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ATEX
Component and Equipment for
potentially explosive atmospheres





ATEX **Catalogue**



THE PHILOSOPHY

Giovenzana's philosophy is based upon the basic principles of business management, dynamism and continuous research into the operator's needs in the field of man-machine interaction.

These principles, thanks to the experience and professionalism of its staff, guarantees development and growth.

THE HISTORY

With over 60 years experience in this field, coupled with excellent managerial skills, **Giovenzana** has maintained growth relying upon:

- Market research
 - Product placement
 - Manufacturing technology
- and above all, team work.

THE PRODUCTS

Giovenzana, leader in the industrial technology field, is the first choice for:

- Handling equipment
- Automation
- Lifting equipment
- Maintenance
- Command and control of moving parts

Development, design and production are combined to reach a common goal and cover most industrial applications.

QUALITY AS A WAY OF LIFE

The commercial success of a product does not happen by chance but is the end result of the combined efforts of all human resources operating within an organizational structure that is devoted to quality.

Giovenzana is an **UNI EN ISO 9001:2008** certified company.

Today, Giovenzana's goal is not just "to manufacture a quality product", but also to ensure the protection of our cycle processes **Giovenzana's** company is certificated **UNI EN ISO 14001:2004**.

THE PRODUCTION

The solutions offered by **Giovenzana** result from the company's extensive knowledge of the requirements of industrial electrical accessories, and are in line with all relevant international standards. The solutions fall into three main sectors: industrial automation, lift and lifting equipment.

AUTOMATION

Automation includes Phoenix cam switches from 12A to 630A and Regolus switch disconnectors from 25A to 160A; Pegasus control auxiliaries with screw or spring cage terminal contacts blocks; limit switches with safety switches and either die cast or moulded casing; foot switches and micro switches.

LIFT

Throughout the years, continuous technological research and development has made **Giovenzana** the undisputed leader in its field. The range includes:

- pit bottom push button stations
- recall drive control units
- inspection boxes

HANDLING SYSTEM

Handling equipment comprises of single and double row pendant stations up to 14 gang for control and direct switching, position and rotary gear limit switches, slip rings, warning horns, busbar conductor rails and festoon system.

ATEX

Giovenzana has obtained the important certifications for **ATEX and IECEx** company system (QAN and QAR) for the potentially EXplosion ATmospheres. ATEX is the European Directive mandatory in conformity with the International Standard **EN 60079 - IEC 60079**. **Giovenzana** develops projects realize and constructs safety solution systems, equipment and components. The goal is protects people and the environment by the safety of components, systems and equipment.

Our **explosion proof** product catalogue (for Zone 1-2, 21-22 Gas and Dust) is in continuous development by our R&D Engineers.

- Switch Disconnectors Regolus Ex Series
- Enclosures Regolus Ex Series with the largest temperature range: -60°C/+150°C
- Limit Switches Rotary Gear FGR2-Ex Series
- Microswitches MFI-Ex Series

PRODUCTION SURVEILLANCE

Product Certification:
EC-Type Examination Certificate

Production & Quality Certifications:

1. QAN (Quality Assurance Notification) necessary for ATEX
2. QAR (Quality Assessment Report) necessary for IECEx

The manufacturer is obliged to implement in the company, a quality and production system in accordance with ISO/IEC 80079-34. This system involves extraordinary control and security measures which are periodically checked and approved by the Notification Bodies under audit inspections.

With these two important certificates Giovenzana has obtained the authority to design, develop, implement, and construct equipment and components in safety systems solutions.

Our goal is to protect people and the environment by the safety of our systems and products.

The **ATEX mark (ATmospheres EXplosives)** refers to two European directives concerning the risk of deflagration in potentially explosive atmospheres:

- ATEX 94/9/CE: concerns the requirements for electrical and non-electrical equipment used in potentially explosive environments. According to this directive the manufacturer has to comply with the provided requirements and mark the articles in conformity with particular categories.

These directives determine the requirements for the safety and health protection of people, animals and property and carry several procedures for the conformity demonstration of equipment to the directive requirements.

CLASSIFICATION OF DUST HAZARDOUS PLACES

A potentially explosive atmosphere is an atmosphere that could become explosive according to the local conditions of work (environments with a presence of air and flammable substance in the form of gas, smog, steams and dusts).

The ATEX Directive defines two types of explosive atmosphere: for atmospheres with explosive gas Zone 0, 1 and 2; for atmospheres with explosive dusts Zone 20, 21 and 22.

Zone 0: area in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist is present continuously or for long periods of time.

Zone 1: area in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.

Zone 2: area in which an explosive gas atmosphere is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Zone 20: place in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently.

Zone 21: place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur, occasionally in normal operation.

Zone 22: area in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.



IECEX

The IECEx directive facilitates the international exchange and acceptance of product-safety test results amongst participating laboratories for national approval or certification in one or more countries without the need for additional testing.

The IECEx certification system is endorsed by the United Nations and is internationally recognised as the certificate system for promoting the safety of equipment, services and personnel that are associated with devices, systems and installations used in explosive atmospheres.

International Classifications

Other international hazardous area classifications for the marking and purchasing of equipment include INMETRO for the Brazilian market, GOST for products in Russia and Ukraine, NEC for North America.





ATEX DIRECTIVES APPLY TO MANY SECTORS OF INDUSTRIAL PRODUCTION

The companies involved with the ATEX Directives and its risks have the duty to conform when purchasing equipment and also on components certification. For each type of company the dangerous areas and materials that could create a potential risk have been identified.

- SECTOR A: food and agriculture (Dust)
- SECTOR B: fixtures, fittings and metal industries (Dust)
- SECTOR C: aviation, aerospace, naval, automotive, railways (Dust)
- SECTOR D: chemistry (Dust - Gas)
- SECTOR E: combustibles, fuel, energy, metallurgy (Dust - Gas)
- SECTOR F: research, universities and laboratories (Dust - Gas)
- SECTOR G: furniture, carpenters, leather processing, tanneries, textile (Dust)
- SECTOR H: plastics and rubber (Dust)
- SECTOR I: disposal of waste explosives (Dust - Gas)
- SECTOR L: paper mills (Dust)



SECTOR A: FOOD AND AGRICULTURE (Dust) COMPANIES

Biscuits, pasta, semolina and sugar; plant and equipment food processors; coffee roasting, cereal and cocoa grinding companies; bakers, distilleries and mills.

DANGEROUS ZONES

The typical food industry processes involve handling of materials stored in silos, resulting in the release of dust and hazardous ATEX areas. During transport and storage of grains explosive dust can form. The drying, grinding and refining of agricultural and food material is hazardous. In food industries controlled environments are often used for the sterilization of alcoholic substances.

MATERIALS

Cocoa, coffee, cereals (mixed powder), wheat flour, soy flour, gelatin, wheat, milk powder, lactose, rye, whey, sugar, granulated, sugar alcohol.



SECTOR B: FIXTURES, FITTINGS AND METAL INDUSTRIES (Dust) COMPANIES

Metal window frames, metal accessories fixtures, profiling order, metals surface treatment.

DANGEROUS ZONES

Potentially explosive atmosphere for the presence of metallic fine dust caused by machine operations in the production cycle. Accumulation on walls of layers of micro dust and also buildup in crevices and in vending machine. Dust from sanding. In the production of molded metal parts, during the surface treatment (grinding) explosive metal powders can form. This is true particularly in the case of light metals and mixtures of alloys. These metal dusts may result into an explosion hazard in the separators and filters. The conductive powders are the most dangerous ones.

MATERIALS

Active substances, various chemicals, pharmaceuticals and biohazard materials.



SECTOR C: AVIATION, AEROSPACE, NAVAL, AUTOMOTIVE, RAILWAYS (Dust) COMPANIES

Aircraft construction, trains, cars maintenance, precision engineering, from electronic industry to aerospace, spray booths, resins processing.

DANGEROUS ZONES

Appearances of micro-powders in the processing of Hi-Tech components. Processing of the aircraft fuselage. Dust produced by vibration testing of electronic components. Treatment of propellants in the aerospace sector. Intake of fuel from the tank. Procedures for aircraft maintenance. Residues of explosive material in engines. Building wooden boats, handling of resin and the presence of explosive exhalation. Machine operations and hydrocarbons recycling rooms.

MATERIALS

Hydrocarbons, propellants, sanding metal dust, fuels, solvents, magnesium, zirconium, aluminum.

SECTOR D: CHEMISTRY (Dust - Gas) COMPANIES

Paints, colors, soda, alcohol, chemicals, solvents, oils.

DANGEROUS ZONES

Presence of solvents and fumes during the production cycle. Production of Hydrogen in chemical reactions. materials transformation of solid, liquid and gaseous fuels with consequent risk of creating explosive atmospheres. Use of explosive dust or liquids for the synthesis of products. Losses from flanges. Various solvents: acetate, acetylene, acetone, alcohol, ethylene, etc.

MATERIALS

Process chemicals products.



SECTOR E: COMBUSTIBLES, FUEL, ENERGY, METALLURGY (Dust - Gas) COMPANIES

Petrol refining plants, plants which treat gases such as fuel oil and natural gas, metallurgy, electric power production.

DANGEROUS ZONES

Accidental loss and extraordinary transactions of spillage. The hydrocarbons handled in refineries are all flammable and, depending on the flash point, they can generate an explosive atmosphere also at room temperature. The environment in which the oil treatment equipment is located is normally considered an area at risk of explosion. For metallurgical and power generation coke is generally used, it is

highly flammable organic material and there are many scraps of combustible powder.

MATERIALS

Hydrocarbons, LPG, refinery gas, fuels, metal dust, acids, fossil carbon, wood.



SECTOR F: RESEARCH, UNIVERSITIES AND LABORATORIES (Dust - Gas) COMPANIES

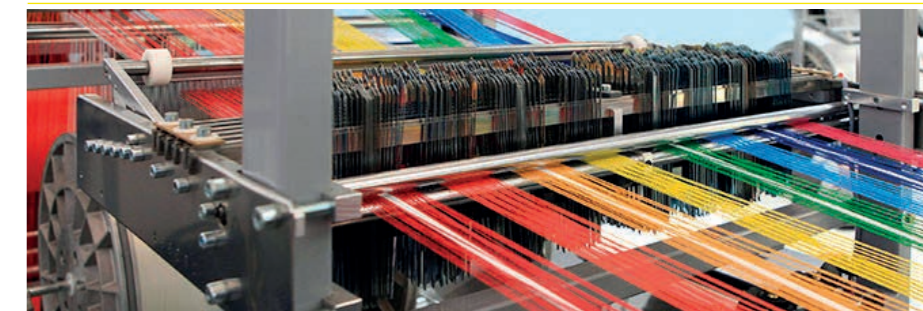
Oxygen cylinders, lab products, test or analysis benches.

DANGEROUS ZONES

Areas used as a warehouse for bottled oxygen or flammable gases. Boxes for explosive or toxic material processing. Appearances of micro-powders in the processing of Hi-Tech components. Use of solvents in laboratory tests. Sterilization of rooms using ethanol or flammable solvents.

MATERIALS

Various solvents, ethanol, alcohol, gas cylinders, oxygen, lab products, electronic micro-powder, resins, gallium arsenide, production photocells, dust from electric circuits, arsine.



SECTOR G: FURNITURE, CARPENTERS, LEATHER PROCESSING, TANNERIES, TEXTILE (Dust) COMPANIES

Kitchens production, wooden furniture production, timber processing, plywood, chipboard. Production of fixtures and doors. Footwear, leather, textile plants.

DANGEROUS ZONES

Wood processing operations produce wood dust which may form explosive mixtures powder / air. Accumulation on walls of layers of micro dust and buildup in the interstices and automatic machinery rooms. Dust from sanding, can represent an explosion risk as well as by inhalation.

MATERIALS

Wood, wood flour (50% stones), wood (beech), wood (pear), sawdust, cork, cellulose (93% softwood, hardwood 6%). Fine dust skin, fibers.



SECTOR H: PLASTICS AND RUBBER (Dust) COMPANIES

Plastics and rubber processing

DANGEROUS ZONES

During transport and storage of plastic or rubber granulate explosive dust can form. In grinders, in storage systems, and dust separation. Some rubbers are made with flammable liquid solutions.

MATERIALS

Polymer of vinyl chloride, plastic Micro Powder.



SECTOR I: DISPOSAL OF WASTE EXPLOSIVES (Dust - Gas) COMPANIES

Landfills, national shooting, automotive.

DANGEROUS ZONES

Production and storage of rockets, smoke bombs, cartridges, buoy smoke, hand flares. In the treatment of wastewater at treatment plants, biogas may form explosive gas / air mixtures. Microbursts for safety systems such as Air Bag or similar. Disposal of dust, dynamite, blasting caps, fireworks and ammunition safety.

MATERIALS

Explosive or metal powders, organic or chemical gases.



SECTOR L: PAPER MILLS (Dust) COMPANIES

Paper production.

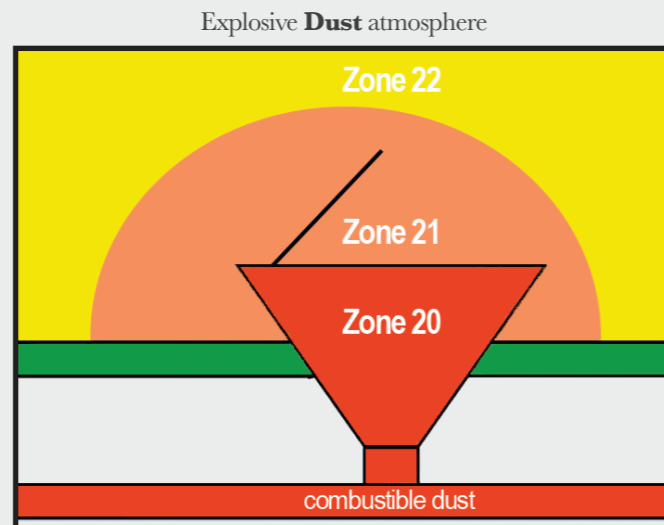
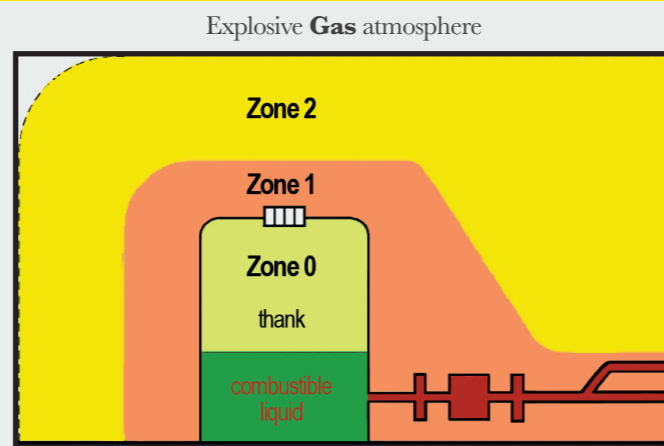
DANGEROUS ZONES

In paper processing operations, during the production cycle, in particular during loading, cutting and processing in general, accumulations of potentially explosive powders are created.

MATERIALS

Paper, cellulose and metal micro powder.

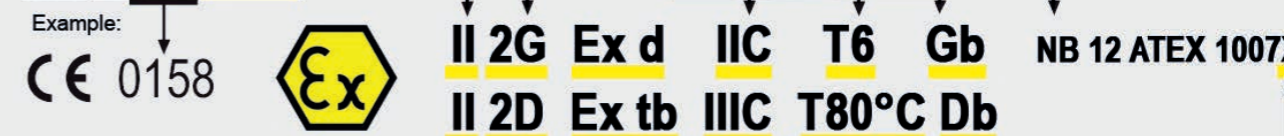
EXAMPLES OF EXPLOSIVE ATMOSPHERES



Classification and labelling of explosion proof areas					
Flammable medium	Hazardous locations Probability of a potential explosive atmosphere occurring	Classification of explosion proof areas	Product classification		Equipment protection level (EPL)
			Product group	Product category	
Gases, vapours, mists	Always, temporarily or often present	Zone 0	II		
	Occasionally present	Zone 1	II	1G	Ga, Gb
	Very seldom or only present for a short period	Zone 2	II		2G, 3G
Dusts	Always, temporarily or often present	Zone 20	II		
	Occasionally present	Zone 21	II	1D	Da, Db
	Does not occur or only seldom for a short period	Zone 22	II		2D, 3D

Classification of areas, hazardous due to flammable gases, vapours, mists						
Explosion group	Examples depending on - explosion group - temperature class					
IIA	IIB	IIC	Ammoniak	Ethylalcohol	Petrol	Acetaldehyd
			Methan	Cyclohexene	Diesel fuel	
			Ethan	n-Butane	Fuel oil	
			City gas	Ethylene	Ethylglycol	Ethylether
			Acrylic nitrile	Ethyleneoxyd	Carbon hydrogen	
			Hydrogen	Acetylene		Carbon disulphide

Official institutes		
Country (Example)	code number	Institute Notified Body (NB)
Germany	0102	PTB
Germany	0158	EXAM



Protection principle	Type of protection	Code	Symbol	To use in zone	CENELEC
Prevents transmission of the explosion outside	flameproof enclosure	Ex d	[Symbol]	1, 2	EN 60079-1
Prevents high temperatures and sparks	increased safety	Ex e	[Symbol]	1, 2	EN 60079-7
Low current/voltage supply	intrinsic safety	Ex i ¹ Ex iD ²	[Symbol]	0, 1, 2 20, 21, 22	EN 60079-11
Positive pressure device	pressurised apparatus	Ex p Ex pD	[Symbol]	1, 2 21, 22	EN 60079-2
Encapsulated	moulding	Ex m ³ Ex mD ⁴	[Symbol]	0, 1, 2 20, 21, 22	EN 60079-18
Parts immersed in oil to isolate from explosive atmosphere	oil immersion	Ex o	[Symbol]	1, 2	EN 60079-6
Prevents transmission of explosion outside	powder filling	Ex q	[Symbol]	1, 2	EN 60079-5
As above, but for use in zone 2	protection „n“	Ex n	[Symbol]	2	EN 60079-15
Dust explosion proof	protection „tD“	Ex t ⁵ IP66	[Symbol]	20, 21, 22	EN 60079-31

¹ Ia (zone 0, 1, 2), Ib (zone 1, 2), Ic (zone 2) ³ ma (zone 0, 1, 2), mb (zone 1, 2), mc (zone 2)
² IaD (zone 20, 21, 22), IbD (zone 21, 22), IcD (zone 22) ⁴ maD (zone 20, 21, 22), mbD (zone 21, 22), mcD (zone 22)
⁵ ta (zone 20, 21, 22), tb (zone 21, 22), tc (zone 22) ⁶ Highest possible application areas

* from April 20, 2016 replacement of ATEX 94/9/EC directives with directives according to ATEX 2014/34/EU



INDEX OF ATEX PRODUCTS



HAZARDOUS LOCATION SOLUTIONS



GIOVENZANA EQUIPMENT PROTECTION

**New Solutions for operating in explosive
atmospheres and hazardous areas**

Switch Disconnectors Regolus SE and SQ Ex Series

pag. 10



Enclosures Regolus Ex Series

pag. 12



Limit Switches Rotary Gear FGR2-Ex Series

pag. 14



Microswitches MFI-Ex Series

pag. 16



ATEX and IECEx Switch disconnectors

Switch disconnectors Regolus Ex - SQ and SE Series - EQUIPMENT for potentially explosive atmospheres

II 2D Ex tb IIIC T85°C Db | Zone 21-22 (Dust) | Tamb = -20°C/+55°C | IP65
**MARKING "EX T"
 STANDARD IEC 60079-31
 ZONE 21, 22**

Norm: The "Ex t" type of protection is based on the protection by an enclosure which is sealed to the penetration of dust and limits the surface temperature. The electrical components that could ignite an explosive atmosphere (high temperatures, sparks, etc.) are located inside enclosures with degree of protection IP6X; in Zone 22 with non-conductive dust the degree of protection IP5X is allowed.

Furthermore, the outer surface temperature of the equipment is kept below the maximum surface temperature T_s in relation to the maximum temperature for cloud TCL and layer Tl provided for in the installation site.
 IP protection in accordance with IEC 60079-0 requirements.

Applications: all equipment protected by an enclosure, both sparking and non-sparking.

New switch disconnectors Regolus Ex for command and emergency in aluminum box painted in Grey RAL 7035 and Yellow PANTONE 102C, suitable for use in ZONE 21 and 22 (D) with rated current of 25-32-40-63A.

Reference standards:

EN 80079-34, EN 60947-3, EN 61241-0, EN60079-0, EN60079-31

Directive: ATEX 94/9/CE.

AREA CLASSIFICATION "Dust"

Zone 21: area in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur occasionally in normal operation.

Zone 22: area in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

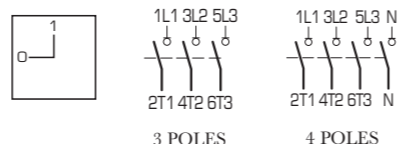
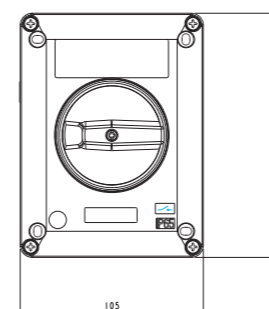
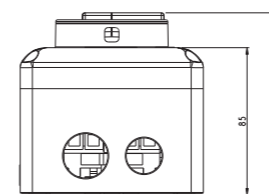
TYPE OF PROTECTION:

 Protection by enclosures (Ex "tb")
 Marking Ex ta/tb/tc Da/Db/Dc II 1/2/3 D in accordance with IEC 60079-0; 60079-31

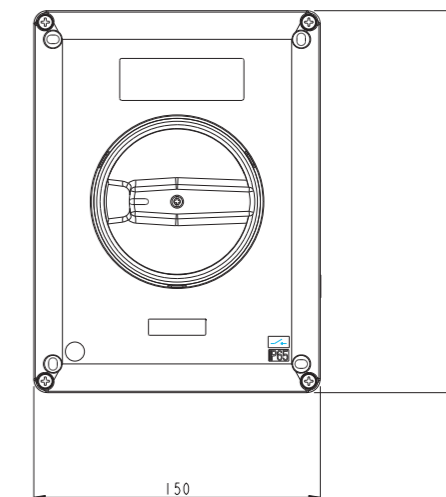
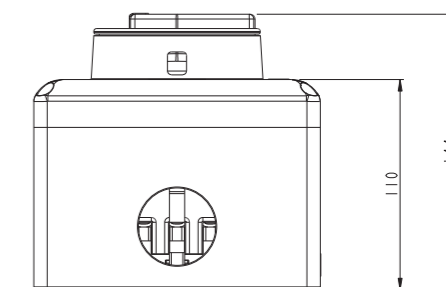
Principle:

The enclosure is sealed so tight, that no combustible dust can enter. The surface temperature of external enclosure is limited.


MARKING AND APPROVALS

SCHEMES

DIMENSIONAL DRAWING


SQ 025-032



SQ 040-063 and SE 63-80-100

PRODUCT CODE	POLES NUMBER	BOX ENCLOSURE	Ithe	AC 22A/690V	AC
SQ025003DEX09	3P	EX09 Grey	32	25	25
SQ025003DEX10	3P	EX10 Yellow	32	25	25
SQ032003DEX09	3P	EX09 Grey	40	32	32
SQ032003DEX10	3P	EX10 Yellow	40	32	32
SQ040003DEXB9	3P	EXB9 Grey	63	63	50
SQ040003DEXB0	3P	EX10 Yellow	63	63	50
SQ063003DEXB9	3P	EXB9 Grey	80	80	75
SQ063003DEXB0	3P	EX10 Yellow	80	80	75
SE630003BEXB9	3P	EXB9 Grey	63	63	40
SE630004BEXB9	4P	EXB9 Grey	63	63	40
SE630003BEXB0	3P	EX10 Yellow	63	63	40
SE630004BEXB0	4P	EX10 Yellow	63	63	40
SE800003BEXB9	3P	EXB9 Grey	80	80	55
SE800004BEXB9	4P	EXB9 Grey	80	80	55
SE800003BEXB0	3P	EX10 Yellow	80	80	55
SE800004BEXB0	4P	EX10 Yellow	80	80	55
SE100003BEXB9	3P	EXB9 Grey	85	85	67
SE100004BEXB9	4P	EXB9 Grey	85	85	67
SE100003BEXB0	3P	EX10 Yellow	85	85	67
SE100004BEXB0	4P	EX10 Yellow	85	85	67

Enclosures can be supplied with special switches on request

ATEX and IECEx Enclosures

Enclosures Regolus Ex - COMPONENT for potentially explosive atmospheres

II 2G Ex e IIC e Gb - II 2D Ex tb IIIC Db | Zone 1-2-21-22 (Gas / Dust) | Tamb = -60°C/+150°C | IP65

New Enclosures Regolus Ex blind enclosures made of aluminum alloy for use in environments at risk of explosion under Directive ATEX94 / 9 / EC. These enclosures are to be considered components. The components require subsequent certification / declaration by the user.

The cover is secured to the box with stainless steel screws, the tightness is ensured by a silicone seal that allows to maintain a degree of protection **IP65**. The containers are provided in different versions depending on the size of the metal box (and therefore of the maximum power that can be dissipated) and the colorations provided.

The **ATEX mark (ATmospheres EXplosives)** refers to two European directives concerning the risk of deflagration in potentially explosive atmospheres.

AREA CLASSIFICATION “Gases and Vapors”

Zone 1: place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is likely to occur in normal operation occasionally.

Zone 2: place in which an explosive atmosphere consisting of a mixture with air of flammable substances in the form of gas, vapor or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

AREA CLASSIFICATION “Dust”

Zone 21: area in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur occasionally in normal operation.

Zone 22: area in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

TYPE OF PROTECTION:

Increased safety (Ex “e”) - Protection by enclosures (Ex “tb”)
 Marking Ex e Gb II 2 G in accordance with IEC 60079-0; 60079-31; 60079-7

Principle:

Additional measures provide a higher level of protection. This ensures reliable prevention of unacceptably high temperatures and sparks or electrical arcs, both on the internal and on the external parts of electrical equipment, whose normal operation does not involve unacceptably high temperature sparks or arching.



MARKING AND APPROVALS



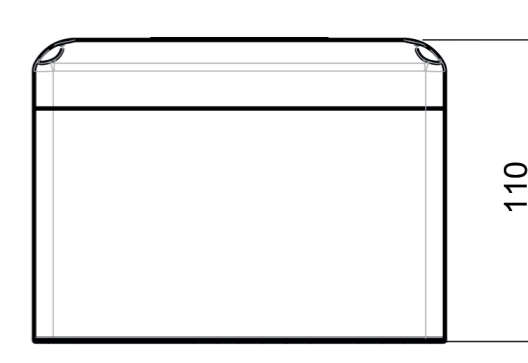
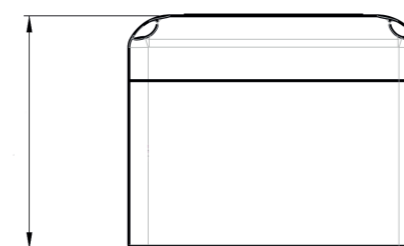
Important design parameters:

- For uninsulated, live parts, special protective requirements apply.
- Air and creepage gaps are made wider than is generally the case in industry. Special conditions apply to the IP protection degree to be adhered to.
- For windings, their design, mechanical strength and insulation, higher requirements apply and the windings must be protected from increased temperatures.
- Minimum cross sections are stipulated for winding wire, the impregnation and reinforcement of coils and for thermal monitoring equipment.

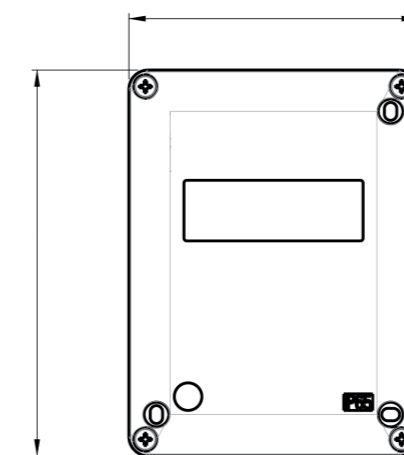
Applications:

- Installation material such as junction boxes, connection cabinets for heating systems, batteries, transformers, ballasts and cage motors.

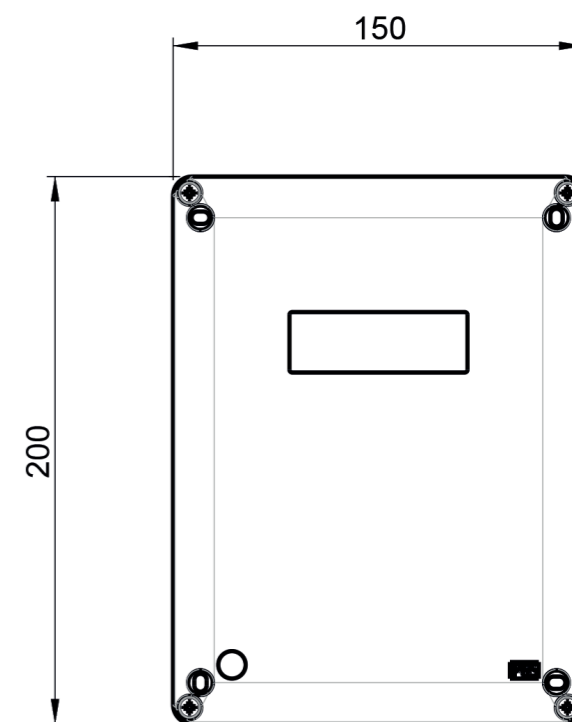
PRODUCT CODE	OVERALL DIMENSIONS	FINISHING COLOR COVER/BOTTOM	POSITIONING (Example)	MAX DISSIPATED POWER at 40°C	MAX DISSIPATED POWER at 50°C	THERMIC DISSIPATION FACTOR
BNA/8NGEX	150x200x110mm	Grey/black	Vertical	28W	13W	3,8K/W
BNA/8NYEX	150x200x110mm	Yellow/black	Horizontal	28W	12W	4,2K/W
BNB/8NGEX	105x140x85mm	Grey/black	Horizontal	17W	7W	2,2K/W
BNB/8NYEX	105x140x85mm	Yellow/black	Vertical	18W	8W	2,0K/W



DIMENSIONAL DRAWING



BNB Series



BNA Series

ATEX and IECEx Limit Switches FGR2-Ex

Series for potential explosive atmospheres, single or rear twin shaft, with 4 or 6 microswitches and transmission ratio from 012 to 200

II 3GD Ex dc ec IIB T5 Gc | II 3GD Ex dc ec IIIC T85°C | Zone 2-21 (Gas and Dust)

New Limit Switch FGR2-Ex, certified ATEX and IECEx, in aluminum and antistatic plastic case, suitable for use in Zone 2 (Gas) and Zone 21 (Dust). The device gear transmission, drives a cam system operates on 4 or 6 microswitches that after a certain number of revolutions predispose the engine or equipment at startup or at the stop. Each cam is provided with an adjusting screw to adjust “micrometer” that operates independently, and thus can calibrate the ‘opening and closing of each microswitch according the necessary functional requirements. The gear drive system allows to choose different ratios and can be provided even in twin rear shaft version.

Reference standards:

EN 80079-34, EN 60947-3, EN 61241-0, EN60079-0, EN60079-31, EN60079-15

Directive: ATEX 2014/34 /EU

AREA CLASSIFICATION “Gas and Dust”

Zone 2: Area in which an explosive atmosphere in the form of gas concentration in the air can occur for a short period due to a breakdown or malfunction.

Zone 21: Area in which an explosive atmosphere in the form of a cloud of combustible dust in the air is likely to occur during normal operation.

TYPE OF PROTECTION GAS:

Restricted breathing case (Ex “dc ec”) Marking: II 3GD Ex dc ec IIB T5 Gc according to IEC 60079-0; 60079-15

Principle: limited in power dissipation (ΔT limited), so the depression which is created when de-energized, is such as to delay the entry of explosive atmosphere for a time limit specified by the standard.

TYPE OF PROTECTION DUST:

Protection by enclosure (Ex “tb”) Marking: II 3GD Ex tb IIIC T 85°C Dc according to IEC 60079-0; 60079-31

Principle:

The coupling of the enclosure is hermetically sealed with special seals, so that the combustible dust cannot enter. The outer surface temperature is limited.

Applications:

Aimed at controlling the revolutions of the rotating parts of industrial and construction machinery such as drum winding ropes, machines, gates, cranes etc... The type of enclosure designed and adopted internal components, conform this equipment for use in areas with potential explosive atmosphere for both gas and dust according to ATEX Directive 2014/34 / EU.



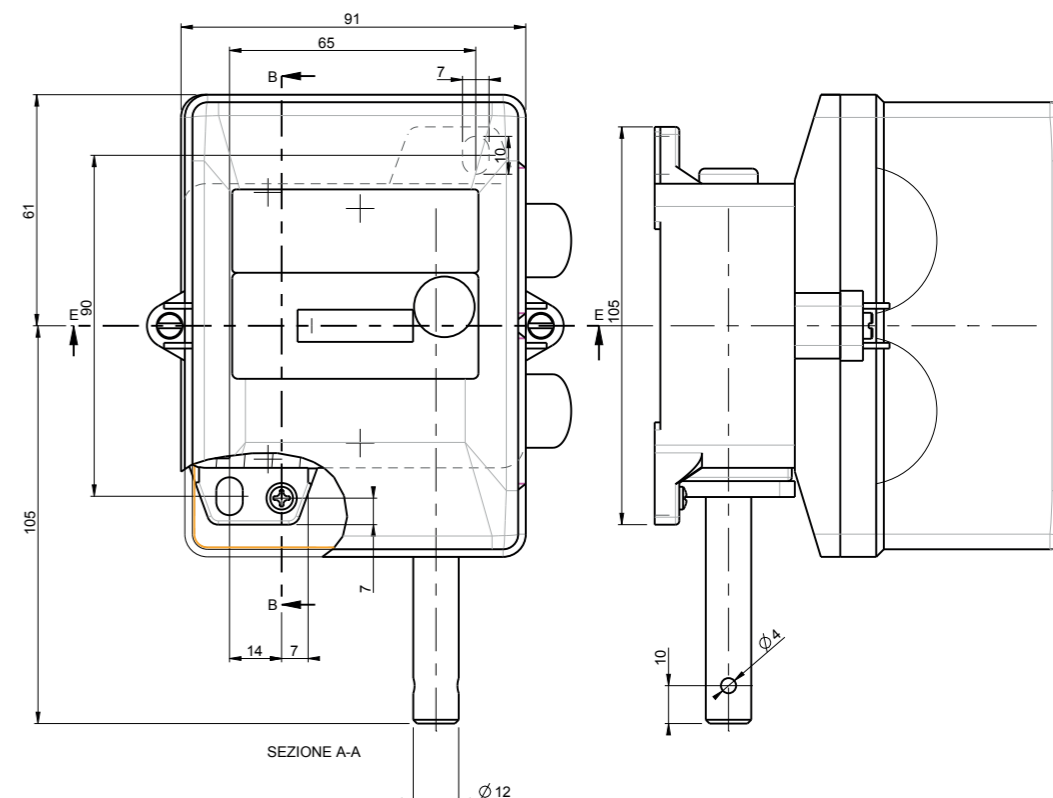
MARKING AND APPROVALS



CHARACTERISTICS

Case	aluminium housing antistatic plastic cover
Ratio	012 - 033 - 050 - 100 - 200
Protection Class	IP65
Shaft type	steel mounted on ball bearing coaxial shaft version available
Fixing type	bottom with stainless steel screws front (flanged with FLG accessories)
Microswitch	MFI-Ex Series Directive ATEX 2014/34/EU
Microswitch	max n° 6 - micrometric adjustment
Cam block	self-lubricating with transparent support for easier cam viewing
Cable entry	M20 (max n°2) not included
Options	3 different cam shapes 15 pinions

DIMENSIONAL DRAWING



RATIO	SINGLE SHAFT		REAR SHAFT	
	4 microswitches	6 microswitches	4 microswitches	6 microswitches
012	FGR2006EX	FGR20066EX	FGR2006BEX	FGR2006B6EX
033	FGR2007EX	FGR20076EX	FGR2007BEX	FGR2007B6EX
050	FGR2008EX	FGR20086EX	FGR2008BEX	FGR2008B6EX
100	FGR2009EX	FGR20096EX	FGR2009BEX	FGR2009B6EX
200	FGR2010EX	FGR20106EX	FGR2010BEX	FGR2010B6EX

ATEX and IECEx Microswitches MFI-Ex

MFI-Ex Series - COMPONENTS for potential explosive atmospheres, available in 8 types of actuation

II 3GD Ex dc ec IIB T5 Gc | Zone 2 (Gas)

New Microswitch MFI-Ex certified ATEX and IECEx, suitable for use in Zone 2 (Gas).

NC positive opening, with snap-action operation with high reliability, equipped with self-cleaning switching contacts in silver alloy and available with the pin plunger or various types of actuation lever.

Reference standards:

EN 80079-34, EN 60947-3, EN 61241-0, EN60079-0, EN60079-31, EN60079-15

Directive: ATEX 2014/34 /EU

AREA CLASSIFICATION "Gas"

Zone 2: Area in which an explosive atmosphere in the form of gas concentration in the air can occur for a short period due to a breakdown or malfunction.

TYPE OF PROTECTION GAS:

Restricted breathing case (Ex "dc ec")

Marking: II 3GD Ex dc ec IIB T5 Gc according to IEC 60079-0; 60079-15

Principle: limited in power dissipation (ΔT limited), so the depression which is created when de-energized, is such as to delay the entry of explosive atmosphere for a time limit specified by the standard.

Applications:

The Microswitch ATEX IECEx find application in many fields such as: control valves, actuators, conveyors, material handling and in general in petrochemical plants.

The type of materials and the internal design of the elements, conform this component for use in areas with potential explosive atmospheres due to the presence of gas in accordance with the ATEX Directive 2014/34 / EU.



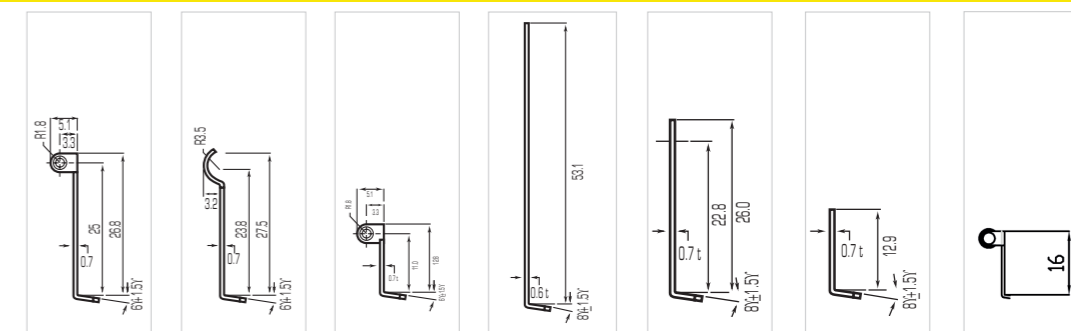
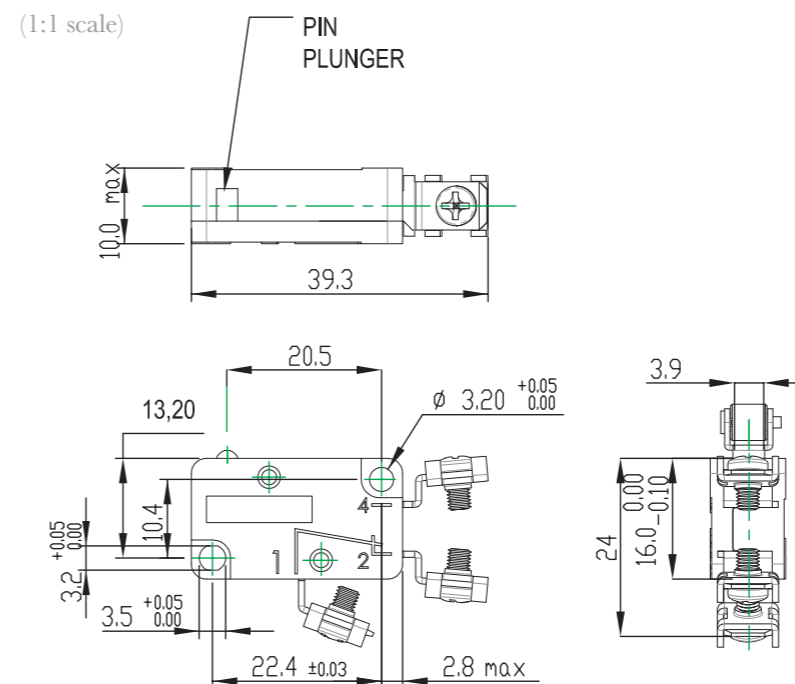
MARKING AND APPROVALS



CHARACTERISTICS

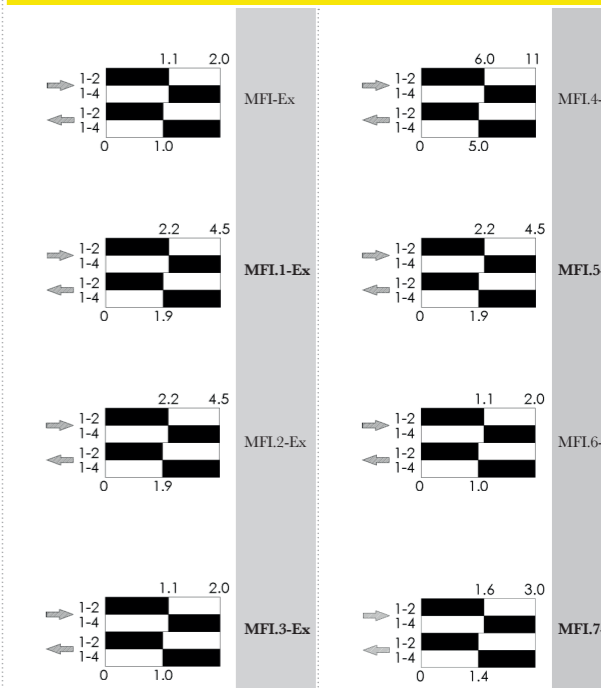
Comply with	IEC/EN61058 UL1054
Rated insulated voltage U_i	250V
Rated impulse withstand voltage U_{imp}	1500V
Rated thermal current I_{th}	8A
Rated operating current I_e	8A-250V AC resistive load 1A-250V AC inductive load
Ambient temperature	-25° C +85° C
Electric shock protection	Class II
Pollution Class	2
Life	mechanical 10^6 cycles electrical 5×10^5 cycles
Termination type	screw terminal

DIMENSIONAL DRAWING



	PIN PLUNGER	LONG ROLLER LEVER	SIMULATED ROLLER LEVER	ROLLER LEVER	LONG LEVER	LEVER	SHORT LEVER	MEDIUM ROLLER LEVER
INC-INO	2 4	2 4	2 4	2 4	2 4	2 4	2 4	2 4
Snap action	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
Operating force	N 4,5	N 3,2	N 3,2	N 4,5	N 1,3	N 3,2	N 4,5	N 4,5
Resetting force	N 1,9	N 1,2	N 1,2	N 1,9	N 0,15	N 1,2	N 1,9	N 1,9
Max pre travel PT	mm 1,1	mm 2,2	mm 2,2	mm 1,1	mm 6,0	mm 2,2	mm 1,1	mm 1,6
Min over travel	mm 0,9	mm 2,3	mm 2,3	mm 0,9	mm 5,0	mm 2,3	mm 0,9	mm 1,4
Tripping position OP	mm 14,4 ^{+0,4}	mm 21,8 ^{+1,2}	mm 18,9 ^{+1,2}	mm 20 ^{+0,6}	mm 15,2 ^{+1,2}	mm 15,2 ^{+1,2}	mm 15,1 ^{+0,5}	mm 20,0 ^{+0,5}

OPENING DIAGRAM





NOTES

A large, empty rectangular area with horizontal lines, intended for taking notes.

