machines for industrial automation, and medium to large dimensions from 92x92x65 to 630x507x193, suitable for junctions in wall-mounting installations. Palazzoli can offer unpainted boxes upon request (e.g. for tunnels). Contact our commercial network for any further information.

Made of die-cast aluminium alloy UNI 5076, these products are powder painted with polymerized non-scratch paint at 180°C, which also makes them suitable for environments with the presence of abrasive elements.



greater resistance

A special chrome treatment applied before painting guarantees protection against corrosion. The walls have a minimum thickness of 3 mm, ensuring outstanding impact resistance (30 Joules).

GUARANTEED PROTECTION

Practical external housings allow you to fasten without drilling inner holes, ensuring that the IP protection rating is maintained over time.

TOTAL QUALITY

All the components are painted and subjected to anti-corrosion chromium treatment. This is an ideal base for any further coats of paint.

SUPER-RESISTANT

Characterised by a reinforced structure with even thicker walls, they are ideal in cases of extreme stress/vibrations and ensure high impact resistance. The walls can be threaded.



APPLICATIONS:

For building systems in fuel deposits, oil refineries, petrol stations, chemical industry, thermal power plants, large kitchens, rooms for painting, garages, both in areas 2 (compulsory) as well as NE areas (recommended), woodworking shops, plastic laminate manufacturing, sugar factories, mills, farmyards, hay storage barns in both areas 22 (compulsory) as well as NE areas (recommended).

Watertight junction boxes in aluminium alloy for potentially explosive atmospheres

Enclosures
and fittings



new

RONDÓ-Ex SERIES
ATEX wall-mounting
junction boxes in
aluminium alloy - IP54
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T6		
Area 2	Area 22	



new

ALUPRES-Ex SERIES
ATEX wall-mounting
junction boxes in
aluminium alloy
IP55/IP67 - EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T6		
Area 2	Area 22	



new

CONTACT-Ex SERIES
ATEX junction terminal
blocks with mantle
terminals for 500V
junction boxes
EEx nA



new

CONTACT-Ex SERIES
ATEX junction terminal
blocks with flat terminals
for watertight enclosures
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T6		
Area 2	Area 22	

Internal diameter (mm)	Maximum available power (W)	Cable gland	Palazzoli Code	Pack Q.ty
ø 62	3	2x1/2"	112020EX	25
		3x1/2"	112030EX	25
		4x1/2"	112040EX	25
ø 82	4	2x3/4"	113020EX	20
		3x3/4"	113030EX	20
		4x3/4"	113040EX	20

Dimensions (mm)	Maximum available power (W)	Palazzoli Code	Pack Q.ty
92x92x77	10	511910EX	20
125x92x77	12	511911EX	10
185x92x77	14	511912EX	10
125x125x113	13	511913EX	10
155x155x73	15	150021EX	10
252x125x113	20	511917EX	6
185x185x145	18	511920EX	10
252x185x145	22	511921EX	5
220x220x108	20	511922EX	1
252x252x197	25	511923EX	1
315x252x193	30	511924EX	1
507x252x193	50	511925EX	1
295x295x123	40	511926EX	1
315x315x193	45	511927EX	1
373x373x220	48	511928EX	1
507x373x305	60	511929EX	1
630x373x267	80	511930EX	1
630x507x193	90	511931EX	1

Type No. poles per section	Palazzoli Code	Pack Q.ty
4x6 mm ²	112094EX	30
4x10 mm ²	113094EX	20

Type No. poles per section	Voltage (V)	For enclosures with min. dimensions (mm)	Palazzoli Code	Pack Q.ty
3x16 mm ²	500	92x92	159030EX	10
3x25 mm ²		125x125	159032EX	10
3x40 mm ²		155x155	159033EX	10
3x70 mm ²		185x185	159034EX	10
3x125 mm ²		220x220	159035EX	3
3x200 mm ²		295x295	159036EX	1
3x315 mm ²		373x373	159037EX	1
4x16 mm ²	500	125x125	159040EX	10
4x25 mm ²		155x155	159042EX	10
4x40 mm ²		185x185	159043EX	10
4x70 mm ²		220x220	159044EX	5
4x125 mm ²		295x295	159045EX	5
4x200 mm ²		373x373	159046EX	1

R greater
resistance
page 42

Equipment:
earth screws inside
and outside the box.

Characteristics:
the Ex n enclosures may be
used for non-sparking
components (terminals)
indicated in this catalogue in
a quantity as to not create a
dispersed power level higher
than the one relating to each
casing. For this reason, the
dispersed power of each type
of connection must be
considered.
Covers with dimensions
155x155 and larger: IP55.

Complementary items:
for aluminium junction boxes
112094 Ex for ø62 mm boxes
113094 Ex for ø82 mm boxes.

Characteristics:
in compliance with
CEI EN60947-7-1 and
CEI EN50021. Corrosion-
resistant, non-sparking,
non-loosening terminals, if
used in the boxes found in
this catalogue, are suitable
for Ex nA junctions and joints.
Anti-tracking insulating casing.
For the dispersed power of
each terminal, see page 41.

Technical data
pages 99-100
Dimensions
page 101

UNIVERSAL FITTINGS AND ACCESSORIES



Pg/metric thread
in insulating material



Gas thread in
insulating material



Gas thread
in brass

Surface treatment division in weapon factories.



Painting department in an industrial warehouse.



Cable glands in insulating material with Pg threading for potentially explosive atmospheres

Enclosures and fittings



UNI-Ex SERIES
ATEX insulated cable glands with Pg threading - IP68
EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T6		
Area 2	Area 22	

Pg	Smooth assembly hole ø (mm)	For cables max. (mm)		Palazzoli Code	Pack Q.ty
		Min.	Max.		
7	13	3.5	6	571007EX	100
9	16	4.5	7	571009EX	100
11	19	5	10	571011EX	100
13.5	21	8	13	571013EX	100
16	23	9	16	571016EX	50
21	29	13	21	571021EX	25
29	38	17	27	571029EX	50
36	48	30	33	571036EX	10
42	55	34	38	571042EX	5
48	61	40	44	571048EX	5

Characteristics:
Sealed threading suitable for creating restricted breathing.

Complementary items:
polygonal nuts on page 46.



UNI-Ex SERIES
ATEX insulated cable glands with Pg threading, with long thread - IP68
EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T6		
Area 2	Area 22	

Pg	Smooth assembly hole ø (mm)	For cables max. (mm)		Palazzoli Code	Pack Q.ty
		Min.	Max.		
7	13	3.5	6	571107EX	100
9	16	4.5	7	571109EX	100
11	19	5	10	571111EX	100
13.5	21	8	13	571113EX	100
16	23	9	16	571116EX	50
21	29	13	21	571121EX	25
29	38	17	27	571129EX	50
36	48	30	33	571136EX	10
42	55	34	38	571142EX	5
48	61	40	44	571148EX	5

Characteristics:
From Pg7 to Pg16 thread length 15 mm.
From Pg21 thread length 20 mm.
Sealed threading suitable for creating restricted breathing.

Complementary items:
polygonal nuts on page 46.

Fittings and screwcaps in insulating material with Pg threading



UNI-Ex SERIES
ATEX capling for watertight enclosures with Pg threads - IP65
EEx nR

Pg	Assembly hole ø (mm)	For cables ø max (mm)	Palazzoli Code	Pack Q.ty
21	29	17	580242EX	50
29	38	24	580243EX	20
36	48	37	580244EX	10
29/36	38 → 48	24	580203EX	20

Equipment:
with threaded shade ring, nut and gasket.



UNI-Ex SERIES
ATEX screwcaps with Pg thread IP67
EEx nR

Pg	Palazzoli Code	Pack Q.ty
21	580232EX	100
29	580233EX	20
36	580234EX	20

Equipment:
with gasket.

Complementary items:
polygonal nuts on page 46.

Protection against explosions		
CE	Ex	II 3GD
EEx nR T6		
Area 2	Area 22	

Technical data
page 102

Universal fittings and accessories

Insulated polygonal nuts with Pg threading



UNI SERIES
Polygonal nuts
with Pg thread

Pg	Palazzoli Code	Pack Q.ty
7	571207	100
9	571209	100
11	571211	100
13.5	571213	100
16	571216	50
21	571221	25
29	571229	50
36	571236	10
42	571242	5
48	571248	5

Uses:
wall-mounting
Pg accessories
with through holes.

Cable glands in insulating material with metric threading for potentially explosive atmospheres



UNI-Ex SERIES
ATEX insulated cable
glands with metric
threading - IP68
Ex nR

Protection against explosions		
CE	Ex	II 3GD
Ex nR T6		
Area 2	Area 22	

Thread	Smooth assembly hole ø (mm)	For cables max. (mm)		Palazzoli Code	Pack Q.ty
		Min.	Max.		
M12x1,5	12.5	3.5	7	581012EX	100
M16x1,5	16.5	6	10	581016EX	100
M20x1,5	20.5	7	13	581020EX	100
M25x1,5	25.5	10	17	581025EX	100
M32x1,5	32.5	13	21	581032EX	50
M40x1,5	40.5	19	28	581040EX	25
M50x1,5	50.5	27	35	581050EX	50
M63x1,5	63.5	34	45	581063EX	10

Characteristics:
Sealed threading suitable
for creating restricted
breathing.



UNI-Ex SERIES
ATEX insulated cable glands
with metric threading
with long thread
IP68
Ex nR

Protection against explosions		
CE	Ex	II 3GD
Ex nR T6		
Area 2	Area 22	

Thread	Smooth assembly hole ø (mm)	For cables max. (mm)		Palazzoli Code	Pack Q.ty
		Min.	Max.		
M12x1,5	12.5	3.5	7	581112EX	100
M16x1,5	16.5	6	10	581116EX	100
M20x1,5	20.5	7	13	581120EX	100
M25x1,5	25.5	10	17	581125EX	100
M32x1,5	32.5	13	21	581132EX	50
M40x1,5	40.5	19	28	581140EX	25
M50x1,5	50.5	27	35	581150EX	50
M63x1,5	63.5	34	45	581163EX	10

Characteristics:
M12 to M25 cable glands
thread length 15 mm.
From M32 cable gland
thread length 20 mm.
Sealed threading suitable for
creating restricted breathing.

Uses:
for entering cables/conduits
into boxes with very thick
walls, for example Tais
series page 40.



UNI SERIES
Polygonal nuts with
metric threading, for
cable glands - IP68

Thread	Palazzoli Code	Pack Q.ty
M12x1.5	581212	100
M16x1.5	581216	100
M20x1.5	581220	100
M25x1.5	581225	100
M32x1.5	581232	50
M40x1.5	581240	25
M50x1.5	581250	50
M63x1.5	581263	10

Uses:
used for fastening
cable glands with metric
threading onto walls
with through holes.

Technical data
page 102

Cable gland shade rings and screwcaps in insulating material with Gas threading for potentially explosive atmospheres

Enclosures and fittings



UNI-Ex SERIES
ATEX cable gland shade rings with Gas threading
IP67 - EEx nR



UNI-Ex SERIES
ATEX screwcaps with Gas threading - IP67
EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T6		
Area 2	Area 22	

Assembly hole type	For cables ø (mm)		Palazzoli Code	Pack Q.ty
	Min.	Max		
3/8"	8	10	580101EX	10
1/2"	10	13	580102EX	10
3/4"	13	17	580104EX	10
1"	17	21	580105EX	10

Characteristics:
Ring in non-ageing elastomer and sealed threading suitable for creating restricted breathing.

Assembly hole type	Palazzoli Code	Pack Q.ty
3/8"	580051EX	100
1/2"	580052EX	100
3/4"	580054EX	100

Uses:
it closes unused Gas thread holes.

Insulated fittings with Gas threading



UNI-Ex SERIES
ATEX couplings with Gas threading for watertight enclosures - IP67
EEx nR

Assembly hole type	Internal hole ø (mm)	Palazzoli Code	Pack Q.ty
1/2"	16	590002EX	100
3/4"	20	590004EX	100

Equipment:
with sleeve and small gasket ring in elastomer.

Uses:
they are used for joining boxes with connections of the same size.



UNI-Ex SERIES
ATEX couplings for joining smooth hole box/threaded hole box - IP67
EEx nR

Threaded hole type	Smooth hole ø (mm)	Internal hole ø (mm)	Palazzoli Code	Pack Q.ty
1/2"	21	12,5	590032EX	100

Equipment:
with threaded sleeve with notched crown and small gasket ring in elastomer.

Uses:
it is used for joining a smooth hole box with a 1/2" threaded hole box.

Protection against explosions		
CE	Ex	II 3GD
EEx nR T6		
Area 2	Area 22	



UNI SERIES
Locking spanner for couplings

Material	Palazzoli Code	Pack Q.ty
Tropicalized steel	590042	10

Uses:
spanner for smooth hole/1/2" threaded hole couplings.

Technical data
page 102

Universal fittings and accessories

Adapters in insulating material for potentially explosive atmospheres



UNI-Ex SERIES
ATEX Pg/Gas adaptors
for conduit/box
couplings - IP67
EEx nR

Protection against explosions	
CE Ex	II 3GD
EEx nR T6	
Area 2	Area 22

For threaded hole type	For conduit with threading type	Palazzoli Code	Pack Q.ty
Pg13.5	3/8"	580271EX	10
Pg16	1/2"	580272EX	10
Pg21	3/4"	580274EX	10
Pg29	1"	580275EX	10
Pg36	1" 1/2	580276EX	10

Characteristics:
Ring in non-ageing elastomer and sealed threading suitable for creating restricted breathing.

Uses:
they are equipped with Gas coupling threaded inlet for direct installation on Pg coupling threaded holes.

Complementary items:
polygonal nuts on page 46.



UNI-Ex SERIES
ATEX Pg/Metric adaptors
for conduit/box
couplings - IP67
EEx nR

Protection against explosions	
CE Ex	II 3GD
EEx nR T6	
Area 2	Area 22

For threaded hole type	For conduit with threading type	Palazzoli Code	Pack Q.ty
Pg13.5	M20x1.5	580291EX•	10
Pg16	M20x1.5	580292EX•	10
Pg21	M25x1.5	580294EX•	10
Pg29	M32x1.5	580295EX•	10
Pg36	M40x1.5	580296EX•	10

• Supplied on request

Characteristics:
Ring in non-ageing elastomer and sealed threading suitable for creating restricted breathing.

Uses:
they are equipped with Gas coupling threaded inlet for direct installation on Pg coupling threaded holes.

Complementary items:
polygonal nuts on page 46.



UNI-Ex SERIES
ATEX Gas/Metric adaptors
for conduit/box
couplings - IP67
EEx nR

Protection against explosions	
CE Ex	II 3GD
EEx nR T6	
Area 2	Area 22

For threaded hole type	For conduit with threading type	Palazzoli Code	Pack Q.ty
1/2" Gas	M20x1.5	580261EX	10
3/4" Gas	M25x1.5	580264EX	10

Characteristics:
Ring in non-ageing elastomer and sealed threading suitable for creating restricted breathing.

Uses:
they are equipped with Gas coupling threaded inlet for direct installation on Pg coupling threaded holes.

Technical data
page 102

Brass cable glands with Gas threading for potentially explosive atmospheres

Enclosures
and fittings



UNI-Ex SERIES

ATEX brass cable glands
with sleeve coupling
for fixing onto
threaded walls - IP55
EEx nR

Protection against explosions	
	II 3GD
	EEx nR T6
Area 2	Area 22

Internal diameter (mm)	Brass washers No.	Coupling thread type	Palazzoli Code	Pack Q.ty
11	2	3/8"	580021EX	50
12.5	–	1/2"	580022EX	50
14	1	5/8"	580023EX	10
17.5	–	3/4"	580024EX	50
21	1	1"	580025EX	10
27	2	1" 1/8	580026EX	10
29	2	1" 1/4	580027EX	10
35.5	2	1" 1/2	580029EX	10
45	2	2"	580031EX	10

Equipment:
with cable gland, washer,
sleeve coupling
and ring in non-ageing
elastomer.

Characteristics:
sealed threading
suitable for creating
restricted breathing.



UNI-SERIES
Hexagonal locking nuts in
brass for cable glands

Spanner size (mm)	Coupling thread type	Palazzoli Code	Pack Q.ty
19	3/8"	580081	20
24	1/2"	580082	50
26	5/8"	580083	50
30	3/4"	580084	50
37	1"	580085	50
44	1" 1/8	580086	10
50	1" 1/4	580087	10
55	1" 1/2	580089	10
65	2"	580091	10

Uses:
for fastening brass
cable glands.



UNI-Ex SERIES

ATEX brass Cable Glands
IP65 - EEx nR

Protection against explosions	
	II 3GD
	EEx nR T6
Area 2	Area 22

Internal diameter (mm)	Brass washers No.	Coupling thread type	Palazzoli Code	Pack Q.ty
11	1	3/8"	580001EX	10
12.5	–	1/2"	580002EX	10
14	1	5/8"	580003EX	10
17.5	–	3/4"	580004EX	10
21	1	1"	580005EX	10

Equipment:
inclusive of cable gland,
washer and ring in
non-ageing elastomer.

Characteristics:
sealed threading
suitable for creating
restricted breathing.

Technical data
page 102

ROTARY CONTROL DEVICES IN BOXES

CAM-Ex Series
page 53

CAM-Ex Series
page 55



In thermosetting
material enclosure



In aluminium
alloy enclosure

Chemical industry.

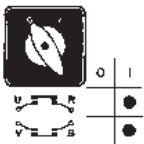


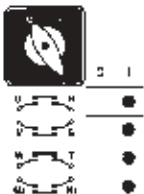
Mill.

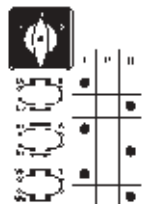
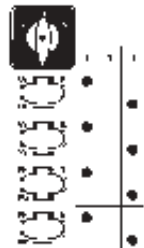




Synoptic CAM-Ex layouts

Switch	Two-pole		Three-pole	
	CAM 1		CAM 2	
				
wall-mounting	pages 53-54-55-56		pages 53-54-55-56	

Circuit-breaker	Four-pole		Six-pole	
	CAM 3		CAM 3.1	
				
wall-mounting	pages 53-54-55-56		page 55	

Line selector switch	Three-pole		Four-pole	
	CAM 6		CAM 7	
				
wall-mounting	page 55		page 55	

Rotary control devices in boxes

Techniques
and advantages

CAM-EX SERIES – WALL-MOUNTING ROTARY CONTROL DEVICES FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

Available with an enclosure in insulating material or aluminium, this is a vast series of high performance wall-mounting devices with cam control. It is for alternated current networks with voltages of up to 500V and currents from 16A to 600A, for motor control, light/signalling circuits and resistance devices. This series' rotary switches, whose controlling shaft comes out of the front panel through a system of secure elastic gaskets, are completely protected against explosions of both gaseous and turbid atmospheres due to the segregation in restricted breathing housing. The AC23 and AC3 category (see table) allows direct motor control. In addition to the CEI EN 50021 Standard governing Ex n electrical constructions, the switches are in compliance with the CEI EN 60947-3 Standard.



APPLICATIONS:

Fuel deposits, pharmaceutical industry, chemical industry, oil refineries, petrol stations, thermal power plants, large kitchens, rooms for painting, garages, both in areas 2 (compulsory) as well as NE areas (recommended), woodworking shops, plastic laminate manufacturing, sugar factories, mills, farmyards, hay storage barns in both areas 22 (compulsory) as well as NE areas (recommended).



see page 24

DEVICES IN THERMOSETTING ENCLOSURES

HIGH ELECTRICAL PERFORMANCES

The contacts in silver alloy are double-break. Each "disk" holds two complete contacts with high connecting and disconnecting power.

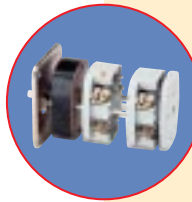
TABLE OF CATEGORIES

CAM 16-25-40A	A32	CAM 63-100A	CAM 125-200A	CAM 400-600A
Cat. AC23A-AC3	AC23A-AC3	AC23A	AC22A	AC20A



SIMULTANEOUS CONTROLS

All the control shafts are single pieces (through bar) and enable the simultaneous and direct control of each cam, without mechanical joints in between.



ETERNAL

Characterised by a reinforced structure with even thicker walls and a high IP67 and IP65 protection rating, these practically maintenance-free enclosures offer excellent resistance against stress/vibrations.



see page 30

DEVICES IN DIE-CAST ALUMINIUM ENCLOSURES

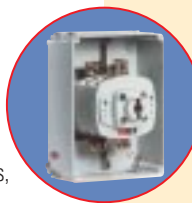
TOTAL SAFETY

The contact holder disks are made of very thick reinforced thermosetting technopolymer which guarantees dimensional stability and non-deformability even in the case of extreme temperatures generated by overloads.



ROBUST

The even thicker enclosure guarantees high impact resistance of up to 30 J even in extreme temperatures (-40° C - + 70°C).



Wall-mounting watertight switches in insulating thermosetting material enclosures - IP65/IP67 for potentially explosive atmospheres

Control, protection and signalling devices



CAM-Ex SERIES

ATEX watertight wall-mounting switches in thermosetting material enclosures

IP67 - EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Poles	CAM layout type	Enclos. dims. (mm)	Holes type	Palazzoli Code	Pack Q. ty
16	2	1	92x125		292101EX	5
	3	2			292102EX	5
	4	3			292103EX	5
25	2	1	92x125		292201EX	5
	3	2			292202EX	5
	4	3			292203EX	5
40	2	1	125x185		292301EX	1
	3	2			292302EX	1
	4	3			292303EX	1
63	2	1	125x185		292411EX	1
	3	2			292412EX	1
	4	3			292413EX	1



Equipment:
earth terminal inside the box. For versions in window enclosure tested with flanged windows equipped with gaskets and screws.

Characteristics:
Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal and for temperature variations greater than expected. Non-loosening terminals that are corrosion resistant. Anti-tracking, anti-static and self-extinguishing resin body.



CAM-Ex SERIES

ATEX watertight wall-mounting switches in window enclosure made of thermosetting material

IP65 - EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2	Area 22	

Rated current (A)	Poles	CAM layout type	Enclos. dims. (mm)	Holes type	Palazzoli Code	Pack Q. ty
100	4	3	185x250		292503EX	1
200	4	3			292603EX	1
	4	3	250x250		292623EX	1
400	4	3	370x500		292703EX	1
600	4	3			292733EX	1

Lockable knob.

Insertable cables diameter

Rated current (A)	Poles	Cable diameter (mm)	
		Min	Max
16	2P	8.1	13
	3P	8.8	14
	4P	10	15.3
32	2P	11.5	17.3
	3P	12.5	19.3
	4P	14	21.3
63	2P	17.3	26
	3P	19.3	28.5
	4P	21.3	31.3
100	4P	31.3	45

CAM-Ex layout table
page 51
Technical data
pages 103-106
Dimensions
page 107

Rotary control devices in boxes

Wall-mounting watertight switches with fuses in thermosetting material insulating enclosures IP67/IP65 for potentially explosive atmospheres 



CAM-Ex SERIES

ATEX watertight wall-mounting switches with fuse-holder base in enclosures made of thermosetting material - IP67 – EEx nR

Protection against explosions		
		II 3GD
EEx nR T5		
Area 2		Area 22

Rated current (A)	Poles	CAM layout type	Enclos. dims. (mm)	Holes type	Palazzoli Code	Pack Q.ty
25	2	1	92x240		290521EX	1
	3	2			290522EX	1
	4	3			290523EX	1
40	2	1	125x335		290641EX	1
	3	2			290642EX	1
	4	3			290643EX	1
63	3	2			290762EX	1
	4	3			290763EX	1



Equipment:
with cable gland.

Characteristics:
earth terminal inside the box.
Diazed fuse type: for devices 25A NDz (E16) for devices 40A and 63A DIII (E33) – not supplied -
Fittings in non-sparking, non-loosening, closed fuse-holders with interlock which blocks replacement when power is on. The casing is made of reinforced thermosetting resin which ensures high shape stability and inalterability in harsh environmental conditions including sun radiation. This guarantees maintenance of restricted breathing even for outdoor installation in difficult conditions. See page 53 for fastenable cable diameters.



CAM-Ex SERIES

Watertight wall-mounting switches with fuse-holder base in window enclosure made of thermosetting material - IP65 EEx nR

Protection against explosions		
		II 3GD
EEx nR T5		
Area 2		Area 22

Rated current (A)	Poles	CAM layout type	Enclos. dims. (mm)	Holes type	Palazzoli Code	Pack Q.ty
100	4	3	250x370		293053EX	1
200		3	370x500		293063EX	1
250		3			293263EX	1



Equipment:
earth terminal inside the box. Heads with flanged windows equipped with gaskets and screws.

Caratteristiche:
lockable knob.
ACR fuse type: for devices 100A GR. 00, for devices 200A and 250A GR 1 –not supplied- See page 53 for fastenable cable diameters.

CAM-Ex layout table
page 51
Technical data
pages 103-106
Dimensions
page 107

Watertight wall-mounting devices in aluminium alloy enclosures - IP67/IP55 for potentially explosive atmospheres

Control,
protection and
signalling
devices



CAM-Ex SERIES
ATEX wall-mounting
watertight switches
in aluminium alloy
enclosures with windows
IP67 - EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2		Area 22

Rated current (A)	Poles	CAM layout type	Enclos. dimens. (mm)	Holes type	Palazzoli Code	Pack Q.ty
16	2	1	92x92		272141EX	6
	3	2			272142EX	6
	4	3			272143EX	6
	6	3.1			272144EX	1
25	2	1	92x92		272241EX	1
	3	2			272242EX	6
	4	3			272243EX	6
	6	3.1			272244EX	1
40	2	1	125x125		272301EX	1
	3	2			272302EX	1
	4	3			272303EX	1
	6	3.1			272304EX	1
63	3	2	125x185		282402EX	1
	4	3			282403EX	1
	6	3.1			282404EX	1
100	3	2	185x252		272502EX	1
	4	3			272503EX	1
200	4	3	220x315		282603EX	1
400	4	3	315x315		282703EX	1

From 100A or higher: IP55.



Equipment:
earth terminal inside and outside the box.
■ Upper and lower flange with 1/2" cable gland.
□ Upper and lower flange with 3/4" cable gland.
▲ 1" upper and lower flange.
△ 1" 1/2 upper and lower flange.
● 2" upper and lower flange.

Characteristics:
Devices with capacities ≥ 100A with lockable knob. The aluminium alloy casing ensures the greatest level of protection against severe environmental conditions, in particular against impact and corrosion. See page 53 for fastenable cable diameters.



CAM-Ex SERIES
ATEX wall-mounting
watertight selector switches
in aluminium alloy enclosures
with windows - IP55
EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2		Area 22

Rated current (A)	Poles	CAM layout type	Enclos. dimens. (mm)	Holes type	Palazzoli Code	Pack Q.ty
16	3	6	92x125		272146EX	1
	4	7			272147EX	1
25	3	6	92x125		272246EX	1
	4	7			272247EX	1
40	3	6	125x185		272306EX	1
	4	7			272307EX	1
63	3	6	125x185		282406EX	1
	4	7			282407EX	1
100	4	7	315x315		272507EX	1
	4	7			282607EX	1
200	4	7	373x373		282707EX	1
400	4	7	507x507		282707EX	1



Equipment:
earth terminal inside and outside the box.
■ Upper and lower flange with 1/2" cable gland.
◆ Lower flange with 1/2" cable gland.
□ Upper flange with 3/4" cable gland
▲ 1" upper and lower flange.
☆ 1" 1/2 upper and lower flange.
● 2" upper and lower flange.
★ 3/4 upper and lower flange.

Characteristics:
• Controls with metal lever and bevel gear pair transmission. See page 53 for fastenable cable diameters.

CAM-Ex layout table
page 51
Technical data
pages 103-106
Dimensions
page 107

Rotary control devices in boxes

Watertight wall-mounting switches with fuses in aluminium alloy enclosures for potentially explosive atmospheres



CAM-Ex SERIES

ATEX watertight wall-mounting switches with fuse-holder base in aluminium alloy enclosure with windows
IP67 - EEx nR

Protection against explosions		
		II 3GD
		EEx nR T5
Area 2		Area 22

Rated current (A)	Poles	Enclos. dimens. (mm)	Windows type	Palazzoli Code	Pack Q.ty
25	2	92x185		274302EX	1
	3			274303EX	1
	4			274304EX	1



Equipment:
earth terminal inside and outside the box.
□ Upper and lower flange with 3/4" cable gland.

Characteristics:
Diazed fuse type: NDz (E16) –not supplied-. Fittings in non-sparking, non-loosening, closed fuse-holders with interlock which blocks replacement when power is on. The aluminium alloy casing ensures the greatest level of protection against severe environmental conditions, in particular against impact and corrosion. See page 53 for fastenable cable diameters.



CAM-Ex SERIES

ATEX watertight wall-mounting switches with fuse-holder base in aluminium alloy enclosure with windows
IP55 - EEx nR

Protection against explosions		
		II 3GD
		EEx nR T5
Area 2		Area 22

Rated current (A)	Poles	CAM layout type	Enclos. dimens. (mm)	Holes type	Palazzoli Code	Pack Q.ty
40	2	1	125x252		274031EX	1
	3	2			274032EX	1
	4	3			274033EX	1
63	3	2	185x373		284042EX	1
	4	3			284043EX	1
100	4	3	185x373		283053EX	1
200	4	3	220x507		283063EX	1
400	4	3	315x630		283073EX•	1
600	3	2	373x630		283082EX•	1



Equipment:
earth terminal inside and outside the box.
▲ 1" upper and lower flange.
△ 1" 1/2 upper and lower flange.
● 2" upper and lower flange.
★ 2" 3/4 upper and lower flange.

Characteristics:
Diazed fuse type: for devices 40A and 63A DIII (E33) for devices 100A GR.00 for devices 200A GR.1 for 400A devices GR 2 for 600A GR. 3 -fuses not supplied-.
• Controls with metal lever and bevel gear pair transmission. Fittings in non-sparking, non-loosening, closed fuse-holders with interlock which blocks replacement when power is on. See page 53 for fastenable cable diameters.

CAM-Ex layout table
page 51
Technical data
pages 103-106
Dimensions
page 107

Closing flanges for modular enclosures in aluminium alloy - IP67

Control,
protection and
signalling
devices



ALUPRES SERIES
Flat closing flanges
in steel for enclosures
with window walls - IP67

For windows type	Projection (mm)	Palazzoli Code	Pack Q.ty
F0 (insulating mat.)	5	540030	100
F1 (insulating mat.)	6	540031	50
F0	2.5	540090	10
F1	5.5	540091	10
F2	5.5	540032	30
F3	6	540033	20
F4	6	540034	10
F5	7	540035	10
F6	8	540036	4

Uses:
large cables
or conduits can be inserted
into the enclosure.

Complementary items:
brass cable glands
on page 49.



ALUPRES SERIES
Raised closing flanges
in aluminium alloy
for enclosures with
window walls - IP67

For windows type	Projection (mm)	Palazzoli Code	Pack Q.ty
F1	32	540061	12
F2	32	540062	4
F3	50	540063	4
F4	50	540064	4
F5	80	540065	4
F6	80	540066	1

Uses:
they close unused windows.
Large cables or conduits
can be inserted into the
enclosure.

Complementary items:
brass cable glands
on page 49.

Technical data
pages 103-106

SIRENS AND BELLS FOR ALARMS AND SIGNALLING

ALARM-Ex Series
page 59



Sirens and bells

Pharmaceutical industry.



Closed rooms with burners.



Watertight sirens in aluminium alloy IP66 for potentially explosive atmospheres

Control,
protection and
signalling
devices



ALARM-Ex SERIES
ATEX watertight sirens
with vibrating diaphragm
for extended operation
in aluminium alloy
enclosure - IP66
EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2 Area 22		

Voltage (V)	Frequency (Hz)	Sound level at 1 mt. (dB)	Absorbed power	Cable gland	Code Palazzoli	Pack Q.ty
24 ~	50/60	107/105	initial 60VA vibrating 25VA	1x1/2"	900453EX	5
110 ~					900463EX	5
220 ~					900473EX	5

Extended operation with
1 hour pause every 4 hours.

Equipment:
cable gland with gasket,
terminal block in insulating
thermosetting material.

Characteristics
Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal. The aluminium alloy casing ensures the greatest level of protection against severe environmental conditions, in particular against impact and corrosion. Non-loosening terminals that are corrosion resistant.



ALARM SERIES
Directional horn
for sirens

Max diameter (mm)	Projection of siren + horn (mm)	Palazzoli Code	Pack Q.ty
112	238	900448	1

Equipment:
with stainless
steel fixing screws.

Watertight bells in aluminium alloy IP66 for potentially explosive atmospheres



ALARM-Ex SERIES
ATEX watertight bells
for continuous
operation in aluminium
alloy enclosure - IP66
EEx nR

Protection against explosions		
CE	Ex	II 3GD
EEx nR T5		
Area 2 Area 22		

Voltage (V)	Drum diameter (mm)	Sound level at 1 mt. (dB)	Absorbed power init./vibr.	Cable gland	Palazzoli Code	Pack Q.ty
24 ~	105	101	13VA/11VA	1x1/2"	900253EX	1
110 ~					900263EX	5
220 ~					900273EX	5

These are suitable for continuous
or extended operation.

Equipment:
cable gland with gasket,
terminal block in insulating
thermosetting material.
Earth screws inside and
outside the box.

Characteristics:
drum in painted and zinc-plated steel. Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal. The aluminium alloy casing ensures the greatest level of protection against severe environmental conditions, in particular against impact and corrosion. Non-loosening terminals that are corrosion resistant.

Technical data
pages 110-111
Dimensions
pages 110-111

SMALL DEVICES IN MODULAR ENCLOSURES

TAIS MIGNON-Ex
Series
page 63

RONDO-Ex
Series
page 67



With thermosetting
material enclosure



With aluminium alloy
enclosure

Inflammable gas storage.



Grain silos.





Wall-mounting (dimensions and entries) - Cable glands supplied



62x80
3/8" Gas



62x80
1/2" Gas



CONTROL DEVICES - IP67 - pages 63-64						
	Switches	1P	16A 250V 10A 380V	202261EX	202271EX	
		2P	16A 250V 10A 380V	202262EX		202282EX
		3P	16A 380V			202283EX
	Two-way Switches	1P	16A 250V 10A 380V	202266EX	202276EX	
	Selector Switches	1P	16A 250V 10A 380V	202265EX	202275EX	
	Push-buttons	1P - N.A.	10A 380V	261403EX	261435EX	
		1P - N.C.	10A 380V	261413EX	261445EX	
		On-Off	10A 380V		261433EX	
	SIGNAL LAMPS - E14 - 250V					
	Signal lamps		red diffuser		800061EX	
			green diffuser		800062EX	
			yellow diffuser		800064EX	
			transp. diffuser		800063EX	
FUSE-HOLDER						
	220V > 6kA	2Px16A				302044EX
		3Px10A				302054EX
	380V > 20kA	2Px16A				302144EX - 62x102 1/2" Gas
		3Px10A				302154EX - 62x102 1/2" Gas

Small devices in modular enclosures

Techniques and advantages

TAIS-MIGNON-EX – SMALL MODULAR WALL-MOUNTING DEVICES IN THERMOSETTING MATERIAL FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

This is a complete and varied range of devices for energy use, control and signalling integrated in watertight modular enclosures with miniaturised dimensions.

Totally made of reinforced thermosetting material, they have a high protection rating of up to IP67, high resistance against impacts, vibrations and aggressive chemical substances.

This series' switches were produced in compliance with Standards CEI 23-50 and 23-9 and are protected against explosions of both gaseous as well as turbid atmospheres due to segregation in restricted breathing housing in compliance with the CEI EN 50021 standard.

This is the most complete and varied range which extends the practicality and simplicity of traditional devices for domestic and similar usage to explosion-risk areas.

Made of reinforced thermosetting material, these "indestructible" products have been designed for outdoor installations (GWT 960°C -20J).



greater safety

Their reinforced geometry ensures a very robust form, insulating resistance, outstanding

resistance to extremes of heat and fire, as well as to chemical agents, humidity, the prolonged action of UV rays and atmospheric agents.

Its non-deformability in the most extreme temperatures maintains the limited respiration qualities intact even when installed outdoors in difficult atmospheres.

TOTAL MODULARITY

They can be easily combined so that small distribution board series can be made.



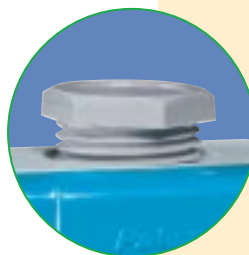
TOTAL SAFETY

The high protection rating IP67 and high mechanical resistance of the control devices ensure safety and continuity of operation even in the most heaviest-duty situations.



EASY TO INSTALL

All the wall-mounting enclosures have Gas threaded holes for entering cables. The cable glands supplied can be replaced by normal universal fittings for entering the conduit.



SAFE

The control devices with contact shoes in silver alloy with single or double break are suitable for prolonged used with heavy loads.

APPLICATIONS:

Pharmaceutical industry, chemical industry, petrol stations, thermal power plants, large kitchens, garages, both in areas 2 (compulsory) as well as NE areas (recommended), woodworking shops, plastic laminate manufacturing, sugar factories, mills, farmyards, hay storage barns in both areas 22 (compulsory) as well as NE areas (recommended).

Watertight wall-mounting control devices in thermosetting material - IP67 for potentially explosive atmospheres

Small devices for controlling, using energy and signalling



new

TAIS-MIGNON-Ex SERIES
ATEX switches in watertight wall-mounting enclosure in thermosetting material - IP67
EEx nR

Protection against explosions		
		II 3GD
EEx nR T6		
Area 2	Area 22	

Descrip.	Rated current/ voltage	Enclos. dimens. (mm)	Entries		Palazzoli Code	Pack Q.ty
			No.	type		
1P Single-pole	16A 250V~ and 10A 380V~	62x80x48		1* 1/2" gas (ø16/12mm)	202271EX	20
				2 3/8" gas (ø12/10mm)	202261EX	10
2P Two-pole	16A 250V~ and 10A 380V~			2 3/8" gas (ø12/10mm)	202262EX	20
				2** 1/2" gas (ø16/12mm)	202282EX	20
3P Three-pole	16A 380V~	62x80x48		2** 1/2" gas (ø16/12mm)	202283EX	20

greater safety
page 62

Characteristics:

- they can be also used with just one entry through the screwcap code 580052EX. Code 202283EX with double breaking contacts.
 - they can be also used with two opposite entries using the gas cable gland code 580102EX.
- Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal and for temperature variations greater than expected.
- Non-loosening terminals that are corrosion resistant.
- Anti-tracking, anti-static and self-extinguishing resin body.



new

TAIS-MIGNON-Ex SERIES
ATEX two-way switches in watertight wall-mounting enclosure in thermosetting material - IP67
EEx nR

Protection against explosions		
		II 3GD
EEx nR T6		
Area 2	Area 22	

Descrip.	Rated current/voltage	Enclos. dimens. (mm)	Entries		Palazzoli Code	Pack Q.ty
			No.	type		
1P Single-pole	16A 250V~ and 10A 380V~	62x80x48	1	1/2" gas (ø16/12mm)	202276EX	20
			2	3/8" gas (ø12/10mm)	202266EX	5



new

TAIS-MIGNON-Ex SERIES
ATEX selector switches in watertight wall-mounting enclosure in thermosetting material - IP67
EEx nR

Protection against explosions		
		II 3GD
EEx nR T6		
Area 2	Area 22	

Descrip.	Rated current/voltage	Enclos. dimens. (mm)	Entries		Palazzoli Code	Pack Q.ty
			No.	type		
1P Single-pole	16A 250V~ and 10A 380V~	62x80x48	1	1/2" gas (ø16/12mm)	202275EX	10
			2	3/8" gas (ø12/10mm)	202265EX	5

Characteristics:

By removing the rear bond, the device becomes a double single-pole switch.

Technical data
pages 112-113
Dimensions
page 114

Small devices in modular enclosures

Watertight wall-mounting push-buttons in thermosetting material - IP67 for potentially explosive atmospheres 



new

TAIS-MIGNON-Ex SERIES
ATEX push-buttons in watertight wall-mounting enclosure in thermosetting material - IP67
EEx nR

Protection against explosions		
		II 3GD
EEx nR T6		
Area 2	Area 22	

Descrip.	Rated current/voltage	Enclos. dimens. (mm)	Entries		Palazzoli Code	Pack Q.ty
			No.	type		
1P Single-pole N.A.	10A 380V~	62x80x51		1* 1/2" gas (ø16/12mm)	261435EX	20
				2 3/8" gas (ø12/10mm)	261403EX	5
1P Single-pole N.C.				1* 1/2" gas (ø16/12mm)	261445EX	10
				2 3/8" gas (ø12/10mm)	261413EX	5

greater safety
page 62

Characteristics:

- they can also be used with two opposite entries using the gas cable gland code 580102EX.
- Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal and for temperature variations greater than expected.
- Non-loosening terminals that are corrosion resistant.
- Anti-tracking, anti-static and self-extinguishing resin body.



new

TAIS-MIGNON-Ex SERIES
ATEX on-off push-button panel in watertight wall-mounting enclosure in thermosetting material - IP67
EEx nR

Protection against explosions		
		II 3GD
EEx nR T6		
Area 2	Area 22	

Rated current/voltage	Enclos. dimens. (mm)	No.	Entries type	Palazzoli Code	Pack Q.ty
10A 380V~	62x80x51	1*	1/2" gas (ø16/12mm)	261433EX	10

greater safety
page 62

Characteristics:

- they can also be used with two opposite entries using the gas cable gland code 580102EX.
- Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal and for temperature variations greater than expected.
- Non-loosening terminals that are corrosion resistant.
- Anti-tracking, anti-static and self-extinguishing resin body.

Technical data
pages 112-113
Dimensions
page 114

Watertight wall-mounting signal lights in thermosetting material for potentially explosive atmospheres - IP65

Small devices
for controlling,
using energy
and signalling



new

TAIS MIGNON-Ex SERIES
ATEX signal lamps in
watertight wall-mounting
enclosure in
thermosetting material
with lampholder - E14
IP65
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T6		
Area 2	Area 22	

Diffuser colour	Rated voltage (V)	Enclos. dims. (mm)	No.	Entries type	Palazzoli Code	Pack Q.ty
Red	250	62x80x78	1	1/2" gas (ø16/10mm)	800061EX	20
Green					800062EX	20
Yellow					800064EX	20
Transp.					800063EX	20

greater safety
page 62

Characteristics:

- they can also be used with two opposite entries using gas cable gland code 580102EX.
- Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base to ensure restricted breathing even after frequent removal and for temperature variations greater than expected.
- Corrosion resistant non-loosening terminals.
- Anti-tracking, anti-static and self-extinguishing resin body.
- Polycarbonate diffuser.
- Lampholder E14 for 3C bulbs, 12W max. (excluding bulb).

Watertight wall-mounting fuse-holder in thermosetting material for potentially explosive atmospheres – IP65



new

TAIS MIGNON-Ex SERIES
ATEX fuse-holders
with fuses in watertight
wall-mounting enclosure
in thermosetting
material - IP65
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T6		
Area 2	Area 22	

Poles	Fuse	Break. Capacity	Rated voltage (V)	Enclos. dims. (mm)	No.	Entries type	Palazzoli Code	Pack Q.ty
2x16A 3x10A	ø8.5x 23	>6kA	220~	62x80 46	2	1/2" gas (ø16/12mm)	302044EX	20
2x16A 3x16A	ø8.5x 32	>20kA	380~	62x102 46			302054EX 302144EX 302154EX	20 20 20

greater safety
page 62

Equipment:

Insulating extractors for fuses.

Characteristics:

Fixing in non-sparking, non-loosening, closed fuse-holders. In compliance with the Standard CEI EN50021, supplied with label "do not replace fuses while power is on".

Technical data
pages 112-113
Dimensions
page 114

Small devices in modular enclosures

Techniques and advantages

RONDO-Ex SERIES – SMALL WALL-MOUNTING DEVICES IN ALUMINIUM ALLOY FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

This range is composed of a well-designed series of devices for every use, control and light signalling, marked by an unusual bulbous shape and made of die-cast aluminium alloy. This series' switches were produced in compliance with Standards CEI 23-50 and 23-9 and are protected against explosions of both gaseous as well as turbid atmospheres due to segregation in restricted breathing housing in compliance with the CEI EN 50021 Standard. It is the most complete and varied range of devices for energy use, control and signalling. It offers superior protection against the entrance of solids, dust and water as well as impact and vibration. This extends the practicality and simplicity of traditional devices for domestic and similar usage to explosion-risk areas.

Made of die-cast aluminium alloy UNI 5076, these products are powder painted with polymerized non-scratch paint at 180°C, which also makes them suitable for environments with the presence of abrasive elements. A special chrome treatment applied before painting guarantees protection against corrosion. The walls have a minimum thickness of 3 mm, ensuring outstanding impact resistance (30 Joules).



greater resistance



SAFE

They come with earth terminals both inside and outside the enclosures, capable of correctly connecting the earth conductor.



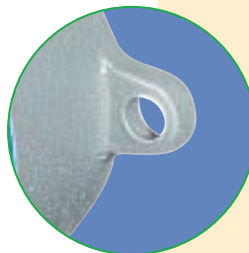
EASY TO INSTALL

All the wall-mounting enclosures have Gas threaded holes for entering cables. The cable glands supplied can be replaced by normal universal fittings for entering the conduit.



GUARANTEED PROTECTION

Practical external holes allow you to install the fixtures without making holes inside, whilst ensuring that the IP55 protection rating is maintained over time.



APPLICATIONS:

Pharmaceutical industry, chemical industry, petrol stations, thermal power plants, large kitchens, garages, both in areas 2 (compulsory) as well as NE areas (recommended), woodworking shops, plastic laminate manufacturing, sugar factories, mills, farmyards, hay storage barns in both areas 22 (compulsory) as well as NE areas (recommended).

Watertight wall-mounting control devices in aluminium alloy for potentially explosive atmospheres – IP55

Small devices
for controlling,
using energy
and signalling



RONDÓ-Ex SERIES

Wall-mounting switches
in watertight aluminium
alloy enclosure - IP55
EEx nR



RONDÓ-Ex SERIES

ATEX wall-mounting
two-way switches in
watertight aluminium alloy
enclosure - IP55- EEx nR



RONDÓ-Ex SERIES

ATEX wall-mounting selector
switch in watertight
aluminium alloy enclosure
IP55 - EEx nR



RONDÓ-Ex SERIES

ATEX wall-mounting
push-button in watertight
aluminium alloy enclosure
IP55 - EEx nR

Protection against explosions	
CE Ex	II 3GD
EEx nR T6	
Area 2	Area 22

Description	Rated current/ voltage	Cable gland	Palazzoli Code	Pack Q.ty
1P Single-pole	16A 250V ~ 10A 380V ~	1x1/2"	201151EX	5
2P Two-pole	16A 250V ~ 10A 380V ~		201152EX	5
2P Two-pole	16A 250V ~ 10A 380V ~	2x1/2"	201162EX	5

Description	Rated current/ voltage	Cable gland	Palazzoli Code	Pack Q.ty
1P Single-pole	16A 250V ~ 10A 380V ~	1x1/2"	201156EX	6
		2x1/2"	201166EX	5

Description	Rated current/ voltage	Cable gland	Palazzoli Code	Pack Q.ty
1P Single-pole	16A 250V 10A 380V ~	1x1/2"	201155EX	5

Description	Rated current/ voltage	Cable gland	Palazzoli Code	Pack Q.ty
1P N.O. single-pole	10A 380V ~	1x1/2"	261021EX	5

R greater
resistance
page 66

Equipment:
with 1/2" gas cable glands.
Earth screws inside
and outside the box.

Characteristics:
Unlosable gaskets in non-
ageing elastomer fastened
to a non-deformable rigid
base to ensure restricted
breathing without
maintenance.
Corrosion resistant
non-loosening terminals.

Watertight wall-mounting signal lamps in aluminium alloy for potentially explosive atmospheres - IP54



RONDÓ-Ex SERIES

ATEX signal lamps in
wall-mounting aluminium alloy
enclosure - IP54 - EEx nA

Protection against explosions	
CE Ex	II 3GD
EEx nA T6	
Area 2	Area 22

Diffuser colour	Rated voltage (V)	Max. lamp power (W)	Cable gland	Palazzoli Code	Pack Q.ty
Red	250 ~	12	1x1/2"	800121EX	1
Green				800122EX	1
Trasp.				800123EX	1

R greater
resistance
page 66

Equipment: with 1/2" gas cable gland.
External earth screw.

Characteristics: Lampholder
E14 for 3C bulbs, 12W max.
(excluding bulb).

Technical data
pages 112-113
Dimensions
page 115

LIGHTING FIXTURES IN ALUMINIUM ALLOY

RINO-Ex Series
page 70



Oval and round lighting
fixtures in aluminium alloy

Garages.



Large kitchens.



RINO-Ex SERIES – WATERTIGHT LIGHTING FIXTURES IN ALUMINIUM ALLOY FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

These lighting fixtures have been manufactured according to the highest standards. They feature a ribbed shockproof glass diffuser protected by a close knit steel mesh cage, a non-loosening E27 porcelain safety lampholder. They must be outfitted with the lamps and auxiliaries indicated in the table and conform to the specific standards. The appliances are in compliance with the specific Standard for EEx nA safety systems and with the general CEI EN 60598-2 Standard.

Made of die-cast aluminium alloy UNI 5076, these products are powder painted with polymerized non-scratch paint at 180°C, which also makes them suitable for environments with the presence of abrasive elements.



**greater
resistance**

A special chrome treatment applied before painting guarantees protection against corrosion. The walls have a minimum thickness of 3 mm, ensuring outstanding impact resistance (30 Joules).



HIGH RESISTANCE

The carefully chosen materials and highly developed construction techniques make them suitable for use at very low temperatures (up to as constant temperature of -40°C) and in particularly harsh atmospheres.



GUARANTEED PROTECTION

Practical external holes allow you to install them without making holes inside, whilst ensuring that the IP65 protection rating is maintained over time.



MAXIMUM SAFETY

Due to the high IP65 protection rating and the protection cage (also available in aluminium for the oval lighting fixtures), you can install them in industrial environments with risks of knocks.

APPLICATIONS:

Pharmaceutical industry, chemical industry, petrol stations, thermal power plants, large kitchens, garages, both in areas 2 (compulsory) as well as NE areas (recommended), woodworking shops, plastic laminate manufacturing, sugar factories, mills, farmyards, hay storage barns in both areas 22 (compulsory) as well as NE areas (recommended).

Lighting fixtures in aluminium alloy

Watertight oval lighting fixtures for
potentially explosive atmospheres - IP65



RINO-Ex SERIES
ATEX RAL 7035 grey
watertight oval lighting
fixtures in aluminium
alloy, tropicalized steel
wire protective cage,
and glass diffuser 250V
IP65
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T*		
Area 2	Area 22	

T* temperature class depending on the lamp used (see table on page 71).

Max. lamp power	Lampholder type	No. 1/2" entry cable glands	Palazzoli Code	Pack Q.ty
60W	E27	1	831072EX	6
		2	831092EX	6
100W		1	831172EX	6
		2	831192EX	4
200W		1	831272EX	2
		2	831292EX	2
5-7-9W	G23	1	831934EX	2



Equipment:
cable entries with 1/2"
gas cable gland.
Internal earth screw.

Characteristics:
porcelain lampholder.
Corrosion-resistant,
non-loosening terminals,
non-sparking lampholder
(in compliance with CEI of
Committee 34). Unlosable
gaskets in non-ageing
elastomer fastened to a
non-deformable base.



RINO-Ex SERIES
ATEX RAL 7035 grey
watertight oval lighting
fixtures in aluminium
alloy, die-cast cage
and glass diffuser
250V - IP65
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T*		
Area 2	Area 22	

T* temperature class depending on the lamp used (see table on page 71).

Max. lamp power	Lampholder type	No. 1/2" entry cable glands	Palazzoli Code	Pack Q.ty
60W	E27	1	831075EX	6
		2	831095EX	6
100W		1	831175EX	6
		2	831195EX	4
200W		1	831275EX	2
		2	831295EX	1
5-7-9W	G23	1	831954EX	2



Equipment:
cable entries with 1/2"
gas cable gland.
Internal earth screw.

Characteristics:
porcelain lampholder.
Corrosion resistant
non-loosening terminals,
non-sparking lampholder
(in compliance with CEI
of Committee 34).
Unlosable gaskets
in non-ageing elastomer
fastened to a
non-deformable rigid base.

Technical data
pages 116-118
Dimensions
page 119

Watertight round lighting fixtures for potentially explosive atmospheres - IP65

Lighting
fixtures



RINO-Ex SERIES
ATEX RAL 7035 grey
watertight round
lighting fixture
in aluminium alloy,
tropicalized steel
wire protective cage
and glass diffuser
250V - IP65
EEx nA

Protection against explosions		
		II 3GD
EEx nA T*		
Area 2		Area 22

T* temperature class depending on the lamp used (see table on page 71).

Max. lamp power	Lampholder type	No. 1/2" entry cable glands	Palazzoli Code	Pack Q.ty
100W	E27	1	830072EX	4

R greater
resistance
page 69

Equipment:
cable entries with one 1/2" gas cable gland.
Internal earth screw.

Characteristics:
porcelain lampholder.
Corrosion resistant
non-loosening terminals,
non-sparking lampholder
(in compliance with CEI of Committee 34).
Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base.

Correlation Lighting Fixture/Lamps/Temperature Classes

Lighting fixture type	Incandescence E27	Mixed light E27	Compact electronic E27	Compact fluorescent G23
	60W 60W max Temperature Classes: T6	-	-	-
	100W 100W max Temperature Classes: T5	-	Philips PL-E-T 15W max Philips PL-E-C 11W max Temperature Classes: T5	-
	200W 200W max Temperature Classes: T4	160W max Temperature Classes: T4	Osram Dulux EL 23W max Philips PL-E-T 23W max Philips PL-E-C 15W max Temperature Classes: T5	-
	5-7-9W -	-	-	9W max Temperature Classes: T6
	100W 100W max Temperature Classes: T5	-	-	-

* The models shown have been tested but other compatible models and brands can also be used.

Technical data
pages 116-118
Dimensions
page 119

WATERTIGHT STAINLESS STEEL LIGHTING FIXTURES

RINO-Ex Series
page 74

RINO-Ex Series
page 75

new



Watertight lighting fixtures
in stainless steel

new



Emergency watertight
lighting fixtures
in stainless steel

Pharmaceutical industry



Oil rig.





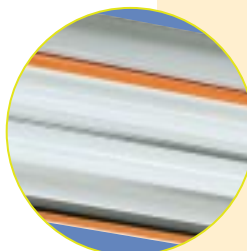
RINO-Ex SERIES – WATERTIGHT STAINLESS STEEL LIGHTING FIXTURES FOR POTENTIALLY EXPLOSIVE ATMOSPHERES

These lighting fixtures have been manufactured according to the highest standards. They feature shockproof diffusers and reflectors with high luminous efficiency for 18 and 36W linear fluorescent lamps in the versions indicated in the relative tables. The fixture's body unit was made in a single drawn piece in ASI 304 austenitic stainless steel which produces an IP 66 protection level. It is also available in the emergency version. The appliances are in compliance with the specific Standard for EEx nA safety systems and with the general CEI EN 60 598-2 Standard.



EFFICIENT

The ultra-bright aluminium reflector available for the two-lamp versions ensures optimum recovery of the luminous flux and an extremely even diffusion.



SAFE

The diffuser screen is made of tempered glass. A stainless steel frame protects the edges against knocks and keeps the watertight seal intact.



RESISTANT

Designed with the very latest technology, this non-deformable structure can be installed even in the presence of vibrations.

APPLICATIONS:

Pharmaceutical industry, chemical industry, petrol stations, thermal power plants, large kitchens, garages, both in areas 2 (compulsory) as well as NE areas (recommended), woodworking shops, plastic laminate manufacturing, sugar factories, mills, farmyards, hay storage barns in both areas 22 (compulsory) as well as NE areas (recommended).

Watertight stainless steel lighting fixtures

Industrial watertight lighting fixtures in stainless steel for potentially explosive atmospheres - IP66



RINO-Ex SERIES
ATEX watertight lighting fixtures in stainless steel with tempered glass diffuser 250V 50/60 Hz - IP66
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T4		
Area 2	Area 22	

Power (W)	Lampholder type	Dimensions (mm)	Palazzoli Code	Pack Q.ty
1x18	G13	700x220x90	820101EX	1
2x18			820102EX	1
3x18			820103EX	1
1x36		1310x220x90	820201EX	1
2x36			820202EX	1
3x36			820203EX	1

Equipment:
two-lamp versions with ultra-polished aluminium reflectors. 1/2" gas coupling in brass Pair of hooks for pendant installation.

Characteristics
body and hooks in AISI 304 stainless steel. Tempered glass diffuser with 10J impact resistance. G13 lampholders. Corrosion resistant non-loosening terminals, non-sparking lampholder (in compliance with CEI of Committee 34). Unlosable gaskets in non-ageing elastomer fastened to a non-deformable rigid base.



RINO-Ex SERIES
ATEX watertight lighting fixtures in stainless steel with tempered glass diffuser, electronic power supply unit 250V - 50/60 Hz - IP66
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T4		
Area 2	Area 22	

Power (W)	Lampholder type	Dimensions (mm)	Palazzoli Code	Pack Q.ty
1x18	G13	700x220x90	820131EX	1
2x18			820132EX	1
3x18			820133EX	1
1x36		1310x220x90	820231EX	1
2x36			820232EX	1
3x36			820233EX	1



RINO-Ex SERIES
ATEX watertight lighting fixtures in stainless steel with tempered glass diffuser, with dimmable electronic power supply unit 250V 50/60 Hz - IP66
EEx nA

Protection against explosions		
CE	Ex	II 3GD
EEx nA T4		
Area 2	Area 22	

Power (W)	Lampholder type	Dimensions (mm)	Palazzoli Code	Pack Q.ty
1x18	G13	700x220x90	820151EX	1
2x18			820152EX	1
1x36		1310x220x90	820251EX	1
2x36			820252EX	1

Technical data
pages 120-121
Dimensions
page 121

Industrial watertight lighting fixtures in stainless steel with emergency light for potentially explosive atmospheres - IP66

Lighting
fixtures



RINO-Ex SERIES

ATEX watertight lighting
fixture in stainless steel
for emergency lighting with
tempered glass diffuser
250V - 50/60 Hz - IP66
EEx nA

Protection against explosions		
		II 3GD
EEx nA T4		
Area 2	Area 22	

Power (W)	Lampholder type	Dimensions (mm)	Palazzoli Code	Pack Q.ty
(1+1)x18	G13	700x220x90	820111EX	1
(1+1)x36		1310x220x90	820211EX	1

Equipment:
ultra-polished aluminium
reflector. 1/2" gas cable
ground in brass.
Pair of hooks for pendant
installation.

Characteristics:
permanent emergency wiring
on a single lamp, Ni-Cd battery,
inverter, 1h autonomy, 24h
recharge with the possibility
of inhibition. Body and hooks
in AISI 304 stainless steel.
Tempered glass diffuser
with 10J impact resistance.
G13 lampholders.
Corrosion resistant
non-loosening terminals,
non-sparking lampholder
(in compliance with
CEI of Committee 34).
Unlosable gaskets in non-ageing
elastomer fastened to a
non-deformable rigid base.

Uses:
whenever lighting is needed
even without power (e.g. work
places in industrial production
departments).

Technical accessories for installation



RINO SERIES
Pair of hooks
for installation
and suspension of
watertight lighting fixtures
in stainless steel

Material	Palazzoli Code	Pack Q.ty
Stainless steel AISI 304	820001	1

Equipment:
lighting fixture washers
and nuts.



RINO SERIES
Pair of adjustable
supports for wall and
ceiling installation
of watertight lighting
fixtures in stainless steel

Rotation angle	Material	Palazzoli Code	Pack Q.ty
± 75°	Stainless steel AISI 304	820000	1



RINO SERIES

High output
ultra-polished
aluminium reflectors.

Material	For lighting fixtures	Palazzoli Code	Pack Q.ty
Aluminium	A 1 tube	820002	1
Aluminium	A 3 tubes	820003	1

Technical data
pages 120-121
Dimensions
page 121

Special products

Methods for requesting special products

What are they

By special products we mean articles from the standard Palazzoli range which are modified according to the specifications of each customer. Any of the Palazzoli products can become special articles by using the following methods.

How to request modifications

After choosing an article from the standard range which is closest in technical characteristics to the desired article, the form on page 86 must be filled in, with a description of the modifications to be made.

Once your fax has been sent to this number **+39 030 2015217**, your request is processed by the **technical department** at Palazzoli which will carry out a feasibility study.

The form must be completed fully with all the required details, so that you can easily be contacted if there are any queries regarding your request.

After defining all the characteristics of the special product, Palazzoli will prepare the technical specification with the following:

- *product code*
- *technical characteristics*
- *dimensional drawing (if requested)*
- *wiring diagram*
- *indicative weight (if requested)*
- *list price*
- *delivery times*

In the case of a negative outcome you will be given back all the documentation and informed of the reasons for which the construction of the requested product has not been possible.

How to order

If the specifications you have received are satisfactory to your needs, you may issue an order together with the product code of the special product. This product code is always preceded by an "S" (e.g. SP22160) and is to be found in the top left-hand corner of the Palazzoli technical specification.

Each code clearly identifies an article and is definitive once assigned.

This simplifies any future orders, which are made by just giving this code number.

Conclusions

The special product is a fundamental service for Palazzoli customers since it offers the best solution to every installation situation that has not been found in the standard catalogue range.

We remind you that all quotation, design and assistance services are completely free.

S-3-2/2 14/05/96
Palazzoli S.p.A.
INDUSTRIA ELETTROTECNICA
25128 BRESCIA Italia Via F. Palazzoli, 31
Tel. 030/2015.1
fax 030/2015.217

Palazzoli

**SPECIFICA TECNICA
QUADRO DI DISTRIBUZIONE
TECHNICAL SPECIFICATION
PANELBOARD**

POS.	NUMERO DI CODICE CODE NUMBER
160	SP22160

Apparecchiature assemblate di protezione e ma
Low-voltage switchgear and controlgear assemblies.

Norme di riferimento : CEI EN 60439/4
Reference standard : CEI EN 60439/4

☒ Contenitori modulari isolanti TAIS.
Thermosetting enclosures TAIS.

Grado di protezione IP 65 secondo
Degree of protection IP 65 in conformity

☐ Contenitori modulari in lega leg
Aluminum modular enclosures.

Grado di protezione IP secondo
Degree of protection IP in conformity



Photocopy this fax form and send to: Fax no. +39 030 2015217 or post to:
Palazzoli SpA - TECHNICAL DEPARTMENT - Via F. Palazzoli, 31 - 25128 Brescia (BS) - Italy

Client details:

In accordance with Italian Law 675/96, we guarantee that the information given shall be kept and treated with strict confidentiality and only used for marketing and promotional purposes.

First name: _____ Surname: _____

Company Name: _____

Address: _____ Street No. _____

Postcode _____ Town: _____ Prov. _____

Tel.: _____ Fax: _____ E-mail: _____

Position in company: _____

Type of device:

Indicate the Palazzoli article that the desired product is based on: _____

Quantity to be produced: _____

Modifications: _____

General technical information

Directive 94/9/CE (ATEX)

ELECTRIC SYSTEMS IN AREAS WITH RISK OF EXPLOSIONS

Since 1st July 2003, only products conforming to directive 94/9/CE (known as the ATEX directive) can be marketed and installed.

The ATEX directive applies to all products for systems designed to be used in explosive atmospheres. ATEX stands for: AT= Atmosphere EX= Explosive 94/9/CE (year, no., European Community). It defines the requirements for protecting the safety and health of people, pets and property, and states the various procedures to be followed for demonstrating the conformity of devices to the directive's requirements.

An "explosive atmosphere" means a mixture of air and flammable substances (gas, vapours, mists or dusts) at ambient temperature and pressure, which rapidly spreads combustion to the unburnt mixture.

Innovative aspects

The Italian standard regarding flameproof electric systems was created in 1995 with the Italian President's Decree 547. The following year, Standard CEI 23-4 adopted explosion-proof housings as the only means of protection. This was confirmed thirteen years later by standard CEI 31-1, which is the first standard of the Committee 31 that complies with IEC and CENELEC recommendations. This rather primitive choice was followed by almost 40 years of unchanged regulations. This conditioned Italian flameproof electric equipment by limiting it to the following syllogism until 1994: flameproof = explosion-proof housing, even though other means of protection were consolidated in northern Europe and the U.S. and were already being adopted on a formal level and for community obligations.

The ATEX directive was published in 1994, but has been effective only since 1st July 2003. It has broken away from the past by setting four footholds:

1. The directive sets minimum safety requirements, which are consistent with the current standard but no longer strictly limited to it.
2. Constructions conforming to the above safety requirements should be used in all areas classified as hazardous in terms of the risk of explosion due to the presence of gases or dusts.
3. The risk is divided into three levels, each of which have a particular construction category: Category 1 covers the level of maximum risk (areas 0 to 20), category 2 covers the highest risk level (areas 1 and 21), category 3 is by far the most important in terms of quantity and the "normal" risk level (areas 2 and 22). The definition "normal" has not been given by chance, as all community laws impose the maximum possible levels of prevention against the formation of explosive atmospheres, so that only areas 2 and 22 should exist in normal conditions.
4. The statement of conformity to the safety requirements should refer to the standard or new means of protection and to the above categories. It should always be accompanied by a shop inspection form, which guarantees that compliance with these requirements continues throughout production.

By operation of point 1, it is no longer necessary to wait for new standards to adopt new means of protection in order to obtain certification, as the same directive contains adequately detailed information.

By operation of point 2, the old AD-T and AD-FT systems based on the use of IP55 and IP44 watertight constructions are no longer permitted. These are now replaced with Ex n G and D means of protection. By operation of point 3, the old Standard CEI 64-2 had to be replaced by the new standards CEI 31-30 and 31-34, which introduce more rational criteria defining areas 2, by broadening the field of use of category 3 constructions, which include Ex n types.

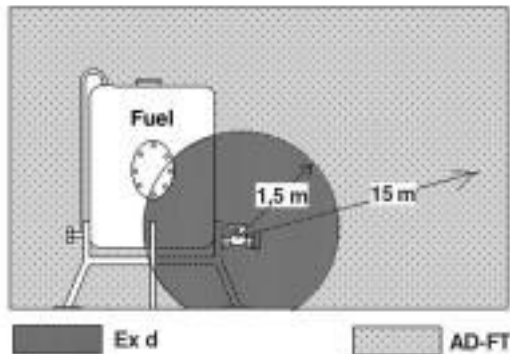
By operation of point 4, the guarantee now extends to production instead of only the prototype submitted to the inspection authority; in particular, the shop inspection form, which is provided by the supervising authorities, is now a certified obligation to customers for ISO 9000 certified companies.

In conclusion, the new ATEX approach offers greater safety guarantees for the user, along with the possibility of calculating expenses for flameproof protection in relation to the actual risk level. It also frees technological research from strict compliance with the standard, which has excessive and discouraging adoption and preparation times.

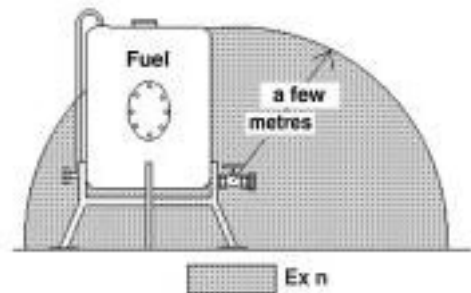
This new approach welcomes Palazzoli's Ex n G and D constructions, which easily conform to the requirements of the ATEX directive and CEI EN construction standards with regard to state-of-the-art flameproof technology.

Examples of differences in construction types that can be used in the various risk zones:

OLD APPROACH



NEW APPROACH



General safety criteria

All areas with risk of explosion should be designed to reduce the risk to a minimum.

This can be achieved by:

- reducing to a minimum the number of sources of possible gas, vapour or flammable dust emissions
- reducing to a minimum the source emission time
- providing extremely reliable seals for hazardous fluids
- ventilating closed rooms as much as possible
- organizing the most efficient supervision and maintenance systems possible.
- keeping sources of ignition away from hazardous zones.

The following steps should be taken in emergency situations:

- closing piping and ducts where fuel passes.
- activating ventilation systems and fireproof doors and divisions.

Hazardous parts of the electric system

All the parts of an electric system which during normal operation or in the event of faults, can reach or exceed the ignition temperature of flammable materials that cause the explosive atmosphere, are a potential hazard.

During normal operation, the following parts can be hazardous:

- resistors
- incandescent lamps
- manifold motors
- all switchgear

During operation the following are hazardous in the event of faults or defects :

- terminal blocks
- ducts
- electrical machinery in general
- storage batteries

Electric equipment that can trigger explosions is divided into two main categories: sparking devices and non-sparking devices.

General technical information

Sparking devices and non-sparking devices

"Sparking" parts are all electric parts (machinery, equipment, instruments) which generate arcs or sparks during normal operation, or contain elements that heat up due to their specific function (e.g. the resistance of a radiator to infrared rays, or the electrodes of an electric welder). These devices cannot remain in contact with the hazardous atmosphere and steps should be taken to prevent such an event.

All components that do not generate arcs, sparks or hot spots during normal operation are "non-sparking"; however, these parts can generate them in the event of faults which can be avoided with specific devices. For example, a terminal can generate hot spots due to a false contact, but this fault can be limited to a minimum by adopting non-loosening systems. Pulling a plug out of a live socket-outlet generates an opening arc, but this can be prevented by an interlock, or made highly improbable by attaching a notice prohibiting people from unplugging when power is on.

Some inactive electric components do not generate hot spots (e.g. pipes, enclosures, channels). However, if they have a protective function, they are classified as non-sparking devices, as the parts contained must be protected in order to use them in hazardous environments.

SPARKING DEVICE



NON-SPARKING DEVICE



Temperature class of constructions

Explosions can also be triggered by the temperature of a component's external parts due to heat generated inside. For example, the enclosure of a transformer or of a poorly cooled power supply unit, or more frequently, the lampholder containing a powerful lamp. To avoid this risk, all devices designed to be installed in areas with risk of explosions should have the same maximum temperature as the enclosure or other parts exposed to the explosive atmosphere. This temperature, which should be measured in the worst possible conditions, should not exceed the ignition temperature of the hazardous substance; for example, a resistor whose external enclosure assumes a temperature of 250°C cannot be exposed to an explosive atmosphere due to the presence of paraffin, whose ignition temperature is 210°C.

Constructions are therefore classified under temperature classes, which correspond to the maximum surface temperature as indicated in the table.

Temperature classes						
Maximum surface temperature °C	450	300	200	135	100	85
Temperature class	T1	T2	T3	T4	T5	T6

Protection modes

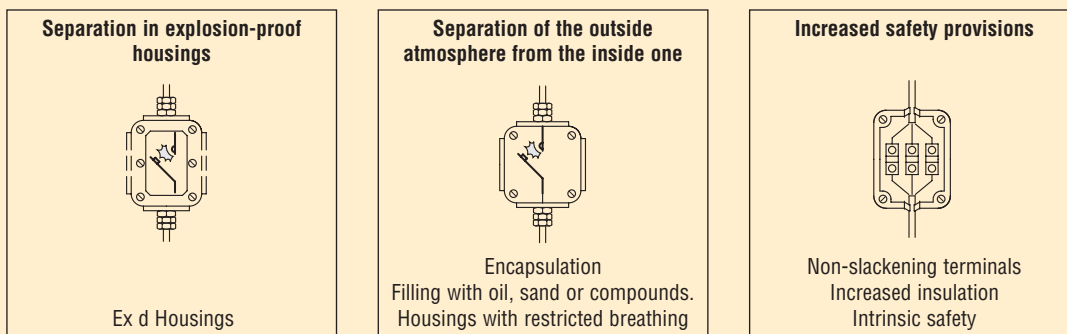
In practice three methods are possible to prevent explosions caused by electrical triggering of an explosive atmosphere:

- isolating the dangerous parts in housings so as to limit the explosion to within the housing itself;
- preventing contact between the hot spots and the potentially explosive atmosphere by a barrier of solid, liquid or gaseous bodies (oil, sand, hermetic sealing, inert gases in overpressure, or by restricting "breathing", i.e. the exchange of air between the outside and inside of a housing);
- taking provisions that limit the generation of dangerous hot spots and remove the possibility of faults by reducing the energy to an amount that is insufficient to cause ignition.

Various protection methods have been developed and standardised based on the standards in force. They are described in the following points.

Electrical constructions for potentially explosive atmospheres are normally protected in a specific way that is compatible with the functional properties and costs (e.g. constructions under sand are only feasible for certain static components, the intrinsic safety protection method is not applicable to power switches and the provisions that limit the probability of hot spots forming are not applicable to sparking appliances).

THE THREE BASIC PROTECTION MODES AGAINST THE DANGER OF EXPLOSION



Traditional protection methods

The traditional protection methods for flameproof materials referred to by Italian DPR [Presidential Decree] 547 have remained virtually unchanged and are also included in the current standard. They can be summarised as follows without entering into details that are outside this brief reference.

- protection method "d" with explosion-proof housings; this method consists in enclosing the dangerous parts in strong housings so that the triggering of a possible explosion will only involve the limited amount of gas contained in the housing itself without spreading to the outside environment. It is a costly method as regards material and demanding to install but offers the advantage of not requiring special equipment since protection is given by just the housings, the protecting tubes and the transit and blocking elements;
- protection method "p" with internal overpressure; this basically consists in enclosing the dangerous parts in housings filled with inert gases in overpressure so that they cannot enter the dangerous atmosphere; this method is applied to assemblies protected by cabinets (e.g. panels) or also to complete environments; it would be very expensive to apply it to single appliances of small size;
- protection method "e" with increased safety; this consists in taking provisions intended to prevent the formation of hot spots; this method is only applicable to non-sparking appliances;
- protection method "o" by immersion in oil; this basically consists in protecting the dangerous parts by immersing them in oil with dielectric properties; it requires specially build appliances and is almost totally obsolete, also because maintenance is difficult;
- protection method "q" under sand; this basically consists in filling boxes and containers containing static components with sand so that the hot spots are insulated from the atmosphere; it is generally used to protect conductors in wells and trench ducts;
- protection method "m" by encapsulation; this basically consists in enclosing dangerous small components in hermetic capsules so that they cannot penetrate the explosive atmosphere;
- intrinsic safety protection method "i"; this consists in using electrical components typified by their impossibility of producing arcs and sparks with enough energy to trigger off the dangerous atmosphere; it is applicable to sensors, generally electronic, for process measurements and controls with short circuit currents lower than the minimum fuel gas ignition currents.

General technical information

The new protection methods permitted by the ATEX Directive

The traditional methods seen in the previous chapter are very valid but their cost is unjustified in areas where the explosion risk is limited. This concept was also contained in the old Italian standard, now abrogated, that permitted systems made with sealed material in less dangerous places and zoned (the well-known AD-FT suitable for the presence of both gas and dust).

The ATEX directive, in force from July 2003 and the new harmonised European standards CEI EN 60079 (for gases) and CEI EN 50281 (for dust) no longer permit the use of sealed material in places with an explosion risk since there is no logical connection between the IP levels, relative to protection from solid bodies and water, and protection from explosions. The new replacement methods are Ex n for gases and II 3D IP5X for dust.

Protection modes Ex n

Protection method Ex n is fundamentally based on provisions for prevention and is divided into two main categories:

- EEx nA applicable to non-sparking appliances, namely those that do not produce arcs, sparks or hot spots during normal operation (junction and connector boxes, fuse holders, lighting appliances, etc.).
- EEx nR applicable to sparking appliances, namely those that produce arcs, sparks or hot spots during normal operation (switches of all types, contact makers, relays, hot resistance, bimetallic items and manifold motors).

The nA category bases the protection criterion on increased safety provisions as summarised below:

- protection levels suitable for the environment
- possible loss-proof gaskets
- recommended minimum resistance of the enclosure to impacts: 5J (>IK08)
- protective netting for delicate parts with a mesh not greater than 50x50 mm
- resin housings with adequate resistance to temperature and surface current effects
- terminals of non-slackening type protected against corrosion
- the maximum temperature of any surface in contact with the outside air must not exceed the limits applicable to the temperature class
- increased insulation distances and specific voltage tests
- specific requirements for fuses, fuse holders and plug socket-outlets.

Category EEx nR, applicable to sparking appliances, as well as the general requisites described for non-sparking appliances, provides for protection using housings with restricted breathing, i.e. sealed with adequate gaskets and grommets so that the exchange between the outside air and the inside air due to heat variations is negligible. This type of protection (i.e. entrusted to the sealing properties of the housing) allows internal installation of ordinary types of appliance.

The following provisions can also be applied as alternatives to or backing for restricted breathing:

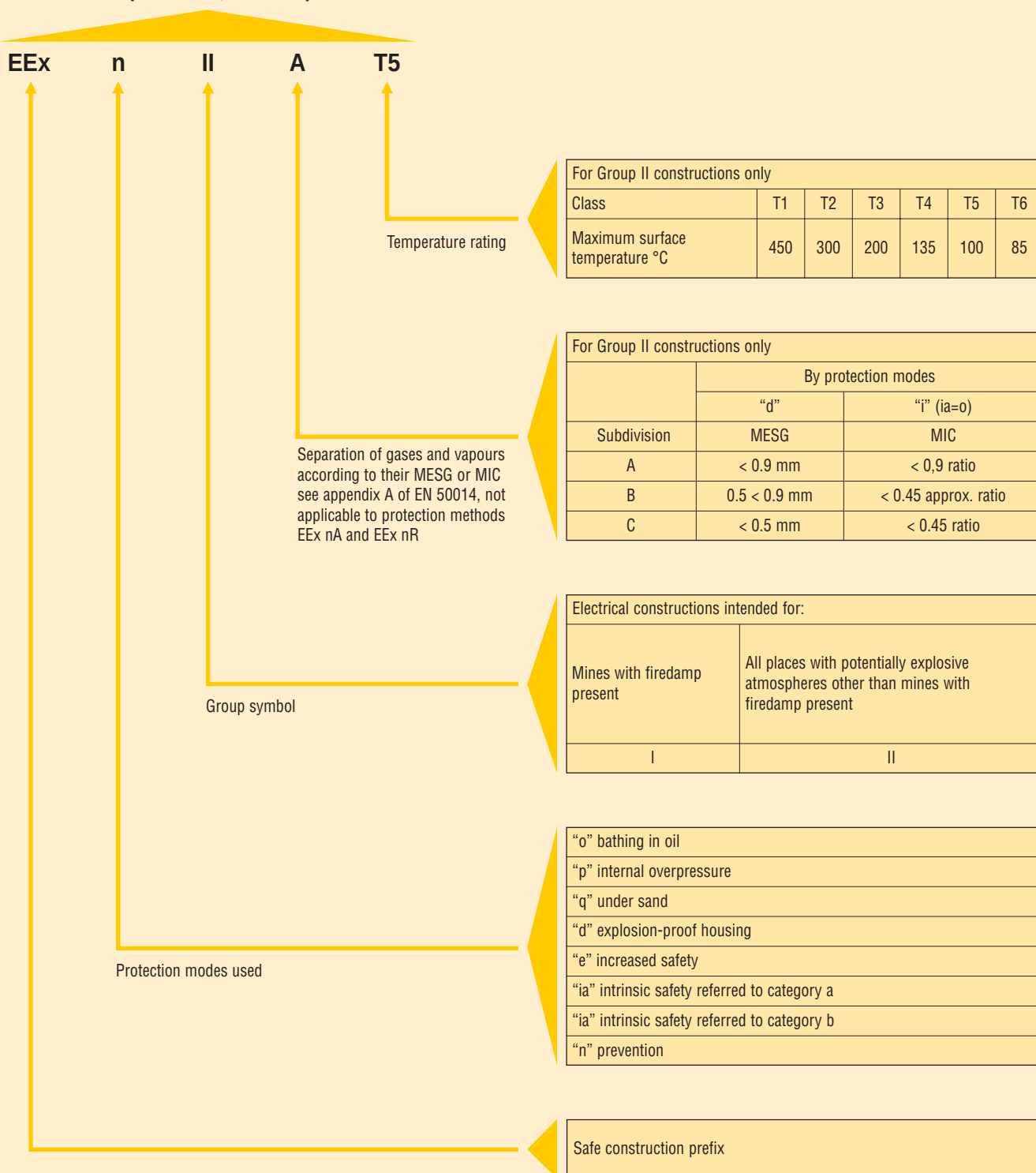
- interruption into closed cells able to support an internal explosion; the check is made using test gas (a similar situation to that of method Ex d, even if less severe);
- non-triggering components obtained with provisions of various types;
- hermetically sealed contacts that do not permit penetration of the explosive mixture;
- non-hermetically sealed or encapsulated contacts; this method only applies to cells with free internal volumes not greater than 100 cm³;
- constructions with restricted energy circuits based on the intrinsic safety principle; this system is not applicable to ordinary power components supplied at mains voltage.

The protection methods can also be combined in the same assembly; a starter, for example, could include a contact maker enclosed in a "d" casing, a triad of fuses protected using method "e" and a micro-relay encapsulated using method "m"; such an assembly can be identified with the codes of the individual methods (e.g. EEx d-e).

II 3D IP5X sealed protection method

This method, applicable in places where non-conducting dust is present, consists in using components enclosed in dust-proof casings that prevent penetration; as well as the level of protection against dust, these appliances must also have specific increased safety requisites and must have the temperature class marked on the housing. The method is also applicable to places where conducting dust is present if the protection level is IPX6 (identification II 2D IP6X).

Marking of electrical constructions for potentially explosive atmospheres (EN 50014; CEI 31-8)



General technical information

Classification of places and areas

The purpose of correct classification of hazardous places is to divide the environment into areas with different risk probabilities so that electrical systems suitable for each area can be installed with a grading criterion: the greater the risk, the more reliable the provisions of protection against the danger of triggering an explosion caused by electrical components must be.

Classification is a preliminary stage of electrical design and requires the collaboration of experts in the process for determining the explosion risk. It can, in fact, be assigned to professionals outside the field of electrical technology although the design must be prepared by professionals with a qualification in the speciality of electrical technology.

The classification defined by the Standard requires an analysis to be made of the possibility that hazardous atmospheres are created within determined volumes and so it is anything but easy; it is mandatory since the criteria used and the results obtained must be included in the technical report of the final design (see Guide CEI 0-2). Allowing ample safety margins is always to be recommended but, to attain the ends of a thoroughly workmanlike design, there is no need to exaggerate by merely using the most well-regarded and costly plant and constructions.

The classification method, given here at top level, refers to the following standards and guidelines:

- CEI 31-30 (CEI EN 60079-10) section 2895 – 1st edition: Electrical constructions for explosive atmospheres due to presence of gas. Part 10; Classification of hazardous places.
- CEI 31-35 section 5925 – Guide to the application of Standard CEI EN 60079-10; Classification of hazardous places.
- CEI 31-35/A section 5926 – Guide to the application of Standard CEI EN 60079-10; Classification of hazardous places, application examples.
- CEI 31-36 section 5301 – Electrical constructions for explosive atmospheres due to presence of dust – Choice, installation and maintenance.

Moreover the old Standard CEI 64-2 – section 1431, 4th edition is still applicable in places where explosives are present.

It must be stressed that, even if the law does not formally these standards to be followed, it is, de facto, since the ATEX Directive is based on it; this regulates constructions and, since incompatible criteria could be used, coherent correlations between constructions and hazardous areas might be lost.

Classification of areas in places where gas is present

As has been seen, the areas in places where gas is present are classified as area 0, area 1 area 2 or “non-hazardous” (NE, acronym for not explosive) depending on the following three parameters:

- emission source level (continuous, first, second)
- ventilation level (VH, VM, VL)
- ventilation availability (good, adequate, poor).

An emission source always generates a first area around it linked to the emission level:

- continuous emission = area 0
- first level = area 1
- second level = area 2

When the ventilation level is high these areas have a negligible extension (a few dm³) and are called, respectively, area 0 NE, area 1 NE and area 2 NE; in this case they have no influence on the classification of the place, even if it is not advisable to install electrical components that could trigger an outbreak in the few hazardous dm³.

If the available ventilation around the first area is adequate a second area is generated two levels lower than the first; if the available ventilation is inadequate, however, the lowering is only by one level so there can also be 2 areas around level 0 emission sources.

The situation is summarised in table I.

Tab. I – Determination of areas depending on ventilation and emission level				
Ventilation		Emission source level		
Level	Availability	Continuous	First	Second
High	Good	Non-hazardous area	Non-hazardous area	Non-hazardous area
	Adequate	Area 2	Area 2	Non-hazardous area
	Poor	Area 1	Area 2	Area 2
Medium	Good	Area 0	Area 1	Area 2
	Adequate	Area 0 + Area 2	Area 1 + Area 2	Area 2
	Poor	Area 0 + Area 1	Area 1 + Area 2	Area 2
Low	Good	Area 0	Area 1	Area 1
	Adequate	Area 0	Area 1	Area 1
	Poor	Area 0	Area 0	Area 0

When there is low level ventilation some areas of the environment, flushed by the flow of air, can suffer a cumulative effect and, as such, must be classified as areas revised by one or even two levels with respect to the area "in contact" with the source of emission. This applies to vaults, to vapours and gases lighter than air and to wells, trench ducts and basements for flammable substances heavier than air. As stated previously, a second level source can generate area 0 if the ventilation is inadequate.

Classification of areas in places where dust is present

Standard CEI EN 50281-1-2 classifies hazardous areas as follows without taking the ventilation and level of the emission source into account.

- Area 20

A place where an explosive atmosphere in the form of a dust cloud combustible in air is present either permanently or for long periods; e.g. containers, pipes, hoppers, etc.

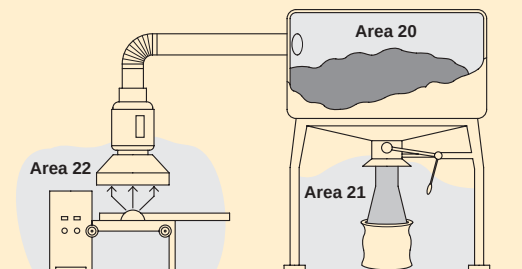
- Area 21

A place where an explosive atmosphere in the form of a dust cloud combustible in air has the probability of being occasionally present during normal operations; e.g. places close to filling and distribution points and places where layers of dust accumulate that could generate an explosive concentration of combustible dust and air during normal operation.

- Area 22

A place where an explosive atmosphere in the form of dust clouds combustible in air is not present during normal operations or only persists for a short time if it occurs: e.g. places near components containing dust that could escape and form deposits in the case of a leak.

THE THREE AREAS IN PLACES WITH AN EXPLOSIVE ATMOSPHERE DUE TO THE PRESENCE OF DUST



Constructions conforming with the ATEX directive

All constructions for potentially explosive atmospheres must be differentiated from others by a mandatory marking system that unambiguously identifies their suitability for use.

They must also have detailed documentation attached that certifies conformity with the product standard in force, some of which is issued by the manufacturer and some by an Control Body authorised at E.U. level. This is currently CESI in Italy. The following markings confirm compliance with the ATEX Directive:

CE marking

Confirms compliance with the current CENELEC standards in all features, including those not strictly applicable to the danger of explosion;

Ex coding Ex marking enclosed in a hexagon

Confirms suitability for use in explosive atmospheres –

Letters d, p, etc.

They identify the construction's protection method, namely:

d - explosion-proof construction

p - internal overpressure construction

o - construction in oil

q - construction under sand

m - encapsulated construction

i - intrinsic safety construction

e - increased safety construction

n - construction with simplified protection method

IP (followed by the accepted figures) – protection using a sealed casing

General technical information

I or II

Define the field of use limited to 2 cases: mines in Group I and other cases in Group II.

Category of the appliance shown by the numbers:
1=very high protection level; 2=high protection level; 3=normal protection level (see table II)

Letter G or D

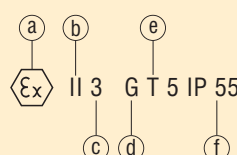
Define the type of fuel considered: gas (G) also including steam or mists; dust (D)

T1, T2, etc.

Shows the temperature class relative to the maximum temperatures that the housings or exposed hot spots can reach

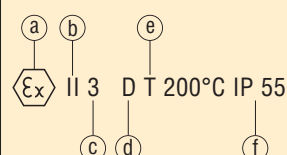
MARKING AND CODING

Constructions for places where gas is present



- a) Symbol of a construction protected by a housing
- b) Construction group (I suitable for firedamp, II unsuitable for firedamp)
- c) Category (1 for area 0, 2 for area 1, 3 for area 2)
- d) Protection against gas ignition
- e) Temperature rating
- f) IP housing protection rating

Construction for places where dust is present



- a) Symbol of a construction protected by a housing
- b) Construction group (I suitable for firedamp, II unsuitable for firedamp)
- c) Category (1 for area 20, 2 for area 10, 3 for area 22)
- d) Protection against dust ignition
- e) Maximum surface temperature
- f) IP protection ratings for the housing (IP 6X for categories 1 and 2, IP 5X for category 3)

Tab. II – Appliance categories

Category	Protection level	Performances	Conformity documents	Suitable for areas
1	Very high	Double barrier	CE marking, conformity declaration, CESI certificate	0-1-2 and 20- 21-22
2	High	Safe single barrier	CE marking, conformity declaration, CESI certificate	1-2 and 21-22
3	Normal	Single barrier	CE marking, conformity declaration	2 and 22

1-5-3 Suitability for installation in the various areas

The suitability of the various protection methods for installation in the various areas is shown in table III.

It should be noted that in area 0, where gas, steam or mists are present (inside fuel tanks, reactors, piping), only intrinsic safety constructions are permitted.

Category 2 constructions can be used everywhere and include all the protection methods, excluding only method “n”. Method “n” of category 3 is mainly used in places that, with the former standard (CEI 64-2), authorised the IP44 protected system and are therefore also of great interest in environments where, by tradition, flameproof materials were not used.

Tab. III – Table II Ex Constructions that can be used depending on the area classification

Tab. III – Table II Ex Constructions that can be used depending on the area classification														
Hazard area	Area	Explosive mixture present	Permissible type of construction	Permissible protection methods										
				ia	d	e	ib	m	o	q	p	n	IP6X	IP5X
Presence of gas, steam or mists	0	Continuous or for extended periods	II 1G	X	-	-	-	-	-	-	-	-	-	-
	1	Occasional	II 2G	X	X	X	X	X	X	X	X	-	-	-
	2	Only for breakdowns or very short periods	III 3G	X	X	X	X	X	X	X	X	X	-	-
Presence of dust	20	Continuous or for extended periods	II 1D										X	-
	21	Occasional	II 2D										X	X
	22	Only for breakdowns or very short periods	II 3D										X	X

The reference standard

The basic Standard that defines the interface between the types of system suitable for the various areas and the permissible safety constructions is CEI EN 60079-14 (CEI 31-33) for environments where gas is present and CEI EN 50281-1-2 (CEI 31-36) for those where dust is present. The general properties are defined in standard CEI EN 50014 (CEI 31-8 classification) entitled "Electrical constructions for potentially explosive atmospheres".

- CEI EN 50014/A1/A2 - CEI 31-8 classification; V1 - Section 5289: Electrical constructions for potentially explosive atmospheres - general rules
- CEI EN 50021 - CEI 31-11 classification; - Section 5865: Electrical constructions for potentially explosive atmospheres - protection method "n"
- CEI EN 61241-2-2 - CEI 31-28 classification - Section 2768: Electrical constructions intended for use in the presence of combustible dust - Part 2: Test methods - Section 2: Method for determining the electrical resistivity of layers of dust
- CEI EN 50281-1-1 - CEI 31-37 classification - Section 5412: Electrical constructions intended for use in environments with presence of combustible dust - Part 1-1: Constructions protected by housings - Constructions and tests
- CEI EN 50281-2-1 - CEI 31-38 classification - Section 5413: Electrical constructions intended for use in environments with presence of combustible dust - Part 2-1: Test methods - Methods for determining the minimum dust ignition temperature
- CEI EN 50284 - CEI 31-43 classification; - Section 5632: Specific prescriptions for constructing, testing and marking electrical constructions belonging to Appliance Group II, category 1 G

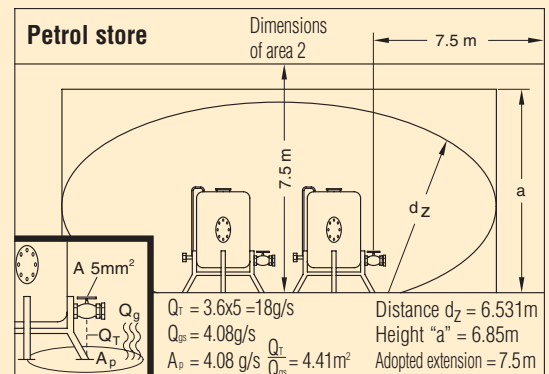
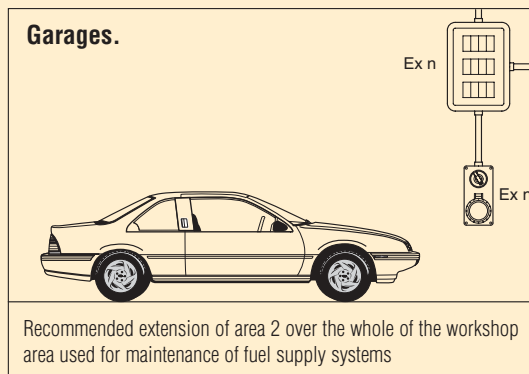
EXAMPLES OF THE FIELDS OF USE OF Ex n AREAS

Garages and workshops not conforming to the Law Decree of February 1986

a) Petrol fuelled vehicles

It can be safely estimated that pools of petrol covering up to 0.5 m^2 remain on the floor of the workshop for a considerable time. Applying the ratio $rh = 2.328 A^{0.7}$ gives a rh distance of 1.4 m that rounds up to 1.5 m.

This provision is also applicable to LPG vehicles.



Heating plant

Source of emission	Emission hole mm^2	Concentration $\text{X}\%$	Safety distance d_z (m)	Coefficient K_z	Minimum height "a" (m)	Recommended extension (m)
manual valves	0.25	0.004	0.14	1	NE	0
automatic valves	1	0.18	0.27	1.05	0.28	1.5
flanges with fibre seal	5	0.49	0.6	2.2	1.32	entire interior environment
large flanges with fibre seal	30	5.4	entire interior environment			

General technical information

Palazzoli products protected against thermal effects

Resistance to excess heat and fire

UL94 Self-extinguishing test (in compliance with USA standard Underwriter's Laboratories)

Testing for Resistance to Tracking (in compliance with IEC 112 publication)

Approval Marks

In conformity with CEI standards, the electric system should be installed in such a way that individuals or materials not included in the electric system as well as all electric system parts are protected against hazards such as:

- material combustion or deterioration
- risk of burns
- reduction in operating safety

These guarantees are achieved by taking adequate safety precautions against overcurrents and excess voltage. This means choosing parts with high dielectric properties and resistance to extreme heat, fire and surface currents. The basic tests and typical values of Palazzoli products are given below.

Glow-wire-test (according to Publication IEC 695-2-1)

This test checks the reaction of a given insulation after overheating of adjacent metallic parts caused by bad connections or faults in the system.

A glow wire coil is pressed into the specimen for 30 seconds, penetrating up to 7 mm. A sheet of tissue paper is put under the point of contact. The temperature of the wire required by the Standards is 850°C for items used for holding parts that carry current and 650°C for other insulations. The test is considered to have a positive outcome if the specimen does not catch fire, or if it extinguishes within 30 seconds of the wire being removed without burning entirely and without causing continuous burning of the tissue paper beneath.

Values for Palazzoli products:

650°C - 850°C - 960°C

A Bunsen burner is twice brought into contact with an insulation specimen in a vertical position, each time lasting 10 seconds. Cotton wool is placed under the point of contact.

Classification	Reaction of specimen
V0	Extinguishes within 5 seconds and the cotton beneath does not ignite.
V1	Extinguishes within 25 seconds and the cotton beneath does not ignite.
V2	Extinguishes within 25 seconds and the cotton beneath ignites.
HB	Does not extinguish within 25 seconds, and when testing the specimen horizontally, burns at a speed lower than 38 mm/min (at a thickness greater than 3 mm) and less than 76 mm/min (at a thickness of up to 3 mm)

Values for Palazzoli products:

HB - V2 - V1 - V0

The surfaces of the insulated item being tested are arranged horizontally, and two platinum electrodes are placed on them at a distance of 4 mm which are connected to a 50 Hz supply source.

Every 30 seconds a drop of 0.1% ammonium chloride in distilled water falls between the two electrodes.

The test is passed if there are no electrical charges between the two electrodes before 50 drops have fallen.

Obviously, the results depend of the level of voltage applied to the electrodes, and this is taken as the index of resistance to tracking.

Values for Palazzoli products:

>500V - >600V

For most PALAZZOLI products, compliance with the standards mentioned is proved by the authority to place a conformity mark on the product itself, or by approval or homologation certificates issued by the testing institutes or approval bodies below.



CE mark

Mark applied by PALAZZOLI in compliance with applicable 93/68 EEC Directives



IMQ Mark

Authorisation issued by the "Istituto Italiano del Marchio di Qualità"



VDE Mark

Authorisation issued by the "Verband Deutscher Elektrotechniker"



UL - C/UL Mark

Authorisation issued by the "Underwriters Laboratories Inc."

M.M.I.

Approval from the "Commissione permanente della Marina Militare Italiana" (Italian Navy)



R.I.Na.

Approval from the "Registro Italiano Navale" (Italian Ship Register)

In addition to this, PALAZZOLI also has a very advanced laboratory fitted out with all the necessary equipment for checking the conformity of its own products to the requirements of current laws. This means that it is able to issue, under its own responsibility, a Declaration of Conformity as provided by Article 7 of Law 791 in the Italian Civil Code. The PALAZZOLI laboratory has also been authorised by the IMQ to work in line with the TMP procedure (Testing at Manufacturer's Premises) for most of its own products.

Installations in environments with risk of explosion

The new European standards CEI EN 60079 (gas) and CEI EN50281 (dust) specify the criteria for classifying places with risks of explosion due to the presence of gas, flammable liquids and dust, and choosing safety systems. The following safety systems are suitable for these environments:

	Type of system	Hazard area class	“AD” area classification	AD-FT			Protected Notes	ATEX	
				C0	C2E	C2NE		Area 2	Area 22
				C0ZR	e,f,g,h				
INDUSTRIAL PLUGS	CEE-Ex		T6	●	X	X	●	●	●
FIXED INTERLOCKED SOCKET-OUTLETS	ULYSSE-Ex		T5	●	●	●	●	●	●
	TAIS-Ex		T5	●	●	●	●	●	●
	ALUPRES-Ex		T5	●	●	●	●	●	●
BOXES AND ENCLOSURES	TAIS-Ex		T6	●	●	●	●	●	●
	ALUPRES-Ex		T6	●	●	●	●	●	●
CONTROL DEVICES	CAM-Ex in thermosetting material enclosure		T5	●	●	●	●	●	●
	CAM-Ex in aluminium enclosure		T5	●	●	●	●	●	●
	Sirens and bells		T5	●	●	●	●	●	●
SMALL CONTROL DEVICES	TAIS-MIGNON-Ex small control devices		T6	●	●	●	●	●	●
	RONDÒ-Ex small control devices		T6	●	○	●	●	●	●
LIGHTING APPLIANCES	Oval and round lighting fixtures		*	●	●	●	●	●	●
	RINO-Ex		T4	●	●	●	●	●	●
SERIES	Type of equipment			● = Exceeds requirement ○ = Suitable X = not suitable * = see table on page 71					

IP protection ratings

The **EUROPEAN STANDARD CEI EN 60529** (classification CEI 70-1) specifies a classification system for the protection ratings of electrical device enclosures. This system uses the IP code in the following way.

1st characteristic number

Protection against access to dangerous parts and protection of equipment against the ingress of solid foreign objects and dust.



IP 0X
No protection



IP 1X
Protection against access to dangerous parts with the back of the hand.
Protection against solid foreign objects of diameter up to ≥ 50 mm



IP 2X
Protection against access to dangerous parts by fingers. Protection against solid foreign objects of diameter up to ≥ 12.5 mm



IP 3X
Protection against access to dangerous parts with a tool (e.g. screwdriver).
Protection against solid foreign objects of diameter up to ≥ 2.5 mm



IP 4X
Protection against access to dangerous parts with wire.
Protection against solid foreign objects of diameter up to ≥ 1 mm



IP 5X
Protection against access to dangerous parts with wire.
Protection against the damaging penetration of water.



IP 6X
Protection against access to dangerous parts with wire.
Total protection against dust. (dust cannot penetrate)

2nd characteristic number

Protection against the damaging penetration of water.



IP X0
No protection



IP X2
Protection against vertically falling drops of water with an enclosure angled up to 15°



IP X3
Protection against rain (from an angle of up to 60° to the vertical).



IP X4
Protection against splashed water (from all directions).



IP X5
Protection against jets of water from all directions



IP X6
Protection against powerful water jets (from all directions).



IP X7
Protection against damage by temporary immersion.

IP X1
Protection against vertically falling drops of water.

IP X8
Protection against damage by continuous immersion, under conditions agreed between the manufacturer and the user.

General technical information

		Characteristics of the enclosure			Operating temperature	
		Level of protection				
		Closure	Knocks	Material		
		IP	IK		Minimum	Maximum
INDUSTRIAL PLUGS	CEE-Ex	67	>08	Thermoplastic	-25°C	+50°C
FIXED INTERLOCKED SOCKET-OUTLETS	ULYSSE-Ex	66/67	>10	Thermosetting	-40°C	+70°C
	TAIS-Ex	67	>10	Thermosetting	-40°C	+70°C
	ALUPRES-Ex	67	>10	Aluminium	-40°C	+70°C
BOXES AND ENCLOSURES	TAIS-Ex	65	>10	Thermosetting	-40°C	+70°C
	ALUPRES-Ex	55	>10	Aluminium	-40°C	+70°C
CONTROL DEVICES	CAM-Ex thermosetting material enclosure	65/67	>10	Thermosetting	-40°C	+70°C
	CAM-Ex in aluminium enclosure	55/67	>10	Aluminium	-40°C	+70°C
	Sirens and bells	66	>10	Aluminium	-40°C	+70°C
SMALL DEVICES FOR ENERGY USE AND SIGNALLING	TAIS-MIGNON-Ex small control devices	67	>10	Thermosetting	-40°C	+70°C
	RONDÒ-Ex small control devices	55	>10	Aluminium	-40°C	+70°C
LIGHTING APPLIANCES	Oval lighting fixtures and round luminaires	55	>08	Aluminium	-40°C	+70°C
	RINO-Ex	66	>10	Stainless steel	-40°C	+70°C

Resistance to chemical and atmospheric agents

ENCLOSURE MATERIAL		CHEMICAL AND ATMOSPHERIC AGENTS							
		Water	Saline atmosphere	UV Rays	Hydrocarbons	Mineral oils	Alcoholic substances	Weak acids	Weak bases
Thermosetting		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good
Aluminium alloy		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Stainless steel		Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

	Explosion (CEI 64-2)	High risk in case of fire (CEI 64-8/7)			Environmental stresses (CEI EN 60721)								
	Explosives present	Group			Environments protected against the elements						Environments totally protected against the elements		
	COZR Area	a	b	c	IE31	IE32	IE33	IE34	IE35	IE36	IE41	IE42	IE43
INDUSTRIAL PLUGS	●	●	●	●	●	●	●	●	○	X	○	X	X
FIXED INTERLOCKED SOCKET-OUTLETS	●	●	●	●	●	●	●	●	○	○	●	○	○
	●	●	●	●	●	●	●	●	○	○	●	○	○
	●	●	●	●	●	●	●	●	○	○	●	○	○
BOXES AND ENCLOSURES	●	●	●	●	●	●	●	●	○	○	●	○	○
	●	●	●	●	●	●	●	●	○	○	●	○	○
CONTROL DEVICES	●	●	●	●	●	●	●	●	○	○	●	○	○
	●	●	●	●	●	●	●	●	○	○	●	○	○
	●	●	●	●	●	●	●	●	○	○	●	○	○
SMALL DEVICES FOR ENERGY USE AND SIGNALLING	●	●	●	●	●	●	●	●	○	○	●	○	
	●	●	●	●	●	●	●	●	○	○	●	○	X
	●	●	●	●	●	●	●	●	○	○	●	○	
LIGHTING APPLIANCES	●	●	●	●	●	●	●	●	○	○	●	X	X
	●	●	●	●	●	●	●	●	○	○	●	X	X

● = Exceeds requirement ○ = Suitable X = Not suitable

Notes on the table

Normalised groups of environmental classes according to harmonised standard CEI EN 60721-3-3. Environments protected against the elements

CLASS	EXPLANATION	TYPICAL CASE
IE31	Temperature from +15°C to +30°C, relative humidity 10-75%, temperature variation ≤0.5°C/min, sun radiation ≤ 700 W/m², ventilation ≤ 1 m/s, no significant stress.	Air-conditioned closed environment (dwelling).
IE32	Temperature from +5°C to +40°C, relative humidity 5-85%, temperature variation ≤0.5°C/min, sun radiation ≤ 700 W/m², ventilation ≤ 1 m/s, no significant stress.	Air-conditioned closed environment with possible interruptions.
IE33	Temperature from +5°C to +40°C, relative humidity 5-85%, temperature variation ≤0.5°C/min, sun radiation ≤ 700 W/m², ventilation ≤ 1 m/s, salt mist, sand up to 30 mg/m³ and/or dust in suspension up to 0.2 mg/m³, slight impacts.	Air-conditioned closed environment with possible interruptions, in coastal regions in aggressive atmospheric conditions.
IE34	Temperature from +5°C to +40°C, relative humidity 5-95%, temperature variation ≤0.5°C/min, sun radiation ≤ 700 W/m², ventilation ≤ 1 m/s, salt mist, sand up to 30 mg/m³ and/or dust in suspension up to 0.2 mg/m³, slight impacts, possible presence of flora and formation of condensation.	Covered environment in a temperate climate; in unheated cellars or rural interiors.
IE35	Temperature from -5°C to +45°C, relative humidity 5-95%, temperature variation ≤0.5°C/min, sun radiation ≤ 700 W/m², ventilation ≤ 1 m/s, salt mist, sand up to 30 mg/m³ and/or dust in suspension up to 0.2 mg/m³, possible impacts with acceleration up to 70 m/s², possible presence of flora and formation of condensation, possible formation of ice.	Covered environment in a continental climate. Open industrial warehouses.
IE36	Temperature from -25°C to +55°C, relative humidity up to 100%, temperature variation ≤0.5°C/min, sun radiation ≤ 1120 W/m², ventilation ≤ 1 m/s, salt mist, sand up to 30 mg/m³ and/or dust in suspension up to 0.2 mg/m³, possible impacts with acceleration up to 70 m/s², possible presence of flora, possible formation of condensation, ice formation, rain and gales.	Covered environment in a tropical or arctic climate. Refrigerating rooms or dryers.
IE37	Temperature from -40°C to +70°C, relative humidity up to 100%, temperature variation ≤1°C/min, sun radiation ≤ 1120 W/m², ventilation ≤ 1 m/s, salt mist, sand up to 30 mg/m³ and/or dust in suspension up to 0.2 mg/m³, possible impacts with acceleration up to 70 m/s², possible presence of flora, possible formation of condensation, ice formation, rain and ventilation up to 5 m/s.	Particular areas (furnaces, freezers, etc.).

Normalised groups of environmental classes according to harmonised standard CEI EN 60721-3-4. Totally exposed environments.

CLASS	MEANING	TYPICAL CASE
IE41	Temperature from -33°C to +40°C, relative humidity 15-100%, rain intensity ≤ 6 mm/min, temperature variation = 0.5° C/min, sun radiation up to 1120 W/m², condensation, snow, hail, ice formation, presence of flora, rodents and other animals (excluding termites), presence of moulds and fungus, atmosphere with ordinary pollution level and possible presence of salt atmosphere (coastal regions), presence of sand up to 300 mg/m³ and/or dust in suspension up to 5 mg/m³ and in sedimentation up to 20 mg/(m²/h), possible slight impacts (acceleration up to 5 m/s²), significant thermal radiation, wind up to 50 m/s, sprays of water.	Area with temperate climate.
IE42	Temperature from -50°C to +40°C, relative humidity 15-100%, rain intensity up to 15 mm/min, temperature variation = 0.5° C/min, sun radiation up to 1120 W/m², condensation, snow, hail, formation of ice, presence of flora, rodents and other animals (excluding termites), presence of moulds and fungus, atmosphere with ordinary pollution level and possible presence of salt atmosphere (coastal areas), presence of sand up to 300 mg/m³ and/or dust in suspension up to 5 mg/m³ and in sedimentation up to 20 mg/(m²/h), possible slight impacts (acceleration up to 5 m/s²), significant thermal radiation, wind up to 50 m/s, sprays of water.	Arctic or tropical areas.
IE43	Temperature from -50°C to +40°C, relative humidity 15-100%, rain intensity up to 15 mm/min, temperature variation = 0.5° C/min, sun radiation up to 1120 W/m², condensation, snow, hail, formation of ice, presence of flora, rodents and other animals with termites, presence of moulds and fungus, atmosphere with ordinary level of pollution and possible presence of salt atmosphere (coastal areas), presence of sand up to 300 mg/m³ and/or dust in suspension up to 5 mg/m³ and in sedimentation up to 20 mg/(m²/h), possible slight impacts (acceleration up to 5 m/s²), significant thermal radiation, wind up to 50 m/s, sprays of water.	Tropical areas with the presence of termites.

Industrial plugs

Technical data CEE-Ex Series

Reference standards:

Socket-outlets and plugs General characteristics

CEI EN 60309-1
IEC 309
CEI 23-12/1

Socket-outlets and plugs

CEI EN 60309-2
IEC 309-2
CEI 23-12/2

Standardization

Level of protection

CEI EN 60529
IEC 529
CEI 70-1

Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Summary table of main versions

Industrial plugs and socket-outlets in compliance with standards CEI EN 60309-1, CEI EN 60309-2, CEI 23-12/1 and CEI 23-12/2.

LOW VOLTAGE			OVER 50, UP TO 500V					
2P + ±			3P + ±			3P + N + ±		
100 - 130V 50 and 60 Hz yellow		 4 h	100 - 130V 50 and 60 Hz yellow		 4 h	57/100 - 75/130V 50 and 60 Hz yellow		 4 h
200 - 250V 50 and 60 Hz blue		 6 h	200 - 250V 50 and 60 Hz blue		 9 h	120/208 - 144/250V 50 and 60 Hz blue		 9 h
380 - 415V 50 and 60 Hz red		 9 h	380 - 415V 50 and 60 Hz red		 6 h	200/346 - 240/415V 50 and 60 Hz red		 6 h
			440 - 460V 60 Hz red		 11 h	250/440 - 265/460V 60 Hz red		 11 h
480 - 500V 50 and 60 Hz black		 7 h	480 - 500V 50 and 60 Hz black		 7 h	277/480 - 288/500V 50 and 60 Hz black		 7 h
> 50V 50 and 60 Hz for supply through insulation transformer (coloured according to voltage)		 12 h	> 50V 50 and 60 Hz for supply through insulation transformer (coloured according to voltage)		 12 h			
> 250V 50 and 60 Hz direct current (coloured according to voltage)		 8 h	380V at 50 Hz and 440V at 60 Hz for refrigerated containers red		 3 h	220/380V at 50 Hz 250/440V at 60 Hz for refrigerated containers - red		 3 h
> 50V 100 - 300 Hz green		 10 h*	> 50V 100 - 300 Hz green		 10 h	> 50V 100 - 300 Hz green		 10 h*
> 50V > 300 - 500 Hz green		 2 h	> 50V > 300 - 500 Hz green		 2 h	> 50V > 300 - 500 Hz green		 2 h
> 50 - 250 V direct current (coloured according to voltage)		 3 h						

VERY LOW VOLTAGE		UP TO 50V	
2P		3P	
20 - 25V 50 and 60 Hz violet		20 - 25V 50 and 60 Hz violet	
40 - 50V 50 and 60 Hz white		40 - 50V 50 and 60 Hz white	
20 - 25V 40 - 50V 100 - 200 Hz green		20 - 25V 40 - 50V 100 - 200 Hz green	
20 - 25V 40 - 50V 300 Hz green		20 - 25V 40 - 50V 300 Hz green	
20 - 25V 40 - 50V 400 Hz green		20 - 25V 40 - 50V 400 Hz green	
20 - 25V 40 - 50V > 400 - 500 Hz green		20 - 25V 40 - 50V > 400 - 500 Hz green	
20 - 25V 40 - 50V continuous current white			

* Not yet normalised

▲ Normally supplied in blue

(2h) (3h) (3h) (4h) (6h) (7h) (8h) (9h) (10h) (11h) (12h) these indicate the direction of the earth contact or the auxiliary reference, according to the position on the 'clock', looking at the socket-outlet from the front and placing the reference point to 6 o'clock. The boxes show the tag colours of the socket-outlets and plugs as provided by the regulations for the various operating voltages. However, the colouring for the devices is optional and may be limited to only some of them.



Technical Sheet

- the socket contacts and pins are made of solid brass rod with a high copper content, providing protection against galvanic corrosion in environments that are damp or have risk of condensation;
- the external screws and cover spring clasps are made of stainless steel;
- the cable clamp is designed to prevent strain from torque and/or traction on terminals with the risk of slackening, whilst keeping the wire sheath intact;
- elements holding live parts are made of self-extinguishing technopolymer (UL94 - V2) for 16A and 32A versions, with GLOW-WIRE resistance to 850°C and resistance to tracking of 600V. For 63A and 125A versions, they are made of self-extinguishing technopolymer (UL94 -V0), with GLOW-WIRE resistance to 960°C and resistance to tracking of 600V;
- the body and lids are made of thermoplastic technopolymer with high impact resistance and high dimensional stability.
- 63A and 125A versions come with the standard pilot contact;
- cable glands have parts in peelable rubber, which adapts perfectly to the size of the cable used;
- 63A and 125A plug and socket-outlet bodies are made of extra-durable thermoplastic technopolymer to guarantee greater impact resistance even under extreme conditions.

Suitability for use in particular environments

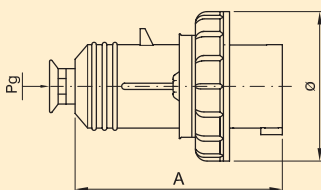
Type of environment	Area class or type	Type or series of devices or enclosures CEE-Ex Series - IP67
Risk of explosion or fire 	COZR	●
	Fire risk a	●
	Fire risk b	●
	Fire risk c	●
	ATEX Area 2	●
	ATEX Area 22	●
Particular environment 	IE35	●
	IE36	○
	IE41	○
Presence of water 	Drops	●
	Splashes	●
	Jets	●
	Temporary Immersion	○

● Exceeds requirement

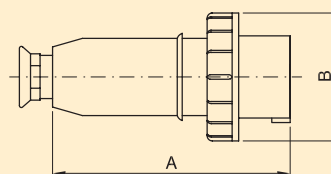
○ Suitable

⊗ This depends on the type of equipment, so contact our technical support service.

X Not suitable



Rated current	Poles	A (mm)	ø (mm)	Pg
16A	2P++	112	73	13,5
	3P++	117	80	16
	3P+N++	124	88	16
32A	2P++	141	94	21
	3P++	141	94	21
	3P+N++	141	101	21



Rated current	Poles	A (mm)	B (mm)	Pg/Gas
63A	2P++	208	110	Pg29
	3P++			
	3P+N++			
125A	2P++	283	126	2" gas
	3P++			
	3P+N++			

CEE-Ex straight watertight plugs

Fixed interlocked socket-outlets

Reference standards

Socket-outlets

CEI EN 60309-1 CEI EN 60309-2
IEC 309-1 IEC 309-2
CEI 23-12/1 CEI 23-12/2

Enclosures

CEI EN 60529
IEC 529
CEI 70-1

Switches

CEI EN 60947-3
IEC 947-3
CEI 17-11

Protection modes

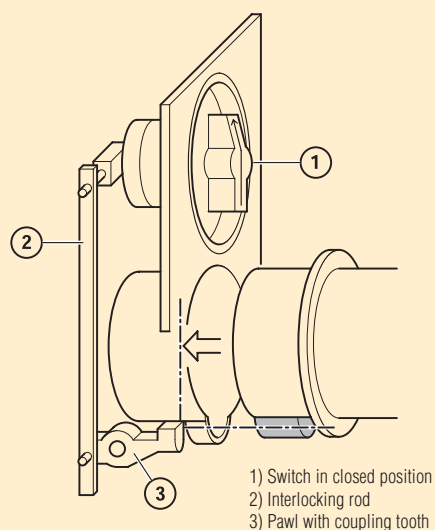
CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Technical Sheet

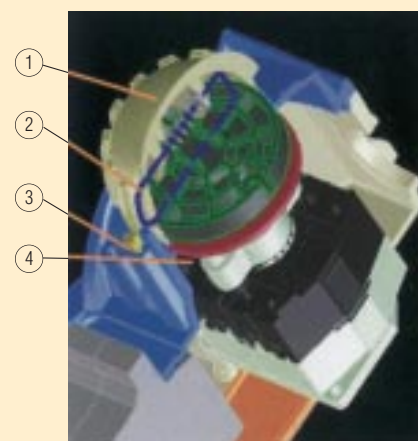
CONSTRUCTIONAL CHARACTERISTICS OF 16A, 32A AND 63A MECHANICALLY INTERLOCKED SOCKET-OUTLETS:

- socket-outlets that are mechanically and electrically interlocked allow you to create electricity distribution systems in total safety, while meeting specific requirements of system regulations for special system configurations, as described below:
according to CEI 64-8/7, sect. 752.55.1 - in electrical systems for public entertainment places "socket-outlets with a power load over 16A must be of the interlocking type";
the interlock is also recommended when the estimated short circuit current exceeds 5-6kA to avoid damage and hazards when users make a connection in a short-circuit and when you want to use socket-outlets with a rated current of more than 16A as machine disconnection or control devices.
- the interlock device prevents the switch from being closed if the plug has not been inserted in the socket-outlets and stops it from being taken out if the switch is in the "closed" position. In addition to this safety feature, the switch knob is connected to a "doorlock" which only allows the enclosure to be opened for maintenance purposes if the switch is in the "open" position;
- the complete functional unit is assembled on an light alloy frame which is then joined to the thermosetting technopolymer enclosure: the entire functional structure forms a "rigid" sub-assembly which is mechanically "defined", guaranteeing that settings and original functions are maintained in the long term;
- the parts forming the mechanical interlock device are made of tropicalized steel plate, which guarantees necessary rigidity and strength even if "forced" by incorrect use;
- the fuse-holder bases are made of ceramic for "D-type" fuse links. Unless specifically requested, the fuses are not normally supplied with the equipment.

MECHANICAL DIAGRAM OF INTERLOCK



DETAIL OF ULYSSE SOCKET-OUTLETS



- 1) Control device cap in thermosetting material
2) Lockable control lock device in stainless steel in O/I
3) Special mechanical interlock between control knob and fuse-holder base door
4) Double gasket between control knob and socket-outlet body



Wall-mounting fixed interlocked socket-outlets

CHARACTERISTICS OF FREQUENTLY USED ROTARY SWITCHES FOR USE IN MECHANICALLY INTERLOCKED 16A, 32A AND 63A SOCKET-OUTLETS

<i>Classification:</i>	<i>isolator switch</i>
<i>Operating category:</i>	<i>AC23A</i>
<i>Flame resistance of structure</i>	<i>GWT 960°C – V0</i>
<i>Disconnection level</i>	

Rated operating current at 500V 16A 32A 63A	16A	32A	63A
<i>Conditional short-circuit currents</i>	<i>10kA</i>	<i>10kA</i>	<i>15kA</i>
<i>Rated breaking capacity</i>	<i>128A</i>	<i>256A</i>	<i>504A</i>
<i>Rated making capacity</i>	<i>160A</i>	<i>320A</i>	<i>630A</i>
<i>Rated short time current (1 second)</i>	<i>240A</i>	<i>480A</i>	<i>950A</i>

These features allow interlocked socket-outlets to be used as machine disconnection devices.

CONSTRUCTIONAL CHARACTERISTICS OF INTERLOCKED SOCKET-OUTLET ENCLOSURES AND HOUSINGS IN THERMOSETTING TECHNOLOGY:

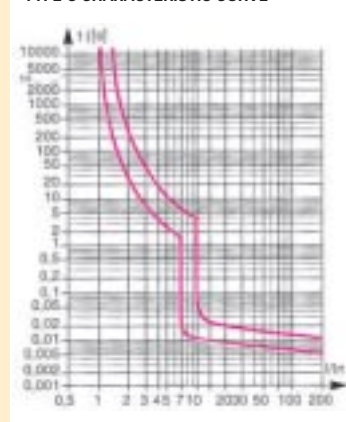
- mounting boxes and covers are made of very thick reinforced thermosetting technopolymer (SMC or CMC or BMC, according to type), which has excellent dimensional stability and non-deformability. It is also resistant to extreme heat, fire, chemical and atmospheric agents and mechanical stress even at extremely low temperatures. All these properties guarantee maximum performance in any environment, even when it is chemically aggressive, and provide state-of-the art insulation;
- the transparent covers are made of thick polycarbonate with a long-chain molecular structure. They are self-extinguishing and U.V. stabilized for maximum resistance to atmospheric and chemical agents;
- the unlosable cover fastening screws are made of stainless steel for medium-sized enclosures; the large cover fastening screws are made of technopolymer thermoplastic material with extra hold and are used for large enclosures; all the gaskets are made of non-ageing elastomer;
- all the enclosures in this series are suitable for creating systems in compliance with CEI 64-8 standards, and particularly for installation in places at "greater risk in case of fire" (64-8/7 sect. 751). They can also be used as enclosures for equipment assembled in conformity with standard CEI EN 50298, both in the ordinary versions and with total insulation (Standard CEI EN 60439-1). They also comply with publication IEC 670;
- the boxes in this range are completely modular and can be used for fitting out complex distribution boards using predefined configurations and standard accessories.

CHARACTERISTICS OF MINIATURE CIRCUIT BREAKERS

BREAKING CAPACITY

Socket-outlets	16A	32A	63A
CEI-EN 60898 (CEI 23-3)			
230/400 Vac	Icn 4.5 kA	Icn 6 kA	Icn 10 kA
230/400 Vac	Ics 4.5 kA	Ics 6 kA	Ics 7.5 kA
CEI-EN 60947-2 (CEI 17-5)			
240 Vac	Icu 10 kA	Icu 20 kA	Icu 30 kA
415 Vac	Icu 5 kA	Icu 10 kA	Icu 15 kA
440 Vac	Icu 3 kA	Icu 6 kA	Icu 10 kA
240 Vac	Ics 75% of Icu	75% of Icu	50% of Icu
415 Vac	Ics 75% of Icu	75% of Icu	50% of Icu
440 Vac	Ics 75% of Icu	75% of Icu	50% of Icu

TYPE C CHARACTERISTIC CURVE



Fixed interlocked socket-outlets

CONSTRUCTIONAL CHARACTERISTICS OF INTERLOCKED SOCKET-OUTLET ENCLOSURES AND HOUSINGS IN LIGHT ALLOY:

- the bottom boxes and covers are made of UNI-5076 light alloy with a high aluminium content. they are oven painted internally and externally after chromate galvanising treatment. The thickness of the material guarantees very high impact resistance and top performance in all environmental conditions, even if they are chemically aggressive. These state-of-the art enclosures are resistant to severe environmental stresses in compliance with standard CEI EN 607213-4 for environments totally exposed to the elements;
- the unlosable screws for closing the covers are made of stainless or tropicalized steel, gaskets are in non-ageing elastomer;
- the earth connection cables are both inside and outside the enclosures;
- all the enclosures in this series are ideal for creating systems in compliance with CEI 64/8 Standard, and particularly for installations in environments at "greater risk in case of fire" (64-8/7 sect. 751); they can also be used as enclosures for appliances assembled in conformity with Standard CEI EN50298;
- these boxes are fully modular and can therefore be used for fitting out complex distribution boards using predefined configurations and standard accessories.
- selected products made of Special Light Alloy UNI-4515 are available for particular uses. They are naturally «rustproof» due to the alloy's particular "purity".

Suitability of use in particular environments

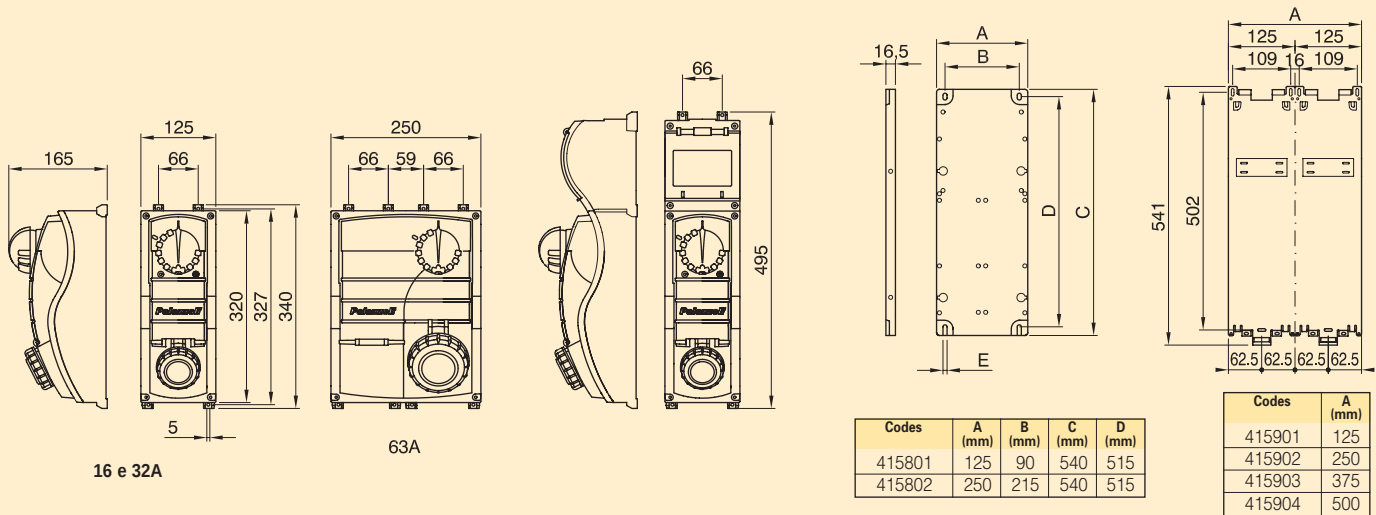
Type of environment	Area class or type	Type or series of devices or enclosures	
		Thermosetting material - IP66/67	Aluminium IP55-67
Risk of explosion or fire 	COZR	●	●
	Fire risk a	●	●
	Fire risk b	●	●
	Fire risk c	●	●
	ATEX Area 2	●	●
	ATEX Area 22	●	●
Particular environment 	IE35	○	○
	IE36	○	○
	IE41	●	●
	IE42	○	○
Presence of water 	Drops	●	●
	Splashes	●	●
	Jets	●	○
	Temp. Immersion	○	X

● Exceeds requirement
○ Suitable

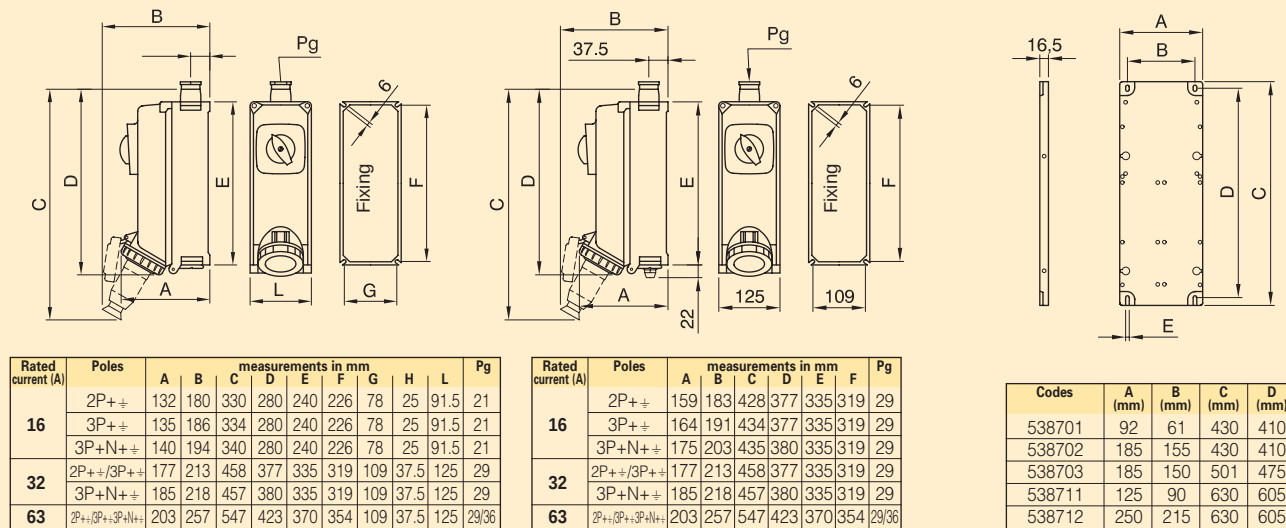
⊕ This depends on the type of equipment, so contact our technical support service
X Not suitable

Dimensions

Fixed interlocked
socket-outlets
and plugs



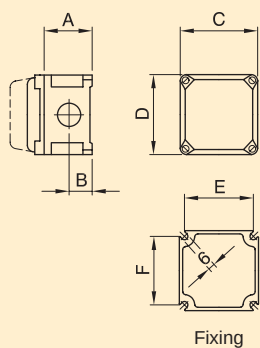
ULYSSE-Ex watertight interlocked socket-outlets, enclosures and plates



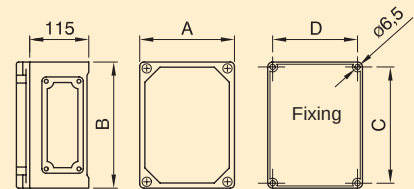
TAIS-Ex wall-mounting interlocked socket-outlets with and without fuse-holder base

TAIS-Ex wall-mounting interlocked socket-outlets with miniature circuit breaker and mechanical interlock

TAIS-Ex Plates for mounting socket-outlets



External dimensions	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
92x92	50	25	92	92	78	78
92x125	50	25	92	125	111	78
185x92	50	25	185	92	171	78
125x125	75	37.5	125	125	109	109
185x125	75	37.5	185	125	169	109
250x125	75	37.5	250	125	234	109



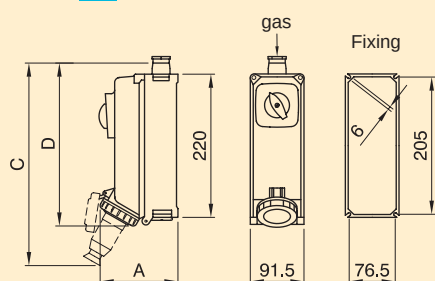
External dimensions	A (mm)	B (mm)	C (mm)	D (mm)
185x185	185	185	159	159
250x185	250	185	224	159
250x250	250	250	224	224
250x370	250	370	344	224
370x500	370	500	474	344

TAIS-Ex watertight enclosures in thermosetting material

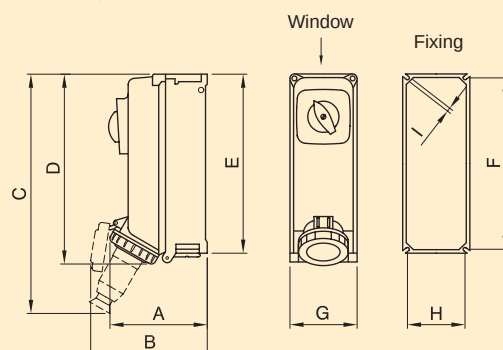
Boxes for combinations

Fixed interlocked socket-outlets

Dimensions

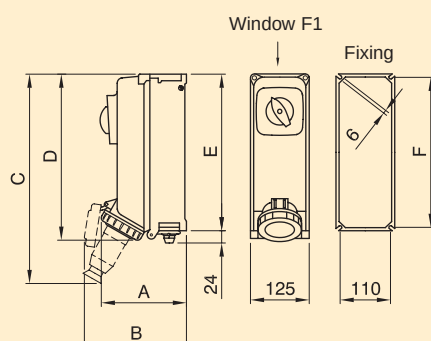


Rated current (A)	Poles	A (mm)	C (mm)	D (mm)	gas
16	2P++	124	300	250	1/2"
	3P++	128	305	250	1/2"
	3P+N++	132	315	252	3/4"
	3P+N++	132	315	252	3/4"



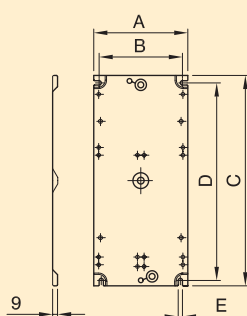
Rated current (A)	Poles	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	Window type
32	2P++/3P++	168	208	420	335	315	300	125	110	6	F1
	3P+N++	170	210	420	336	315	300	125	110	6	F1
63	all poles	188	250	518	382	355	340	125	110	6	F1
125	all poles	240	344	748	545	507	490	185	168	7	F3

ALUPRES-Ex wall-mounting interlocked socket-outlets and fuse-holder base



Rated current (A)	Poles	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
16	2P++	150	178	390	335	315	300
	3P++	155	186	400	335	315	300
	3P+N++	160	195	400	335	315	300
32	2P++/3P++	168	208	420	335	315	300
	3P+N++	170	210	420	336	315	300
63	all poles	188	250	518	382	355	340

ALUPRES-Ex wall-mounting interlocked socket-outlets with miniature circuit breaker and mechanical interlock



Codes	A (mm)
541010	23
541020	29
541080	31
541090	33
541030	34
541011	29
541021	33
541040	36



Codes	A (mm)
540151	63
540141	63
540152	63
540142	64
541153	82
541154	88
540145	124
541156	154

Codes	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
532806	185	162	389	366	8
532816	276	253	389	366	8
532826	185	162	421	398	8
532836	250	222	558	530	10
532846	375	347	558	530	10
532856	310	282	558	530	10
532866	435	407	558	530	10



Codes	A (mm)
540161	57
540162	62
540172	63
540163	79
541164	124
541165	154
541166	36

ALUPRES-EX plates for mounting socket-outlets

ALUPRES-Ex closing flanges

Watertight junction boxes

Technical data
TAIS-MIGNON-Ex,
TAIS-Ex,
ALUPRES-Ex

Enclosures,
and fittings



Reference standards

IP and IK protection ratings

CEI EN 60529 CEI EN 50102
IEC 529 CEI 70-3
CEI 70-1

Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Characteristics of boxes

These boxes are intended to contain components that do not dissipate significant heat power.

The junction boxes consist of three series:

- **TAIS-Ex series**
- **TAISMIGNON-Ex series**
- **ALUPRES-Ex series**

CONSTRUCTIONAL CHARACTERISTICS OF TAIS-Ex AND TAIS MIGNON-Ex SERIES JUNCTION BOXES

- mounting boxes and covers are made of thick reinforced thermosetting technopolymer (SMC or CMC or BMC, according to type), with excellent dimensional stability, non-deformability and resistance to extremes of heat and fire, chemical and atmospheric agents, and mechanical stress even at very low temperatures. All these properties ensure maximum performance in any environment, even when chemically aggressive, and are state-of-the-art in terms of insulating material;
- the transparent covers are made of thick polycarbonate with a long-chain molecular structure. They are self-extinguishing and U.V. stabilized for maximum resistance to atmospheric and chemical agents;
- unlosable screws for fastening the covers are made of stainless steel for medium-size enclosures. Large unlosable screws in technopolymer, thermoplastic material with extra hold are used for the covers of large enclosures, with gaskets in non-ageing elastomer;
- all the boxes in this range are suitable for creating systems in compliance with CEI 64-8 standards and, in particular, for installation in places at "greater risk in case of fire" (64-8/7 sec. 751). They can also be used as casings for devices assembled in conformity with standard CEI EN 50298, both ordinary and with protection using total insulation. They can also be used for fitting out distribution boards protected by complete insulation (Standard CEI 60439-1) and meet the requirements of the IEC 670 publication;
- since they are fully modular, the boxes in this range can also be used for fitting out complex distribution boards using predefined configurations and standard accessories.

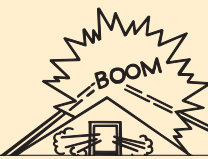
CONSTRUCTIONAL CHARACTERISTICS OF ALUPRES-Ex SERIES JUNCTION BOXES:

- bases and covers are made of UNI-5076 light alloy with a high aluminium content. They are oven-painted internally and externally after chrome galvanising treatment. The great thickness of the material used to make these boxes assures top level results in any environment, even if chemically aggressive, and high resistance to impacts. These enclosures, with regard to resistance to severe environmental stresses, as classified by Standard CEI EN 607213-4 for environments totally exposed to bad weather conditions, are state-of-the-art;
- the unlosable screws for closing the covers are made of stainless or tropicalized steel, gaskets are in non-ageing elastomer;
- the earth connection cables are both inside and outside the enclosures;
- all the enclosures in this series are suitable for creating systems in compliance with CEI 64/8 Standard, and particularly for installation in places at "greater risk in case of fire" (64-8/7 sect. 751); they can also be used as enclosures for appliances assembled in conformity with Standard CEI EN50298;
- since they are fully modular, the boxes in this range can also be used for fitting out complex distribution boards using predefined configurations and standard accessories;
- for special applications, selected products are available in Special Light Alloy UNI-4514. Their main feature is in being inherently "rustproof" due to the particular purity of the alloy. Products made with this alloy are, nonetheless, given the same surface treatment as that for standard alloy in order to assure "super-resistance" to corrosion even in the severest environmental conditions.

Watertight junction boxes

Technical data
TAIS MIGNON-Ex Series
TAIS-Ex Series
ALUPRES-Ex Series

Suitability for use in particular environments

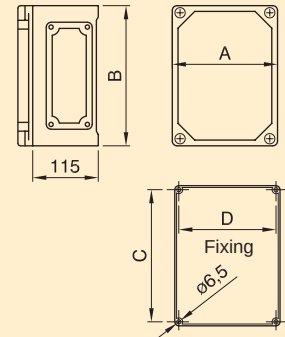
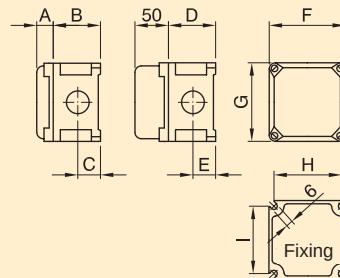
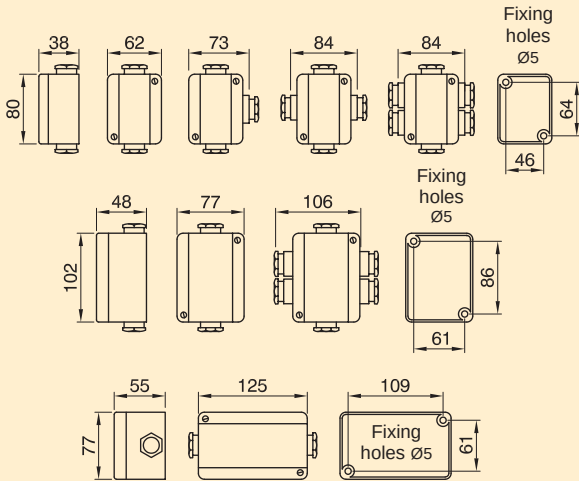
Type of environment	Area class or type	Type or series of devices or enclosures	
		TAIS-Ex and TAIS-MIGNON-Ex Series	ALUPRES-Ex Series
Risk of explosion or fire 	COZR	●	●
	Fire risk a	●	●
	Fire risk b	●	●
	Fire risk c	●	●
	ATEX Area 2	●	●
	ATEX Area 22	●	●
Particular environment 	IE35	○	○
	IE36	○	○
	IE41	●	●
	IE42	○	○
	IE43	X	○
Presence of water 	Drops	●	●
	Splashes	●	●
	Jets	○	○
	Immersion	X	X

● Exceeds requirement

○ Suitable

⊕ This depends on the type of equipment, so contact our technical support service

X Not suitable



External dimensions FxG	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	H (mm)	I (mm)
92x92	18	50	25	50	25	78	78
125x92	18	50	25	50	25	111	78
185x92	18	50	25	50	25	171	78
125x125	25	75	37.5	75	37.5	109	109
185x125	25	75	-	75	-	169	109
250x125	25	75	-	75	-	234	109

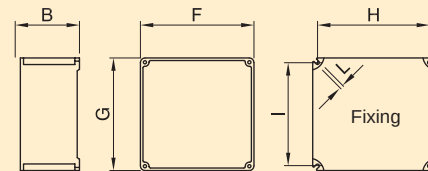
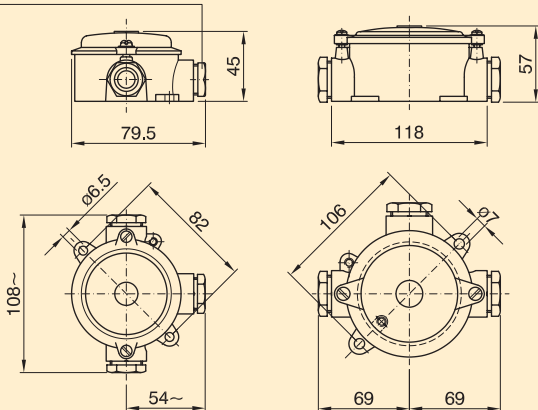
External dimensions	A (mm)	B (mm)	C (mm)	D (mm)
185x185	185	185	159	159
250x185	250	185	224	159
250x250	250	250	224	224
250x370	250	370	344	224
370x500	370	500	474	344

TAIS-MIGNON-Ex junction enclosures in thermosetting material

TAIS-Ex junction enclosures in thermosetting material

TAIS-Ex modular enclosures

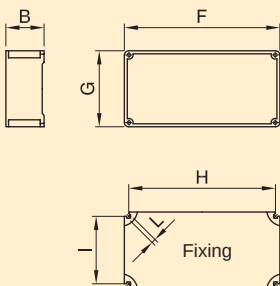
No. 3 connections with 1/2" gas (Ø 16/12 mm)



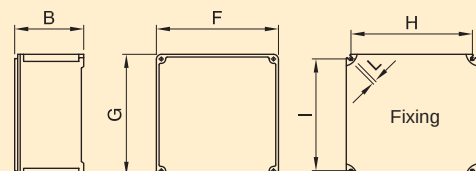
External dimensions	B (mm)	F (mm)	G (mm)	H (mm)	I (mm)	L (mm)
92x92	42	92	92	78	78	6
125x125	63	125	125	111	111	6
185x125	63	185	125	171	111	6
155x155	63	155	155	141	141	6
185x185	95	185	185	171	171	6
252x185	95	252	185	236	169	7
315x252	140	315	252	300	224	9

ALUPRES-Ex Series junction enclosures

ALUPRES-Ex Series junction enclosures



External dimensions	B (mm)	F (mm)	G (mm)	H (mm)	I (mm)	L (mm)
92x92	42	92	92	78	78	6
125x92	42	125	92	111	78	6
185x92	42	185	92	171	78	6
125x125	63	125	125	111	111	6
185x125	63	185	125	171	111	6
252x125	63	252	125	238	111	6
155x155	63	155	155	141	141	6
185x185	95	185	185	171	171	6
252x185	95	252	185	236	169	6
220x220	95	220	220	205	192	6
252x252	140	252	252	237	224	6
315x252	140	315	252	300	224	6
507x252	140	507	252	492	224	9
295x295	105	295	295	280	266	9
315x315	140	315	315	300	286	9
373x373	140	373	373	353	330	12
507x373	140	507	373	487	330	12
630x373	140	630	373	610	330	12
630x507	140	630	507	610	464	12



External dimensions	B (mm)	F (mm)	G (mm)	H (mm)	I (mm)	L (mm)
92x92	42	92	92	78	78	6
125x125	63	125	125	111	111	6
185x125	63	185	125	171	111	6
155x155	63	155	155	141	141	6
185x185	95	185	185	171	171	6
252x185	95	252	185	236	169	7
315x252	140	315	252	300	224	9

ALUPRES-Ex modular enclosures

Universal fittings and accessories

Technical data UNI-Ex Series

Reference standards

IP and IK protection ratings

CEI EN 60529
CEI 70-1
CEI EN 50102
CEI 70-3

General characteristics

CEI EN 50298
CEI 17-71
CEI EN 50086-1
CEI 23-39
CEI 23-48

Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Technical Sheet

GENERAL CHARACTERISTICS AND METHODS OF USE:

The pipe-box, cable-box and box-box unions for components with a high level of protection against environmental stresses perform a function of vital importance. If the gland is defective, the component is no longer suitable for installation in the particular environment for which it was planned.

Specifically, not only mechanical closing of the gaps for sealing against dust and water is required, but also good reactions to temperature, sun radiation, heat variations and, for chemically aggressive environments, adequate chemical resistance.

The material and sizes of the fittings listed in the catalogue are suitable for all Palazzoli components within the protection rating shown and respecting the combinations shown below.

Fitting type	Cable Glands	Coupling	Screwcaps	Adaptors	Cable Glands
Type/Threading	from Pg13.5 to Pg48 from M12 to M63	from Pg21 to Pg36	from Pg13.5 to Pg36	from Pg13.5-Pg63 to 3/8"-1"1/2	from 3/8" to 2"
Fixing hole diameter	from 13 to 61mm	from 21 to 48mm	from 21 to 48mm		
External diameter of the cable	from 8 to 44mm				from 11 to 45mm
IP Protection level	IP68	IP67	IP67	IP67	IP55
Material used	Thermoplastic	Thermoplastic	Thermoplastic	Thermoplastic	Brass
GWT	850°C	850°C	850°C	850°C	

Suitability for use in particular environments

Type of environment	Area class or type	Dev. or encl.	Type of environment	Area class or type	Dev. or encl.	Type of environment	Area class or type	Dev. or encl.
Risk of explosion or fire 	COZR	●	Particular environment 	IE35	●	Presence of water 	Drops	●
	Fire risk a	●		IE36	○		Splashes	●
	Fire risk b	●		IE41	●		Jets	●
	Fire risk c	●		IE42	○		Immersion	X

● Exceeds requirement
○ Suitable

⊕ This depends on the type of equipment, so contact our technical support service
X Not suitable

Rotary control devices in box

Technical data CAM-Ex Series

Control,
protection
and
signalling
devices



Reference standards

Isolator and disconnection switches

CEI EN 60947-3
IEC 947-3
CEI 17-11

Electromechanical devices for control circuits

CEI EN 60947-5-1
IEC 947-5-1
CEI 17-45

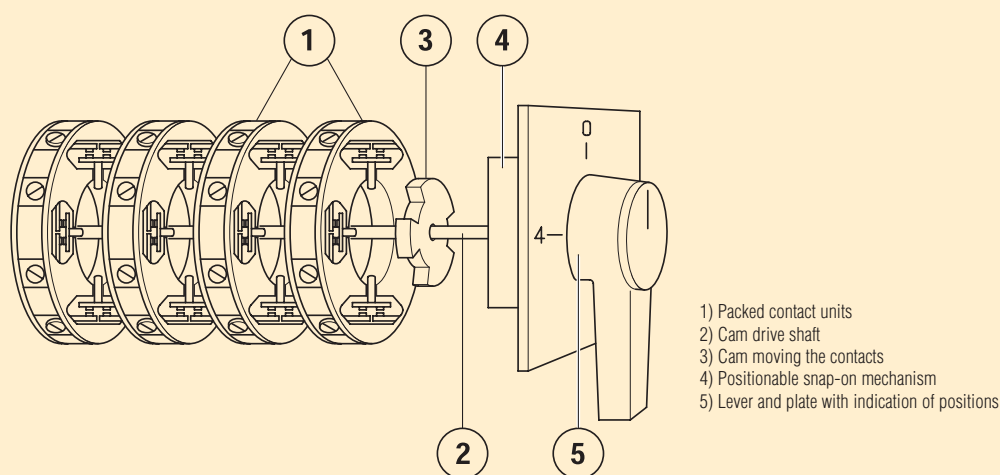
Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Technical Sheet

CONSTRUCTIONAL CHARACTERISTICS OF THE CONTROL DEVICES

- products from the CAM-Ex series belong to the category of so-called "cam" equipment. This means that the operation of each single contact is put into effect, via a control shaft, directly from a cam, the shape of which defines the type of movement the contact makes. This fundamental solution means that a high number of contact-holder discs can be coupled together while maintaining direct and inter-dependent operation, thus making it possible to create very differing layouts to meet any requirement.
- the contact-holder discs are made of very thick reinforced technopolymer with exceptional dimensional stability, indeformability, resistance to excess heat and fire, to the action of chemical and atmospheric agents, and to mechanical stress even at very low temperatures. Together with these properties there can be added a natural resistance tracking (>600 V) which is essential to guarantee reliability in the long term for this type of apparatus;
- all the contacts, from the 16A to the 600A, are of the "double-break" type, with inserts in silver alloy (AgCd) on solid brass nickel-coated bars or silver-plated copper bars, depending on the type. This technique assures the best conditions for electrical durability, both in terms of breaking and disconnecting capacity and electrical durability (life expressed in the number of loaded operations) whatever the type of use for the equipment;
- all the control shafts are single pieces (through bar) and enable simultaneous direct operation of the single cams, without mechanical joints in between. This gives true simultaneousness of operation, which is particularly important in all those cases of direct switching under load;
- the standard control cams make it possible to create up to 39 switching layouts. However, on request, special cams can be made which will be also suitable for actuating auxiliary contacts with advanced or delayed operation, both in opening and closing.
- every CAM-Ex product has a "click box" which determines the exact angular position of operation. This box is fitted to the base of each device, and is completely independent of the operating cams, resulting in particularly high switching precision and independent of the actual number of contact-holder discs fitted;
- the various items can be fitted with front-plates and operation devices for the differing uses at various degrees of protection, suitable for meeting the widest series of installation requirements.



Utilisation categories

CAM-Ex switches are used for setting and interrupting currents on power circuits for disconnection, non-electrical cut-in for maintenance, machine disconnection, emergency operations and functional control according to Standard CEI EN 60947-3.

Rotary control devices in box

Technical data CAM-Ex Series

Isolator switches are also suitable for control circuits (CEI EN 60947-5-1). Some layouts are suitable for direct and indirect manual starting of motors (CEI EN 60947-4-1).

For each function, the respective standards provide for different utilisation categories, which are characterised by the values of closing and opening currents depending on the type of connected or disconnected use. The following tables summarise the terms.

DISCONNECTION AND CONTROL ON THE POWER CIRCUITS:

Type of current	Utilisation category		Typical applications
	frequent operation	infrequent operation	
Alternating current	AC-20A (*)	AC-20B (*)	Connecting and disconnecting under no-load conditions
	AC-21A	AC-21B	Control of resistive loads including moderate overcurrents
	AC-22A	AC-22B	Control of mixed resistive and inductive loads including moderate overcurrents
	AC-23A	AC-23B	Control of motors or other highly inductive loads
Direct current	DC-20A (*)	DC-20B (*)	Connecting and disconnecting under no-load conditions
	DC-21A	DC-21B	Control of resistive loads including moderate overcurrents
	DC-22A	DC-22B	Control of mixed, inductive and resistive loads with moderate overcurrents (e.g. junction motors)
	DC-23A	DC-23B	Control of highly inductive loads (e.g. motors in series)

(*) These utilisation categories are not permitted in the U.S.A.

MOTOR START

Type of current	Category	Typical applications
Alternating current	AC-1	Non-inductive or slightly inductive loads, resistance furnaces
	AC-2	Slip-ring motors: starting, stop
	AC-3	squirrel-cage motors starting, stop with maximum running motor
	AC-4	squirrel-cage motors starting, plugging, inching of squirrel-cage motors
	AC-5a	Control of discharge lamps
	AC-5b	Control of incandescent discharge lamps
	AC-6a	Control of transformers
	AC-6b	Control of condensation benches
	AC-7a	Motors for domestic use
	AC-8a	Control of motors for refrigerator airtight compressors with manual resetting of overcurrent releases
	AC-8b	Control of refrigerator airtight compressors with automatic resetting of overcurrent releases
Direct current	DC-1	Non-inductive or slightly inductive loads, resistance furnaces
	DC-3	Shunt motors, starting, plugging, inching, and dynamic motor plugging
	DC-5	Motors in series, starting, plugging, inching, dynamic motor plugging
	DC-6	Control of incandescent discharge lamps

CONTROL OF CONTROL CIRCUITS

Type of current	Category	Typical applications
Alternating current	AC-12	Control resistive loads and solid-state loads with insulation obtained by opto-insulators
	AC-13	Control of solid-state loads with insulation transformer
	AC-14	Control of small electromagnetic loads (= 72 VA)
	AC-15	Control of electromagnetic loads (72 VA)
Direct current	DC-12	Control resistive loads and solid-state loads with insulation obtained by opto-insulators
	DC-13	Control of electromagnets
	DC-14	Control of electromagnet loads with economizer resistors in the circuit

CAM series devices of up to 200A are suitable for the AC3 utilisation category at 220/380/550V (see specific data in the catalogue)



Technical data and performances of CAM-Ex series switches

	CAM-Ex 16A	CAM-Ex 25A	A32-Ex 32A	CAM-Ex 40A	CAM-Ex 63A	CAM-Ex 100A	CAM-Ex 125A	CAM-Ex 200A	CAM-Ex 400A	CAM-Ex 600A
RATED INSULATION VOLTAGE (max. operating voltage)										
U _i =U _e	500V	500V	500V	500V	500V	500V	500V	500V	500V	500V
THERMAL AND UNINTERRUPTED RATED CURRENT										
I _{th} = I _{the} = I _u	16A	25A	32A	40A	63A	100A	125A	200A	400A	600A
RATED MAKING CAPACITY										
	160A	250A	320A	400A	630A	1000A	1250A	1250A	1250A	1250A
RATED BREAKING CAPACITY										
	128A	200A	256A	320A	504A	800A	1000A	1000A	1000A	1000A
RATED SHORT TIME CURRENT (1 second)										
	240A	380A	480A	600A	950A	1500A	2000A	3000A	minimum 3000A	minimum 3000A
CONDITIONAL SHORT-CIRCUIT CURRENT										
	10kA	10kA	10kA	10kA	15kA	15kA	15kA	15kA	-	-
RATED IMPULSE STAND WITH VOLTAGE										
	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV	-	-
MAX CURRENT OF PROTECTION FUSES										
g l o a M	16A	25A	32A	40A	63A	100A	125A	200A	-	-
UTILIZATION CATEGORY AND RATED OPERATING CURRENT «I _e » IN AC										
AC 20A NO LOADS CONDITION OPERATION										
I _e	16A	25A	32A	40A	63A	100A	125A	200A	400A	600A
AC21A RESISTIVE LOADS INCLUDING MODERATE OVERLOADS										
AC22A MIXED RESISTIVE-INDUCTIVE LOADS INCLUDING MODERATE										
I _e	16A	25A	32A	40A	63A	100A	125A	200A		
AC23A MOTORS OR OTHER HIGHLY INDUCTIVE LOADS										
AC3 STARTING AND SWITCHING OFF OF SQUIRREL-CAGE MOTOR DURING RUNNING										
RATED POWER OF THREE-PHASE MOTORS										
a 220V ca	kW	4.5	7	8,5	11	18	26	30	30	-
a 380V ca	kW	7.5	12	15	19	31	45	52	52	-
a 500V ca	kW	10	14	17	23	40	56	64	64	-
RATED POWER OF SINGLE-PHASE MOTORS										
a 220V ca	kW	2.8	4	5	-	-	-	-	-	-
a 380V ca	kW	4.8	7	9	-	-	-	-	-	-
AC4 STARTING AND PLUGGING, INCHING OF SQUIRREL-CAGE MOTORS										
RATED POWER OF THREE-PHASE MOTORS										
a 220V ca	kW	3.5	5	6	8	13	14	14	14	-
a 380V ca	kW	6	8	10	13	21	27	27	27	-
a 500V ca	kW	7.5	10	13	16	24	28	28	28	-
UTILISATION CATEGORY AND RATED CURRENT «I _e » IN DC										
DC 20A NO-LOADS CONDITION OPERATION										
I _e	16A	25A	32A	40A	63A	100A	125A	200A	-	-
DC 21A RESISTIVE LOADS INCLUDING MODERATE OVERCURRENTS L/R = 1 MILLISECOND MAX.										
I _e	16A	25A	32A	40A	63A	100A	125A	200A	-	-
MAX VOLTAGE FOR EACH POLE IN SERIES										
V	60V	60V	60V	60V	48V	42V	42V	42V	-	-
DC 22A MIXED RESISTIVE-INDUCTIVE LOADS INCLUDING MODERATE OVERCURRENTS L/R= 2.5 milliseconds max (e.g. shunt motors)										
I _e	16A	25A	32A	40A	63A	100A	125A	200A	-	-
MAX VOLTAGE FOR EACH POLE IN SERIES										
V	48V	48V	48V	42V	42V	30V	30V	30V	-	-
DC 23A HIGHLY INDUCTIVE LOADS L/R= 15 milliseconds max. (e.g. motors in series)										
I _e	16A	25A	32A	40A	63A	100A	125A	200A	-	-
MAX VOLTAGE FOR EACH POLE IN SERIES										
V	30V	30V	30V	30V	30V	30V	30V	30V	-	-
MAX FREQUENCY OF OPERATIONS AT RATED CURRENT										
operations/hour	120	120	120	120	120	120	120	120	60	60
CONNECTION TERMINALS										
RIGID CONDUCTOR SECTION										
max mm ²	4	6	10	10	25	35	-	-	-	-
min mm ²	1	2,5	1	6	10	10	-	-	-	-
FLEXIBLE CONDUCTOR SECTION										
max mm ²	4	6	10	10	16	25	70*	70*	*	*
min mm ²	1	1,5	1	1	6	10	16*	16*	*	*
*) WITH BOLTED CLAMP FOR TERMINALS						M10	M10	M12	M16	
AMBIENT TEMPERATURE max + 55°C min -20°C - On request: operation at minimum temperature (Tmin) of down to -45°C										

Rotary control devices in box

Technical data
CAM-Ex Series

Technical Sheet

CONSTRUCTIONAL CHARACTERISTICS OF THE ENCLOSURES FOR THE CONTROL DEVICES:

in insulating material:

- mounting boxes and covers are made of thick reinforced thermosetting technopolymer (SMC or CMC or BMC, according to type), with excellent dimensional stability, non-deformability and resistance to extremes of heat and fire, chemical and atmospheric agents, and mechanical stress even at very low temperatures. All these properties ensure maximum performance in any environment, even when chemically aggressive, and are state-of-the-art in terms of insulating material.

in metal:

- base boxes and covers made of UNI-5076 Light Alloy with a high aluminium content are oven-painted internally and externally after chrome galvanising treatment; due to the great thickness of the material used to make these containers, top level performances are assured in any environment, even if chemically aggressive, together with very high resistance to impacts. These enclosures, with regard to resistance to very heavy environmental stresses, as classified by Standard CEI EN 607213-4 for environments totally exposed to bad weather conditions, are state-of-the-art.

Suitability for use in particular environments

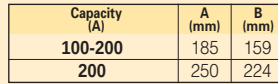
Type of environment	Area class or type	Type or series of devices or enclosures	
		Thermosetting CAM-Ex - IP65	Aluminium CAM-Ex - IP55
Risk of explosion or fire 	COZR	●	●
	Fire risk a	●	●
	Fire risk b	●	●
	Fire risk c	●	●
	ATEX Area 2	●	●
	ATEX Area 22	●	●
Particular environment 	IE35	○	○
	IE36	○	○
	IE41	●	●
	IE42	○	○
	IE43	○	○
Presence of water 	Drops	●	●
	Splashes	●	●
	Jets	○	○
	Immersion	X	X

● Exceeds requirement

○ Suitable

⊕ This depends on the type of equipment, so contact our technical support service.

X Not suitable

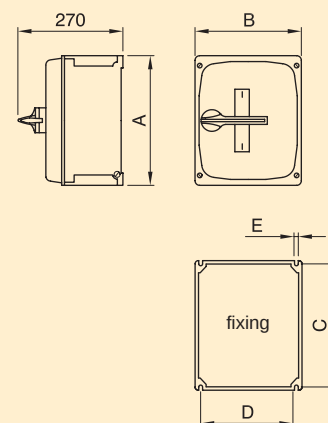
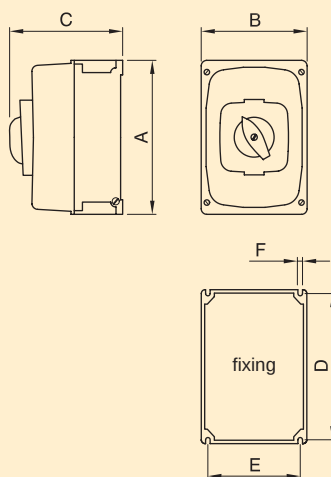
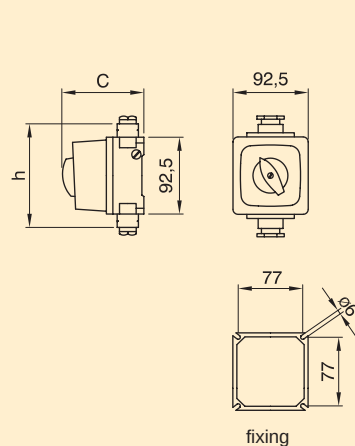


Capacity (A)	A (mm)	B (mm)	C (mm)	D (mm)
100	370	250	344	224
200-250	500	370	474	344

Palazzoli

Rotary control devices in box

Dimensions



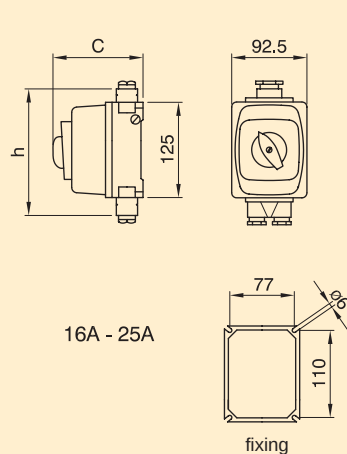
Code	h (mm)	C (mm)
272141	130	87
272142	130	103
272143	130	103
272148	130	87

Code	h (mm)	C (mm)
272178	130	103
272241	137	87
272242	137	103
272243	137	103

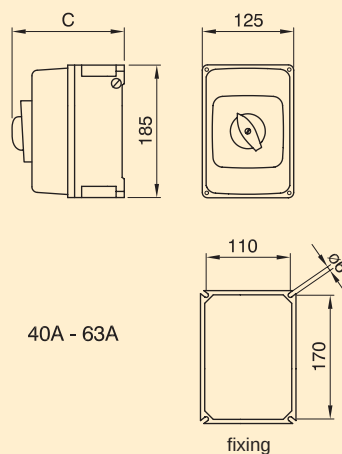
Capacity (A)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
40	125	125	137	110	110	6
40	185	125	150	170	110	6
63	185	125	150	170	110	6
63-6P	185	125	170	170	110	6
100	252	185	230	237	170	7
200	315	220	240	299	192	9

Capacity (A)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
400	315	315	299	286	9
800-1200	507	507	485	464	12

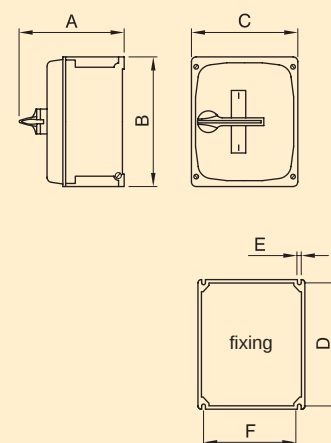
CAM-Ex rotary control devices-watertight switches in metal enclosure



16A - 25A



40A - 63A



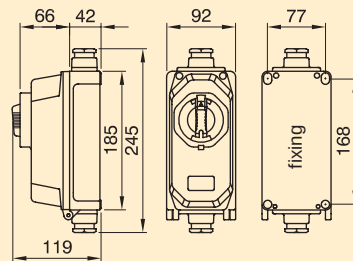
Code	h (mm)	C (mm)
272144EX	176	120
272146EX	173	120
272147EX	173	135
272244EX	176	120
272246EX	176	120
272247EX	176	135

Code	C (mm)
272304EX	150
272306EX	150
272307EX	170
273212EX	150
272313EX	170

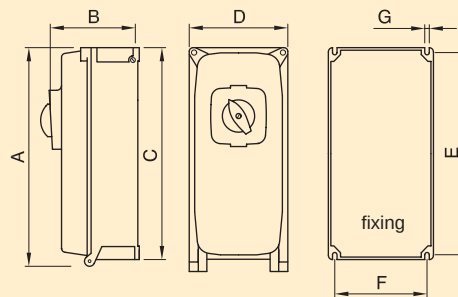
Code	C (mm)
272402	150
272403	150
272404	170
272406	170
272412	170

Capacity (A)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
63	195	185	252	170	7	237
100	270	315	315	299	9	286
100	270	315	252	299	9	223
200	270	373	373	351	12	330
400	270	507	507	485	12	464

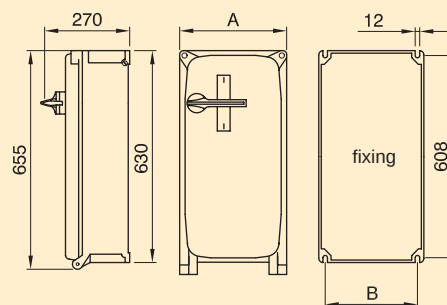
CAM-Ex rotary control devices-watertight selector switches in metal enclosure.



25A



Capacity (A)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
40-63	264	152	252	125	237	110	6
100	386	230	373	185	356	168	7
200	525	240	507	220	491	192	9



Capacity (A)	A (mm)	B (mm)
400	315	272
600	373	330

CAM-Ex rotary control devices-watertight switches in metal enclosure with fuse-holder base

Sirens and bells for alarms and signalling

Technical data and dimensions of ALARM-Ex Series sirens

Reference standards:

IP protection rating

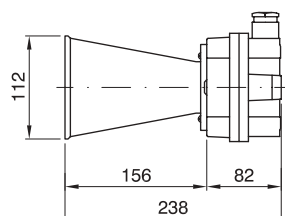
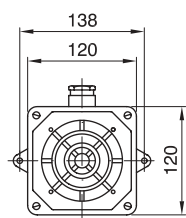
CEI EN 60529
IEC 529
CEI 70-1

Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Technical sheet for sirens

DIMENSIONS:



GENERAL CHARACTERISTICS:

Watertight sirens suitable for continuous extended operation.
Room temperature from -40°C to +50°C.
Stainless steel vibrating membrane.
Diffuser disk in anodized anticorrosion alloy.
Winding impregnated with paints for tropical climates.
2.5 mm² internal two-pole terminal block in thermosetting material, for connecting conductors.
Internal and external earth terminals.
Stainless steel screws for fixing cover and sound directional horn.
Gaskets in non-ageing elastomer on cover and membrane.

SOUND LEVEL in decibels (dB) in free space at a distance of 3m:

Siren with grid: 97 dB with a.c. 50 Hz – 95 dB with a.c. 60Hz
Siren with horn: 98 dB with a.c. – 96dB with a.c. 60Hz

ELECTRICAL CHARACTERISTICS:

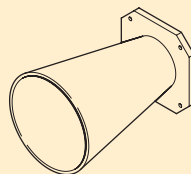
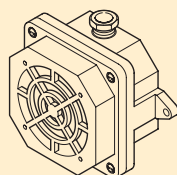
Rated voltages 24-110-220V.a.c.
Input power 60VA on connection, 25VA in operation

Voltage threshold	50Hz	50Hz	50Hz	60Hz	60Hz	60Hz
Rated voltage (V)	24	110	220	24	110	220
Minimum Voltage (V)	19	87	176	21	99	198
Minimum Voltage (V)	26	121	242	26	121	242

The alternated current sirens have no power supply unit and therefore are not suitable for direct current operation. They have been calibrated to work at 50Hz. In order to optimize operation at a frequency of 60Hz, just make the adjustment using two screws that fix the core to the structure.

CONSTRUCTIONAL CHARACTERISTICS:

A directional horn can be applied to the front sound emission panel protected by a grid.



Suitability of sirens in particular environments

Type of environment	Area class or type	Dev. or encl.	Type of environment	Area class or type	Dev. or encl.	Type of environment	Area class or type	Dev. or encl.
Risk of explosion or fire 	COZR	●	Particular environment 	IE35	○	Presence of water 	Drops	●
	Fire risk a	●		IE36	○		Splashes	●
	Fire risk b	●		IE41	●		Jets	○
	Fire risk c	●		IE42	○		Immersion	X
	ATEX Area 2	●	● Exceeds requirement ○ Suitable			☉ This depends on the type of equipment, so contact our technical support service		
	ATEX Area 22	●				X Not suitable		

Technical data and dimensions of ALARM-Ex Series bells

Control, protection and
signalling devices



Reference standards:

IP Protection rating

CEI EN 60529
IEC 529
CEI 70-1

Protection modes

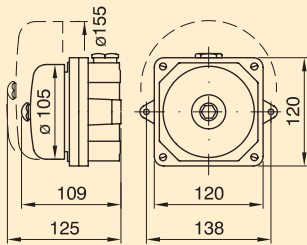
CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Technical sheet for bells

GENERAL CHARACTERISTICS:

*Watertight bells suitable for continuous extended operation.
Room temperature from -40° to +50°.
Assembly position preferably with striker facing downwards.
Stainless steel striker.
Winding impregnated with paints for tropical climates.
2.5 mm² internal two-pole terminal block in thermosetting material, for connecting terminals.
Internal and external earth terminal (exposed conductive part) screw
Stainless steel screws for fixing cover and drum.
Gasket in non-ageing elastomer on cover and striker.*

DIMENSIONS:



SOUND LEVEL in decibels (dB) in free space at a distance of 3m:

with Ø105 drum: 91 dB – with drum Ø155: 94 dB.

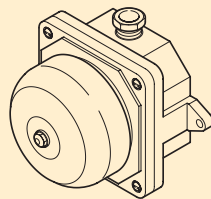
ELECTRICAL CHARACTERISTICS:

Rated voltage: 24-110-220V a.c.
Input power 13VA on connection, 11VA in operation

Voltage threshold	50Hz	50Hz	50Hz	60Hz	60Hz	60Hz
Rated voltage (V)	24	110	220	24	110	220
Minimum Voltage (V)	20	94	187	21	99	198
Maximum Voltage	26	121	242	26	121	242

The alternated current bells have no power supply unit and therefore are not suitable for direct current operation. They have been calibrated to work at 50Hz. For operation at a frequency of 60Hz, you need to position the striker closer to the drum by simply adjusting the internal support protection.

CONSTRUCTIONAL CHARACTERISTICS:



Type:
IP 66 box with cover in light alloy with chromate treatment, which increases protection against corrosion. Steel drum painted before special anti-rust treatment. Box as above in oven-painted and die-cast brass.

Bells suitability for use in particular environments

Type of environment	Area class or type	Dev. or encl.	Type of environment	Area class or type	Dev. or encl.	Type of environment	Area class or type	Dev. or encl.
Risk of explosion or fire 	COZR	●	Particular environment 	IE35	○	Presence of water 	Drops	●
	Fire risk a	●		IE36	○		Splashes	●
	Fire risk b	●		IE41	●		Jets	○
	Fire risk c	●		IE42	○		Immersion	X
	ATEX Area 2	●	● Exceeds requirement ○ Suitable ☉ This depends on the type of equipment, so contact our technical support service.			X Not suitable		
	ATEX Area 22	●						

Small devices in modular enclosures

Technical data
TAIS MIGNON-Ex Series
RONDÒ-Ex Series

Reference standards

IP

rating
CEI EN 60529
IEC 529
CEI 70-1

Devices for domestic and similar use

CEI EN 60669-1

Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Control devices characteristics

The small control and junction devices are available in two series:

- **TAIS-MIGNON-Ex series**
- **RONDÒ-Ex series**

with specific characteristics indicated below.

TAIS MIGNON-Ex series devices

SPECIFIC CONSTRUCTIONAL CHARACTERISTICS OF THE SMALL CONTROL DEVICES AND ACCESSORIES:

- this series of devices uses switch components with contact shoes in silver alloy and single or double opening. The devices are made of reinforced, high resistance technopolymer, suitable for prolonged use and under heavy working loads. An incorporated sealing membrane ensures a high protection rating by isolating and separating the functional parts from the control parts. This makes it possible to use these devices even in extreme conditions, since this membrane, now internally fitted, keeps the sealing properties to original levels over a longer time.

CHARACTERISTICS OF THE ENCLOSURES:

- enclosures for devices from the TAIS MIGNON-Ex series are made of reinforced technopolymer, with excellent dimensional stability, non-deformability and resistance to extremes of heat and fire, chemical and atmospheric agents, and mechanical stress even at very low temperatures. These properties ensure maximum performance in any environment, including chemically aggressive ones, so that you can install systems outdoors where there are extreme temperature changes, in either tropical or polar climates.



RONDO-Ex series

CONSTRUCTIONAL CHARACTERISTICS OF DEVICES IN METAL CASE:

- the devices of this series have a structure in die-cast UNI-5076 Light Alloy with a high aluminium content, oven-painted internally and externally over a pre-treatment of chromate galvanising for maximum rust resistance. The heavy thickness of the material used for making these enclosures assures maximum results in any environment, even when chemically aggressive, and are state-of-the-art in terms of metal structures due to the high impact resistance;
- the unlosable screws for the covers are in stainless steel, with gaskets in non-ageing elastomer;
- earth connection screws are made with both internal and external screws;
- the control devices and the socket-outlets have internal components made in self-extinguishing thermoplastic technopolymer, with the electrical contact parts treated to meet the needs of heaviest-duty.

TECHNICAL INFORMATION

control devices (standard CEI EN 606691 – CEI 23-9)

Rated voltage:	250V
Rated current:	16A
Rated voltage:	380V
Rated current:	10A

The control devices can also be used for inductive loads with $\cos\theta = 0.65$ with operating current reduced to 70% of the rated current. For other specifications, see the indications of the respective product standards.

CHARACTERISTICS OF THE MATERIAL INCLUDING THE DEVICE BASES:

GWT 960°C

Self-extinguishing class V0

CHARACTERISTICS OF THE MATERIAL INCLUDING THE ENCLOSURE (IF IN RESIN):

GWT 850°C

Self-extinguishing class V2

Suitability of devices in protected box for use in particular environments

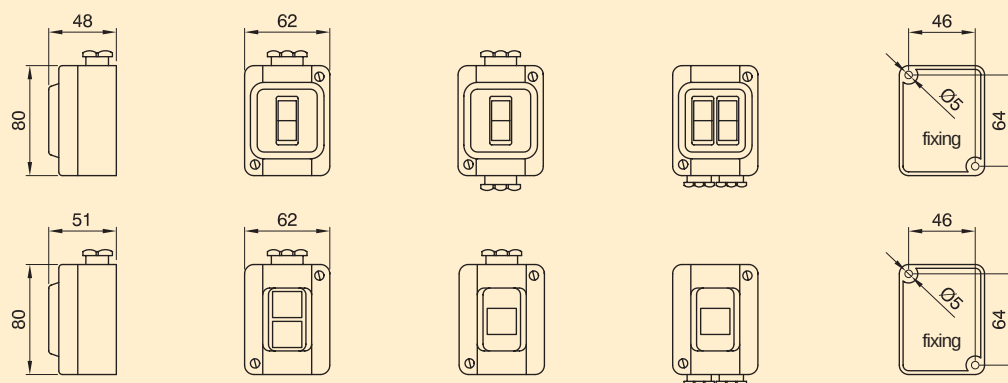
Type of environment	Area class or type	Type or series of devices or enclosures	
		TAIS-MIGNON-Ex	RONDÒ-Ex
Risk of explosion or fire 	COZR	●	●
	Fire risk a	●	X
	Fire risk b	●	●
	Fire risk c	●	●
	ATEX Area 2	●	●
	ATEX Area 22	●	●
Particular environment 	IE35	○	○
	IE36	○	○
	IE41	●	○
	IE42	○	○
Presence of water 	Drops	●	●
	Splashes	●	●
	Jets	○	○
	Immersion	X	X

● Exceeds requirement
○ Suitable

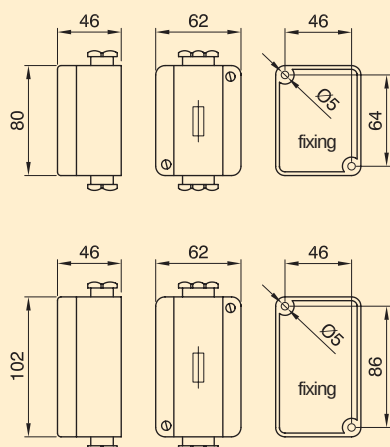
⊕ This depends on the type of equipment, so contact our technical support service
X Not suitable

Small devices in modular enclosures

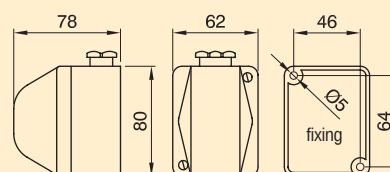
Dimensions



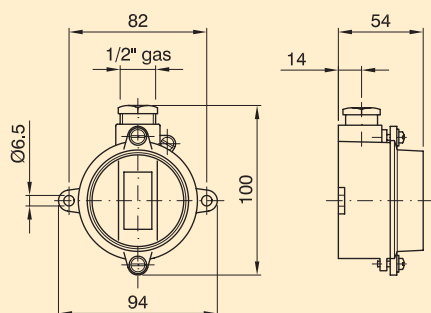
TAIS-MIGNON-Ex Series Switches, two-way switches, selector switches, push-buttons



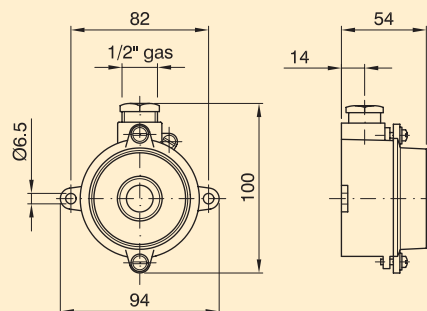
**TAIS MIGNON-Ex Series
Fuses in watertight wall-mounting enclosure**



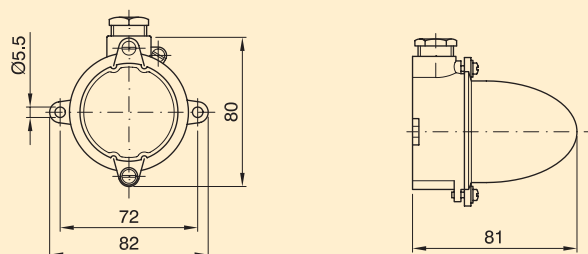
**TAIS MIGNON-Ex Series
Signal lamps in watertight wall-mounting enclosure**



RONDÒ-Ex Switches, two-way switches and selector switches in watertight wall-mounting enclosure



RONDÒ-Ex Pushbuttons in watertight wall-mounting enclosure



RONDÒ-Ex wall-mounting signal lamps

Lighting fixtures in aluminium alloy

RINO-Ex Series technical data

Reference standards:

Lighting fixtures for general use

CEI EN 60598-1 CEI EN 60598-2-1
CEI 34-21 CEI 34-23

Edison Lampholder

CEI EN 60238
CEI 34-11

Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Technical Sheet

GENERAL CHARACTERISTICS:

- all items from the RINO-Ex lighting series have structures in die-cast UNI-5076 Light Alloy with a high aluminium content, oven-painted internally and externally over a pre-treatment of chromate galvanising for maximum rust resistance. The thickness of the material used for making these enclosures assures maximum results in any environment, even when chemically aggressive, and is state-of-the-art in terms of metal structures due to the high resistance to impact;
- unloosable screws for closing the lids are made of stainless steel, with gasket in non-ageing elastomer;
- incandescent lamps versions have E27 porcelain safety lampholders;
- G23 safety lampholders for fluorescent lamps, together with ballast, on internal reflector plate;
- earth connection has internal screws;
- standard diffusers are in ribbed prismatic clear glass. Diffusers in smooth coloured glass (for 60W type), or in smooth coloured polycarbonate (with derating max. 40W) are available for cylindrical lighting fixtures only;
- the materials used for all the items for incandescent lights in this series make them suitable for use even at very low temperatures (down to constant -40°C) and in particularly harsh atmospheres.

CONSTRUCTIONAL CHARACTERISTICS:

IP65 protection rating

Max. lamp power installable see table page. 117

Type of direct lighting - class UTE - A

Protective steel wire cage

Impact resistance

Body 30J

Steel wire guard: 10J

Die-cast guard: 6J

Diffuser in
prismatized
diffusing glass

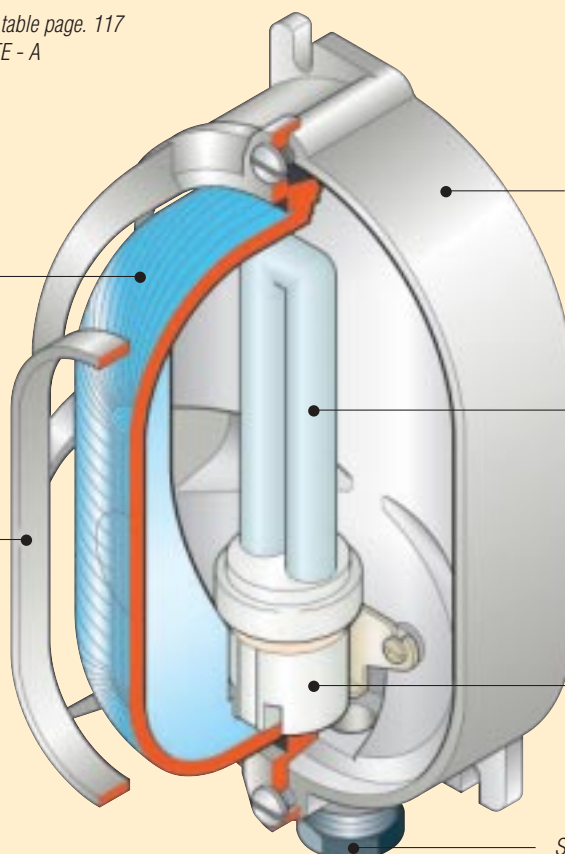
Protective
wire cage

Aluminium alloy housing
of high mechanical strength

Compact fluorescent
or incandescent lamps

Lampholder E27 or G23

Stepped gland IP65





LIGHT SOURCES:

Luminaire type		Incandescent E27	Flux lm	Mixed light E27	Flux lm	Electronic compact E27	Flux lm
	60W	60W max	730	-	2000	Philips PL-E-T 15W max Philips PL-E-C 11W max	900 600
	100W	100W max	1300	-	2000	Osram Dulux EL 20W max Philips PL-E-T 20W max Philips PL-E-C 15W max	1200 1200 600
	200W	200W max	3100	160W max	6500	Osram Dulux EL 23W max Philips PL-E-T 23W max Philips PL-E-C 15W max	1200 1200 900
Fixture type		Incandescent E27	Flux lm	Mixed light E27	Flux lm	Electronic compact E27 or G23	Flux lm
	60W	60W max	730	-	2000	-	-
	100W	100W max	1300	-	4000	Philips PL-E-T 15W max Philips PL-E-C 11W max	900 600
	200W	200W max	3100	160W max	6500	Osram Dulux EL 23W max Philips PL-E-T 23W max Philips PL-E-C 15W max	1200 1200 900
	5-7-9W	-	-	-	-	Fluorescent compact G23 9W max	400
	100W	100W max	1300	125W	6500	-	-

* The models shown have been tested, but this does not exclude the use of other compatible makes and versions.

Suitability for use in particular environments for oval luminaires and cylindrical lighting fixtures IP65

Type of environment	Area class or type	Type or series of devices or enclosures	
		for lamps 5-7-9W T6	with lamps E27 T3
Risk of explosion or fire 	COZR	●	●
	Fire risk a	○	○
	Fire risk b	●	●
	Fire risk c	●	●
	ATEX Area 2	●	○
	ATEX Area 22	●	○
Particular environment 	IE35	○	○
	IE36	○	○
	IE41	○	○
	IE42	X	X
Presence of water 	Drops	●	●
	Splashes	●	●
	Jets	○	○
	Immersion	X	X

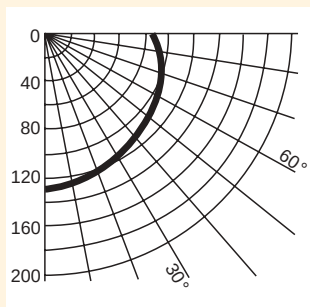
● Exceeds requirement
○ Suitable

⊕ This depends on the type of equipment, so contact our technical support service.
X Not suitable

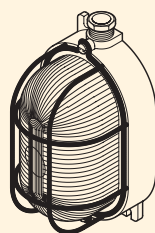
Lighting fixtures in aluminium alloy

Technical data
RINO-Ex Series

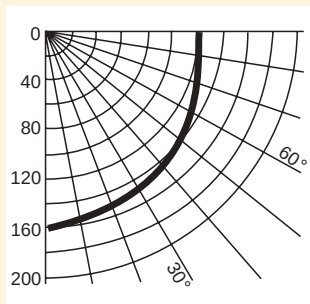
PHOTOMETRIC INDICATORS



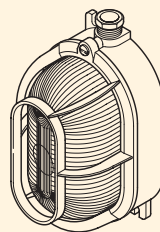
OVAL LIGHTING FIXTURES:



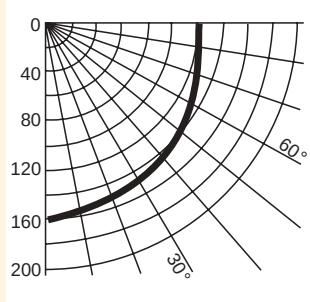
831072EX
831092EX
831172EX
831192EX
831272EX
831292EX
831934EX



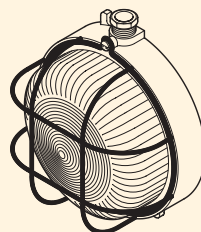
OVAL LIGHTING FIXTURES:

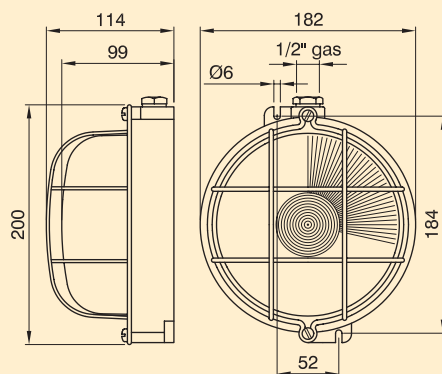


831075EX
831095EX
831175EX
831195EX
831275EX
831295EX
831954EX

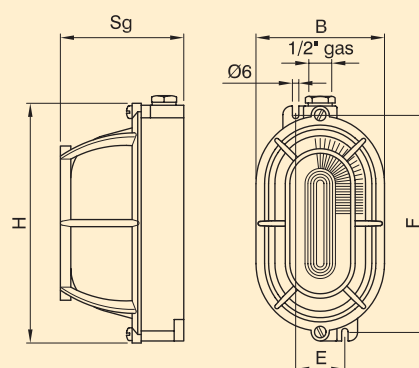
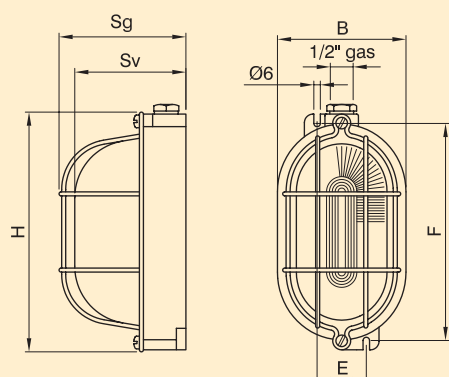


ROUND LIGHTING FIXTURES: code 830072EX





Watertight round lighting fixtures



Oval lighting fixtures	Without cage Sv
from 60W	100
from 100W	105
from 200W or 5-7-9W	127

With wire cage Sg	Common Dimensions mm			
	B	H	E	F
119	112	199	42	184
122	130	226	42	210
142	170	295	52	278

Oval lighting fixtures	with die-cast cage				
	B	H	Sg	E	F
from 60W	115	201	106	42	184
from 100W	133	229	113	42	210
from 200W or 5-7-9W	174	297	137	52	278

Watertight oval lighting fixtures

Watertight stainless steel lighting fixtures

Technical data
RINO-Ex Series

Reference standards

Lighting fixtures

CEI EN 60598-1
CEI EN 60598-2-1
CEI 34-21

Protection rating

CEI EN 60529
IEC 529
CEI 70-1

Protection modes

CEI EN 50021 (Gas)
CEI 31-11
CEI EN 50281-1-1 (Dusts)
CEI 31-37

Technical Sheet

GENERAL CHARACTERISTICS:

- the RINO-Ex series watertight lighting fixtures in AISI 304 stainless steel have a tempered glass diffuser and a corrosion resistant aluminium reflector, which has been specially anodized and polished. This structure consists of an enclosure that protects against the harshest climatic conditions and corrosion of highly aggressive atmospheres. In particular, the IP66 protection prevents any dust from entering the device, which can cause a drastic deterioration in photometric output.
- the AISI 304 stainless steel body and glass diffuser are totally resistant to the harshest environments such as salt spray fog and sulphurous anhydride, and are not damaged by the prolonged effects of the sun's direct rays.
- these characteristics allow the lighting fixtures to be used both in normal conditions, such as machine shops and food industries, and in difficult environments such as refineries, chemical industries and spray painting rooms, etc.
- these fixtures hold fluorescent tubular lamps of up to 3x36W (9000lm), which are available in different shades and colour representations. Due to the constantly specular reflector and the internal white painted steel body with a high reflection factor, these lighting fixtures can be used in environments where the standard UNI 10380 requires very high performances in lighting technology, such as final assembly industries and textile industries, etc.
- wiring: power supply 250V 50/60Hz. Rigid leads with PVC-HT sheath resistant to 90°C as per Standards CEI 20-20. 2P+± terminal box with maximum cable cross-section of 2.5 mm².

Watertight stainless steel lighting fixture with tempered glass diffuser 250V 50/60 Hz - IP66

GENERAL CHARACTERISTICS:

AISI 304 stainless steel body and hooks. Diffuser in tempered glass with an impact resistance of 10J. Lampholder type G13.

Uses:

it is suitable for a wide variety of uses, from small workshops to heavy-duty uses, both indoors or outdoors, even in the presence of highly aggressive substances.

Watertight stainless steel lighting fixtures for emergency lighting with tempered glass diffuser 250V - 50/60 Hz - IP66

GENERAL CHARACTERISTICS:

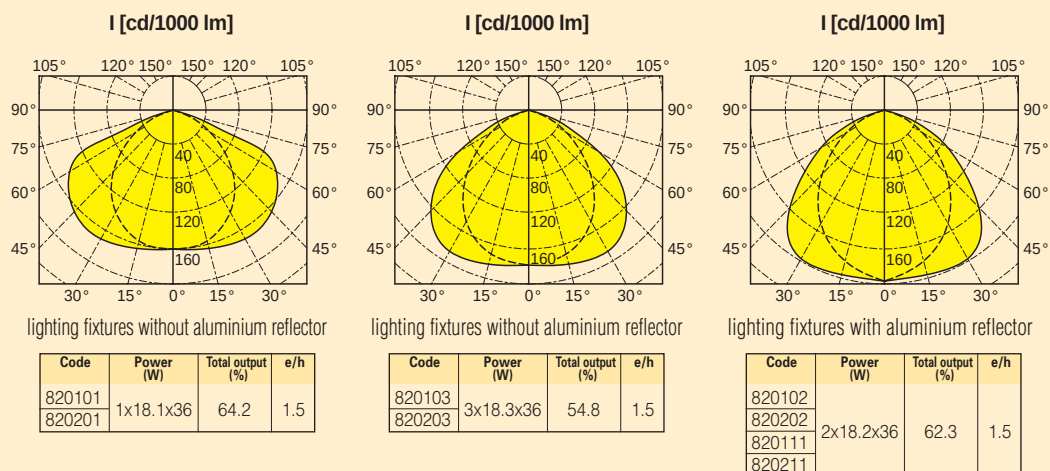
Emergency wiring, permanent type on a single lamp, Ni-Cd battery, inverter, 1h autonomy, 24 h recharging with possibility of inhibition. AISI 304 stainless steel body and hooks. Diffuser in tempered glass with an impact resistance of 10J. Lampholder type G13.

Uses:

it is suitable for a wide variety of uses, from small workshops to heavy-duty uses, both indoors or outdoors, even in the presence of highly aggressive substances. For all cases where lighting is also needed without voltage (e.g. work places in industrial production units).



PHOTOMETRIC INDICATORS



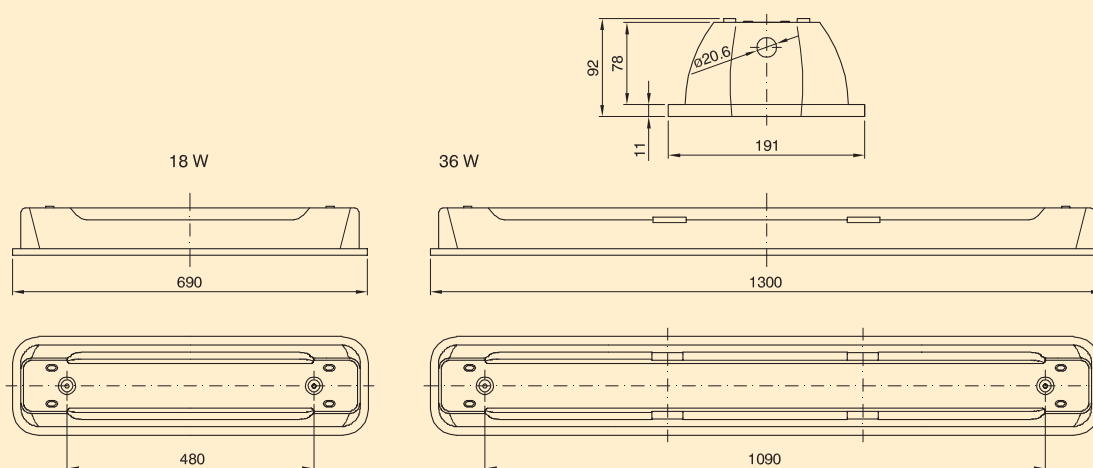
Suitability for use in particular environments

Type of environment	Area class or type	Dev. or encl.
Risk of explosion or fire 	COZR	●
	Fire risk a	○
	Fire risk b	●
	Fire risk c	●
	ATEX Area 2	●
	ATEX Area 22	●
Type of environment	Area class or type	Dev. or encl.
Particular environment 	IE35	●
	IE36	○
	IE41	●
	IE42	○
Type of environment	Area class or type	Dev. or encl.
Presence of water 	Drops	●
	Splashes	●
	Jets	○
	Immersion	X

● Exceeds requirement
 ○ Suitable

☉ This depends on the type of equipment, so contact our technical support service.
 X Not suitable

Dimensions



RINO-Ex Series – Watertight lighting fixtures in stainless steel

Sequential Code Index

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
1EX			
101021EX		50	38
101022EX		25	38
101025EX		50	39
101031EX		25	38
101035EX		25	39
101041EX		25	38
101045EX		20	39
101061EX		25	38
101081EX		20	38
101095EX		10	39
101096EX		20	39
101121EX		10	38
101156EX		10	39
101157EX		10	39
101161EX		25	38
112020EX		25	43
112030EX		25	43
112040EX		25	43
112094EX		30	43
113020EX		20	43
113030EX		20	43
113040EX		20	43
113094EX		20	43
150021EX		10	43
159030EX		10	41-43
159032EX		10	41-43
159033EX		10	41-43
159034EX		10	41-43
159035EX		3	41-43
159036EX		1	41-43
159037EX		1	41-43
159040EX		10	41-43
159042EX		10	41-43
159043EX		10	41-43
159044EX		5	41-43
159045EX		5	41-43
159046EX		1	41-43
2EX			
201151EX		5	67
201152EX		5	67
201155EX		5	67

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
201156EX		6	67
201162EX		5	67
201166EX		5	67
202261EX		10	63
202262EX		20	63
202265EX		5	63
202266EX		5	63
202271EX		20	63
202275EX		10	63
202276EX		20	63
202282EX		20	63
202283EX		20	63
249538EX		2	15
249550EX		2	15
259538EX		2	15
261021EX		5	67
261403EX		5	64
261413EX		5	64
261433EX		10	64
261435EX		20	64
261445EX		10	64
272141EX		6	55
272142EX		6	55
272143EX		6	55
272144EX		1	55
272146EX		1	55
272147EX		1	55
272241EX		1	55
272242EX		6	55
272243EX		6	55
272244EX		1	55
272246EX		1	55
272247EX		1	55
272301EX		1	55
272302EX		1	55
272303EX		1	55
272304EX		1	55
272306EX		1	55
272307EX		1	55
272502EX		1	55
272503EX		1	55
272507EX		1	55

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
274031EX		1	56
274032EX		1	56
274033EX		1	56
274302EX		1	56
274303EX		1	56
274304EX		1	56
282402EX		1	55
282403EX		1	55
282404EX		1	55
282406EX		1	55
282407EX		1	55
282603EX		1	55
282607EX		1	55
282703EX		1	55
282707EX		1	55
283053EX		1	56
283063EX		1	56
283073EX		1	56
283082EX		1	56
284042EX		1	56
284043EX		1	56
290521EX		1	54
290522EX		1	54
290523EX		1	54
290641EX		1	54
290642EX		1	54
290643EX		1	54
290762EX		1	54
290763EX		1	54
292101EX		5	53
292102EX		5	53
292103EX		5	53
292201EX		5	53
292202EX		5	53
292203EX		5	53
292301EX		1	53
292302EX		1	53
292303EX		1	53
292411EX		1	53
292412EX		1	53
292413EX		1	53
292503EX		1	53

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
292603EX		1	53
292623EX		1	53
292703EX		1	53
292733EX		1	53
293053EX		1	54
293063EX		1	54
293263EX		1	54
3EX			
302044EX		20	65
302054EX		20	65
302144EX		20	65
302154EX		20	65
4EX			
400124EX		1	21
400126EX		4	21
400129EX		1	21
400134EX		1	21
400136EX		4	21
400137EX		1	21
400139EX		1	21
400144EX		1	21
400146EX		4	21
400147EX		1	21
400149EX		1	21
400226EX		4	21
400234EX		1	21
400236EX		4	21
400237EX		1	21
400239EX		1	21
400244EX		1	21
400246EX		4	21
400336EX		4	21
400337EX		1	21
400339EX		1	21
400346EX		4	21
403124EX		1	22
403126EX		6	22
403129EX		1	22
403134EX		1	22
403136EX		4	22
403139EX		1	22
403144EX		1	22

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
403146EX		1	22
403149EX		1	22
403226EX		1	22
403234EX		1	22
403236EX		4	22
403239EX		1	22
403244EX		1	22
403246EX		4	22
403336EX		1	22
403339EX		1	22
403346EX		1	22
408126EX		1	22
408136EX		1	22
408146EX		1	22
408226EX		1	22
408236EX		1	22
408246EX		1	22
408336EX		1	22
408346EX		1	22
415000EX		1	23
415001EX		4	23
415002EX		2	23
470126EX		1	27
470136EX		1	27
470146EX		1	27
470226EX		1	27
470236EX		1	27
470246EX		1	27
470336EX		1	27
470346EX		1	27
472233EX		1	32
472243EX		1	32
472246EX		1	32
472253EX		1	32
472256EX		1	32
472333EX		10	32
472336EX		1	32
472343EX		5	32
472346EX		1	32
472347EX		1	32
472348EX		1	32
472353EX		1	32



Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
472418EX		1 32	
472428EX		1 32	
472433EX		1 32	
472443EX		10 32	
472446EX		1 32	
472447EX		1 32	
472453EX		10 32	
472456EX		1 32	
472457EX		1 32	
472518EX		1 32	
472543EX		1 32	
472546EX		1 32	
472547EX		1 32	
472553EX		1 32	
472610EX		1 26	
472620EX		10 26	
472621EX		1 26	
472630EX		1 26	
472710EX		1 26	
472711EX		1 26	
472720EX		4 26	
472721EX		1 26	
472722EX		1 26	
472730EX		10 26	
472731EX		1 26	
472732EX		1 26	
472750EX		1 26	
472751EX		1 26	
472752EX		1 26	
472810EX		1 26	
472811EX		1 26	
472820EX		1 26	
472830EX		10 26	
472831EX		1 26	
472832EX		1 26	
472840EX		1 26	
474210EX		1 27	
474220EX		1 27	
474230EX		1 27	
474246EX		1 33	
474256EX		1 33	
474310EX		1 27	

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
474320EX		1 27	
474330EX		1 27	
474336EX		1 33	
474346EX		1 33	
474347EX		1 33	
474410EX		1 27	
474420EX		1 27	
474430EX		1 27	
474446EX		1 33	
474447EX		1 33	
474456EX		1 33	
474457EX		1 33	
474621EX		1 27	
474633EX		1 33	
474643EX		1 33	
474653EX		1 33	
474711EX		1 27	
474721EX		1 27	
474722EX		1 27	
474731EX		1 27	
474732EX		1 27	
474733EX		1 33	
474743EX		1 33	
474753EX		1 33	
474811EX		1 27	
474831EX		1 27	
474832EX		1 27	
474833EX		1 33	
474843EX		1 33	
474853EX		1 33	
477203EX		10 14	
477213EX		1 14	
477216EX		10 14	
477223EX		1 14	
477226EX		1 14	
477303EX		50 14	
477306EX		10 14	
477313EX		10 14	
477316EX		10 14	
477317EX		4 15	
477318EX		1 15	
477323EX		1 14	

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
477403EX		1 14	
477413EX		20 14	
477416EX		20 14	
477417EX		10 15	
477423EX		20 14	
477426EX		20 14	
477427EX		10 15	
477513EX		10 14	
477516EX		10 14	
477517EX		10 15	
477523EX		1 14	
5EX			
511910EX		20 43	
511911EX		10 43	
511912EX		10 43	
511913EX		10 43	
511914EX		20 34	
511915EX		10 34	
511916EX		6 34	
511917EX		6 43	
511918EX		6 34	
511919EX		6 34	
511920EX		10 43	
511921EX		5 43	
511922EX		1 43	
511923EX		1 43	
511924EX		1 43	
511925EX		1 43	
511926EX		1 43	
511927EX		1 43	
511928EX		1 43	
511929EX		1 43	
511930EX		1 43	
511931EX		1 43	
531911EX		1 41	
531931EX		1 41	
531940EX		1 41	
531942EX		1 41	
531962EX		1 41	
532005EX		16 40	
532006EX		12 40	
532015EX		8 40	

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532016EX		8 28-40	
532017EX		8 40	
532018EX		4 40	
532035EX		10 40	
532045EX		5 40	
532055EX		5 40	
532116EX		5 40	
532117EX		4 40	
532118EX		5 40	
532618EX		4 28	
532628EX		4 28	
532667EX		6 28	
532725EX		10 40	
532735EX		20 40	
532745EX		20 29-40	
532747EX		10 29-40	
532748EX		20 29-40	
532755EX		10 40	
532765EX		20 29-40	
532768EX		10 29-40	
571007EX		100 45	
571009EX		100 45	
571011EX		100 45	
571013EX		100 45	
571016EX		50 45	
571021EX		25 45	
571029EX		50 45	
571036EX		10 45	
571042EX		5 45	
571048EX		5 45	
571107EX		100 45	
571109EX		100 45	
571111EX		100 45	
571113EX		100 45	
571116EX		50 45	
571121EX		25 45	
571129EX		50 45	
571136EX		10 45	
571142EX		5 45	
571148EX		5 45	
580001EX		10 49	
580002EX		10 49	

Palazzoli Code	Marks	Pack Q.ty	Catalogue Page
580003EX		10 49	
580004EX		10 49	
580005EX		10 49	
580021EX		50 49	
580022EX		50 49	
580023EX		10 49	
580024EX		50 49	
580025EX		10 49	
580026EX		10 49	
580027EX		10 49	
580029EX		10 49	
580031EX		10 49	
580051EX		100 47	
580052EX		100 47	
580054EX		100 47	
580101EX		10 47	
580102EX		10 47	
580104EX		10 47	
580105EX		10 47	
580203EX		1 28-45	
580232EX		100 28-45	
580233EX		20 28-45	
580234EX		20 28-45	
580242EX		50 28-45	
580243EX		20 28-45	
580244EX		10 28-45	
580261EX		10 48	
580264EX		10 48	
580271EX		10 48	
580272EX		10 48	
580274EX		10 48	
580275EX		10 48	
580276EX		10 48	
580291EX		10 48	
580292EX		10 48	
580294EX		10 48	
580295EX		10 48	
580296EX		10 48	
581012EX		100 46	
581016EX		100 46	
581020EX		100 46	
581025EX		100 46	

Sequential Code Index

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581032EX		50	46
581040EX		25	46
581050EX		50	46
581063EX		10	46
581112EX		100	46
581116EX		100	46
581120EX		100	46
581125EX		100	46
581132EX		50	46
581140EX		25	46
581150EX		50	46
581163EX		10	46
590002EX		100	47
590004EX		100	47
590032EX		100	47
8EX			
800061EX		20	65
800062EX		20	65
800063EX		20	65
800064EX		20	65
800121EX		1	67
800122EX		1	67
800123EX		1	67
820101EX		1	74
820102EX		1	74
820103EX		1	74
820111EX		1	75
820131EX		1	74
820132EX		1	74
820133EX		1	74
820151EX		1	74
820152EX		1	74
820201EX		1	74
820202EX		1	74
820203EX		1	74
820211EX		1	75
820231EX		1	74
820232EX		1	74
820233EX		1	74
820251EX		1	74
820252EX		1	74
830072EX		4	71

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831072EX		6	70
831075EX		6	70
831092EX		6	70
831095EX		6	70
831172EX		6	70
831175EX		6	70
831192EX		4	70
831195EX		4	70
831272EX		2	70
831275EX		2	70
831292EX		2	70
831295EX		1	70
831934EX		2	70
831954EX		2	70
9EX			
900253EX		1	59
900263EX		5	59
900273EX		5	59
900453EX		5	59
900463EX		5	59
900473EX		5	59
4			
415801		1	23
415011		1	23
415012		1	23
415802		1	23
415901		1	23
415902		1	23
415903		1	23
415904		1	23
5			
532705		10	40
532714		10	40
532715		5	40
532716		20	29-40
532717		20	29-40
532718		20	29-40
532826		2	35
532836		2	35
532846		2	35
532856		2	35
532866		2	35

Palazzoli Code	Marks	Pack Qty	Catalogue Page
532895		20	35
538703		10	29
538711		10	29
538712		5	29
538791		50	29
540030		100	35-57
540031		50	35-57
540032		30	35-57
540033		20	57
540034		10	57
540035		10	57
540036		4	57
540061		12	35-57
540062		4	35-57
540063		4	57
540064		4	57
540065		4	57
540066		1	57
540090		10	35-57
540091		10	35-57
540141		8	34
540142		8	34
540145		1	34
540151		8	34
540152		8	34
540153		8	34
540154		4	34
540156		1	34
541010		50	34
541011		20	34
541020		50	34
541021		20	34
541030		20	34
541040		10	34
541080		10	34
541090		20	34
571207		100	46
571209		100	46
571211		100	46
571213		100	46
571216		50	46
571221		25	28-46

[illegible][illegible]



TECHNICAL AND SALES SERVICE

Photocopy this form and send to: **Fax no. +39 030.2015217**

Or post to: **Palazzoli SpA** - Marketing Department - Via F. Palazzoli, 31 - 25128 Brescia (BS) - Italy

First name

Surname

Company Name

Address Street No.

Postcode Town

PROV. TEL. FAX

E-Mail

POSITION IN COMPANY

VAT NUMBER

EMPLOYEES ☐ up to 2 ☐ from 3 to 9 ☐ from 10 to 49 ☐ over 50

Sector ☐ Installation ☐ O.E.M. ☐ Design ☐ Distribution

Other (please specify):

PRIVATE ☐

INFORMATION REQUIRED / SUGGESTIONS

In accordance with Italian Law 675/96 we guarantee that all the information given shall be kept and treated with strict confidentiality, and shall be used for commercial and promotional purposes only.

[illegible]



Notes:

General sale and supply terms

PALAZZOLI S.p.A.
INDUSTRIA ELETTROTECNICA
25128 BRESCIA - ITALIA - Via F. Palazzoli, 31
tel. +39 030.2015.1 fax +39 030.2015.217
<http://www.palazzoli.it>
E-mail: palazzoli@palazzoli.it



Fully p.u. capital 5.096.000 Euro
Fiscal code 04452750484
VAT code 03316260177
Brescia Chamber of C. N° 356562
Brescia Court N° 04452750484
Data code BS 058237

(Registered in Brescia 6 March 1956, N° 9907, Mod. 2, Vol. 359, Private Acts) OFFERS - ESTIMATES - DESIGNS

- 1 - Prices and terms are binding only at the moment we accept the order with written confirmation.
- 2 - The terms and other commitments taken on by us with the offer are only valid if the order extends to everything that is included in the offer.
- 3 - Estimates, general projects, etc. attached to the offer are our exclusive property and thus may not be disclosed to others without our written approval.
- 4 - Any alteration to the offer and to these general supply terms must be in written form and limited to what has been explicitly agreed.

WEIGHTS - DIMENSIONS - TECHNICAL DATA

- 5 - Estimates, plans, drawings and technical data given in the catalogues, price lists and offers are only approximate until such time as they are confirmed or replaced by definitive data, total or partial, at the moment of ordering.

PRICES

- 6 - The prices and discounts in the price lists and offers may be subject to change depending on the requirements of the market or relating to variations in the costs of raw materials or manpower, without prior notice to customers. The prices given are ex-factory, transport, customs, duties, and rights of any nature are always to the customer's charge, unless otherwise agreed in written form.

PACKING AND TRANSPORT

- 7 - Returns are not accepted on packing. Under no circumstance can our company be held liable for failed or irregular deliveries by carriers, and it is to be expressly understood that goods, even where by special agreement they are sold with free delivery or delivered to the customer's domicile, will always travel at the buyer's full risk. Any return of goods must be authorised beforehand by our company and arrive free of all expense in the warehouse of our factory.

DELIVERY TERMS

- 8 - The delivery terms agreed on are approximate and not binding and, under the clause "providing unsold" for goods signalled as being ready, it is intended to be valid only in normal work and supply conditions. In no circumstance and for no reason will our company be held liable to make a reimbursement for any direct or indirect damage due to delays in delivery.

PAYMENT

- 9 - The payment conditions must be agreed on in written form or, otherwise, they are understood to be for the net amount in cash at the moment of delivery of the goods. In the case of delayed payment, the customer undertakes to pay interest at an average market rate applied by the Bank, increased by 4%. If the buyer does not comply with, even only partly, any of the agreed conditions for collecting the goods or for the regular payment of single invoices, our company has the option of immediately interrupting further deliveries and to consider itself released from any contractual commitment, but maintaining all rights regarding the buyer's failure to comply with the contract. Unless otherwise expressly agreed on, payments must always be made directly to our company.

CLAIMS

- 10 - Any claims regarding goods supplied must reach us within 12 days of delivery of the same, after which time they will not be accepted. Any claim must be based on firm data in order to be taken into consideration. We reserve the option of taking back or replacing goods that the customer demonstrates to us to be defective, but we will not acknowledge any payment made for repairs or exchange which have been done without our authorisation. It is to remain understood that any claims put forward on single parts of the order will not affect the rest of the order or undertaking, nor the payment for goods received without objection.

WARRANTIES

- 11 - The warranties that we adopt for material manufactured by us will last 12 months from the date of the invoice concerned. It is understood that, during this period, we undertake to repair or replace free of charge in our workshop those parts or devices which, by defect in manufacture or materials, are considered to be unusable. Nonetheless, we reserve the right to decide in our sole opinion, if it is better to repair or to replace them. We shall not send our staff on site for inspection purposes of places where our equipment has been used in systems, apart from those cases where it is necessary to check the operating conditions to which our equipment has been subject.
- 12 - Our warranty has natural effect only if the apparatus has been perfectly installed and managed, if it has not been tampered with or modified, and if all the technical regulations contained in our catalogues and instruction sheets have been followed. The warranty does not cover those items which, by the nature of the material of which the items are made or due to their specific use, are subject to early wear, and in the same way, breakdowns due to normal wear and tear are excluded.
- 13 - The customer must give written notice of faults and defects detected, with a precise report on their nature. We undertake to repair or replace the item, within a reasonable period, as per the above mentioned circumstances and terms. Material to repair or replace must be returned to us free of charge.
- 14 - Our company, with the repair or replacement of items or parts which were defective, is to be considered released of all further liability. Moreover, the customer must, by way of this, consider himself satisfied and waive any request for damages and expenses. In particular cases we may permit the customer to provide for repair or replacement himself, with our only obligation being to reimburse the out-of-pocket expenses acknowledged as being essential for putting our equipment into working condition.
- 15 - If there should be a dispute of a technical nature, the parties will obtain the opinion of an inspector to be nominated by agreement or, if there is a dispute over the nomination, then the person will be appointed by the presiding judge of Brescia Court.
- 16 - We will not accept any costs that the buyer has incurred, not even during the warranty period, without our prior written agreement.
- 17 - Our company reserves the right to use, in the manufacture of its equipment, any material that it deems suitable and to make any changes in shape, weight or dimensions in its products that it deems appropriate.

DISPUTES

- 18 - The contracts, even if stipulated with foreign companies or persons or for material supplied abroad, are governed by current Italian law. The competent court will only be that of Brescia notwithstanding articles 31 (et seq.) of the Italian Civil Procedure Code, thereby excluding the customer's possibility of having recourse to Judicial Authorities of any other place, even for investigations or in any connection with the case, but permitting the supplying company the option of taking legal proceedings, as a plaintiff, in the customer's place of residence, in Italy or abroad.
- 19 - Any disputes do not release the customer from complying with the payment terms and do not imply any extension to the times agreed.

Palazzoli reserves the right to modify or improve the product at any time without prior notice.

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