ROSE

A Phoenix Mecano Company




# EX EQUIPMENT

## CATALOGUE

www.rose-systemtechnik.com

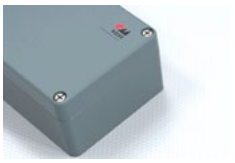
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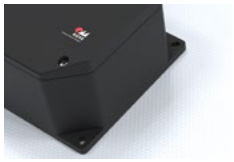
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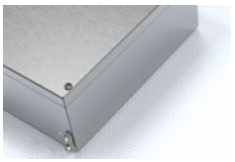
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# Company

## ROSE in Germany

Since 1969 ROSE Systemtechnik is well known for their robust and innovative industrial enclosures. Nowadays the company is not only one of the leading suppliers for enclosures but also when it comes to individual solutions. We can maintain a leading position on today's world market thanks to over 2,190 reliable employees.

Our products are made to protect sensitive built-in components against External influences, they are found in many different industries such as: railway- and traffic engineering, machine- and plant construction, automation engineering, potentially Explosive atmospheres, measurement- and control technology as well as the food and beverage industry.

The 37,000 $m^2$ site in Porta Westfalica is home to the headquarters with around 350 employees who work in production, sales, marketing and development. In addition to the site on the edge of the Wiehengebirge, ROSE Systemtechnik has another plant in Finow. Industrial and control enclosures, device carriers and accessories are assembled there. The development and production of our HMI solutions is located in Hohenlockstedt.

Alongside a wide variety of industrial enclosures, HMI Panel-PCs and Ex proof enclosures, ROSE Systemtechnik offers unmatched services, that also provide tailormade solutions.

ROSE Systemtechnik sticks out in all categories thanks to our Extensive service. Enclosures made of aluminium, polyester, polycarbonate, ABS and stainless steel belong to our integrated system solutions. Just as the assembly with i. e. cable glands or terminal blocks and costumer specific surface finishing as well as packaging and detailed security tests.

Regarding special requirements, we also develop tailormade special enclosures in close contact with the customer.





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## Overview of our services:

### Machining:

- Milling
- Drilling
- Thread cutting
- Backwards cutting
- Engraving
- Laser machining



## Surface engineering:

- Painting
- Printing
- Special coating
- Blasting
- Cleaning
- Passivation
- Powder coating
- Screen printing
- Pad printing




## Equipment:

- Cable glands
- Terminal blocks
- Mounting plates
- Membrane keyboards and electrical inspection
- Wiring
- Circuit board assembly



## Mounting of HMI Solutions:

- Unpacking
- Assembly and fitting
- Briefing employees at your location
- Adjusting already existing systems
- Leaving a spotless workplace
- Disposal of packaging material



## Laboratory:

- IP proctection class test
- IK impact tests
- Protection class test according to DIN EN 60529
- Impact tests according to EN 62262
- Heat and climate tests according to IEC 60079



## Traffic engineering

**Enclosure solutions for traffic engineering**

Traffic engineering includes transportation of people and goods

- on the street
- on the rails
- on water
- in the air

Sensitive electronics from traffic engineering or traffic guidance systems are safely protected by innovative and robust industrial enclosures from ROSE Systemtechnik. Traffic engineering has very high requirements towards our products. As they are often exposed to extreme weather conditions such as

- Corrosion
- Vibrations
- Stone impacts
- Varying temperatures
- Strong pollution

We partake to a functioning infrastructure in this sector with our special industrial enclosures, because traffic engineering connects people and supports globalisation due to freight trafficking.

# Industries

Introduction



## eMobility

**Enclosure solutions for eMobility**

We need to have a more sustainable way of dealing with our environment to fight against climate change in the best possible way. Emissions can be lowered with electric cars to path the way into a more climate friendly mobility solution. That's why ROSE Systemtechnik supports this sector with the following products:

- Charging stations
- Wall boxes
- Special enclosures
- High Voltage Power Distribution Units
- Housing for batteries

Our charging stations and wall boxes define themselves with the following attributes:

- Withstanding environmental stress
- Made of aluminium
- Can be equipped with up to two charging sockets
- Can be designed individually according to customer requirements

Especially our wall boxes are best suited for personal use at home. They can transfer about 22 kW into the car with the appropriate installations. Which means that even at home aggregates can be charged within a short amount of time. ROSE offers different variations of wall boxes within this sector, which all have their own advantages, not only aluminium but also stainless steel and polyester wall boxes can be the perfect solution for private usage.



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## Automotive

**Enclosure solutions for the automotive industry**

Assembly lines in the automotive industry are leading when it comes to all things regarding automation and advancements. Currently this sector is facing several challenges:

- eMobility
- Digitization
- Shorter model cycles

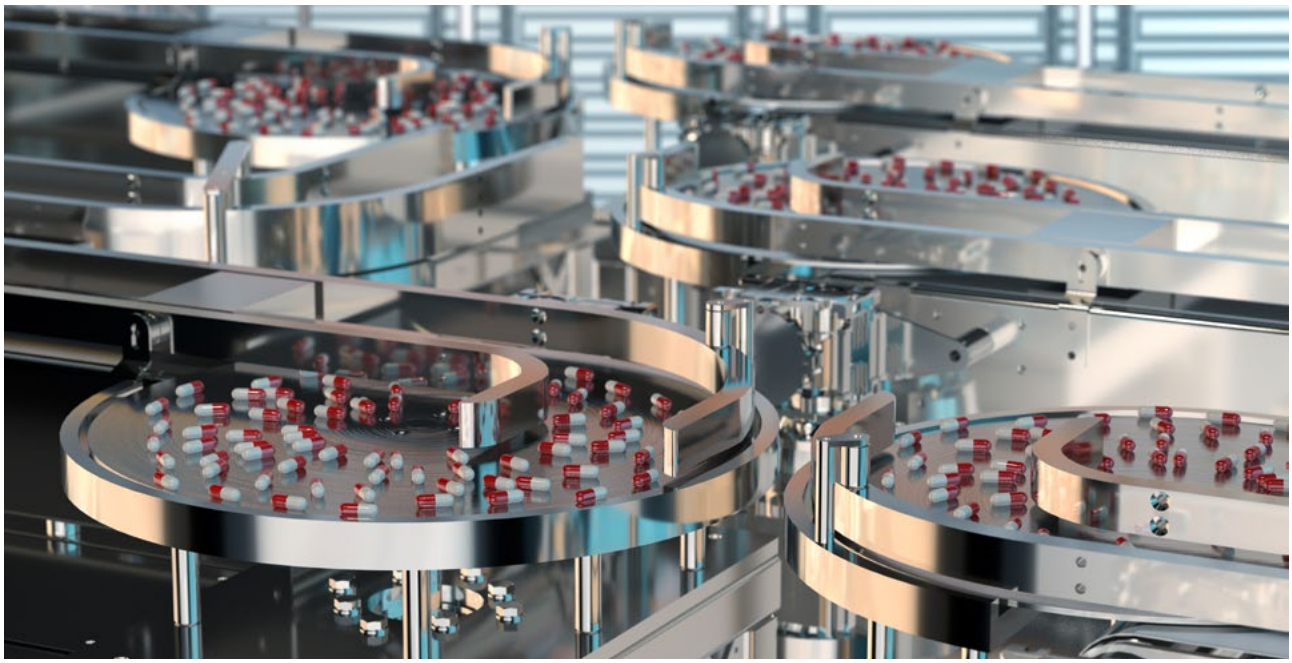
However, the manufacturers of the required production equipment must also meet the frequently changing trends in the automotive industry. Because the machine- and plant construction sector must deal with way more than just fair market prices. That's why we at ROSE not only offer industrial-, operating-, and display enclosures as well as support arm systems with a high-quality standard but moreover:

- Comprehensive technical know how
- Fast reaction- and responding times
- Short delivery times
- Reliability
- Flexibility

ROSE offers a new product line called HMI Solutions which combines different IPC products with our established control enclosures and support arm systems. That is why we also offer complete solutions for machine and plant construction in addition to the distributor housings.

# Industries

Introduction



## Chemistry

**Enclosure solutions for the chemistry industry**

There is a high fire hazard during the conversion from natural raw materials into synthetic material, as many chemicals are easily flammable and sensitive to mechanical exposure. That's why sparks and discharge from electrical components needs to be shielded while simultaneously protecting them from intrusion through corrosive materials. This especially affects industrial sectors like:

- Synthetic industry
- Food industry
- Automotive industry
- Machine and plant construction

Stainless steel Ex enclosures from ROSE Systemtechnik guarantee a safe containment of

- Electrical distribution systems
- Devices
- Built in components
- Small parts

We are specialised in Ex projects for many years and offer custom-made enclosure solutions in this area.



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## Oil and gas

**Industry solutions for the Oil- and gas industry**

Natural and combustible gases as well as flammable liquids, such as gasoline or oil, are often pumped in areas with Extreme ambient temperatures. Particularly safe enclosures are needed to protect the environment from pollution caused by ignition. ROSE produces different kinds of enclosures in various types for that use.

- Terminal enclosures
- Control enclosures
- Display enclosures
- Operating enclosures

These are used in both onshore and offshore applications. There are certain criteria you must consider when choosing an Ex product:

- Zone
- Ambient temperature
- Dust or gas atmosphere
- Location
- Size
- Protective function

ROSE Systemtechnik also offers a wide range of applications made of stainless steel, polyester, polycarbonate or aluminium for the various types of ignition protection.



## Machine and plant construction

**Industry solutions for the machine- and plant construction**

More machines are needed to produce goods to meet the increasing demands of a steadily rising world population. ROSE Systemtechnik offers different industrial enclosures for automation processes. We also support our customers in machine- and plant construction with custom-made enclosure concepts and excellent service. We score particularly well with:

- Innovation
- Reliability
- Swiftness
- Flexibility

Depending on the application machines and plants may need to withstand heavy exterior impact. In the food industry as an example:

- Chemical cleaning
- Water
- Food residues

That's why industrial enclosures and system solutions from ROSE Systemtechnik are extremely durable and easy to maintain. Built in components are interchangeable at any time.




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## Agricultural technology

**Industry solutions for agricultural technology**

Almost 10% of earth's surface is used agriculturally. The vehicles used are becoming more digitalized. Drones and radio-controlled agricultural machinery with sensitive electronics are being used to make arable farming even more efficient. Technicians and engineers like to speak of Smart-Farming-Systems.

- Sensor technology
- Satellite based GPS orientation
- Robot technologies

ROSE Systemtechnik enclosures made of aluminium, stainless steel or polyester can protect any kind of electrical fittings with protection classes up to IP69K against

- Vibrations
- Water
- Dust
- Acids

Additionally, they reliably shield from electromagnetic interference and are especially shock-proof. Quick maintenance of the machines is assured trough easy handling.



## Wind energy

**Industry solutions for wind turbines**

Power generation through wind energy is set to be the most important source of renewable energy in the future. Wind turbines are mainly placed

- on fields
- in the ocean
- at lakes

Customized enclosures from ROSE Sytemtechnik are installed on the inside and outside of wind turbines to protect electronics. They need to withstand strong vibrations and caused by the movement of the rotor blades and be impact resistant due to possible collision. A special coating protects against:

- Lubricating oil
- Gasoline
- Salt and seawater
- Fertilizer

Terminal boxes made of aluminium are being installed in maintenance platforms as an example. Offshore plants need to use special stainless steel enclosures due to corrosion resistance.



## Shipbuilding

**Industry solutions for shipbuilding**

90% of goods worldwide are being transported via ships. Which makes shipbuilding mandatory for globalisation. In addition, there are markets for ferries, yachts and cruise ships. Parts are exposed to especially strong weather conditions due to water and wind.

- Saltwater
- Varying temperatures
- Wind
- Swell

Control stations made of stainless steel and distribution boxes made of aluminium from ROSE Systemtechnik are used in numerous ships. Our enclosures receive a special coating against corrosion which makes them not only weatherproof but also protects them against:

- Oil and grease
- Fuels
- Brine
- Detergent

We offer enclosures in individual sizes and shapes. Certificates from the American Bureau of Shipment, Lloyds Register of Shipping and Maritime Register of Shipping show, that our products meet the high expectations from the nautical industry.

# Industries

Introduction



## Vehicle construction

**Industry solutions for construction vehicles**

Construction vehicles are massive, that's why they need a strong power unit. This sector currently goes through a turnaround when it comes to motorisation. From old diesel engines to environmentally friendly eMobility that's the current agenda for the manufactures of construction vehicles. The benefits gained from this are remarkable:

- Due to high braking energy vehicles can charge themselves.
- Considerable reduction of diesel usage and $CO^2$ emissions.
- The vehicles are almost silent.
- Maintenance costs are lower.
- There are no restrictions due to environmental zones.

We produce high-voltage distributors as a central link between aggregates, batteries and E-Motors, to assist manufacturers on their way to eMobility. Power distribution units from ROSE Systemchnik are characterized by

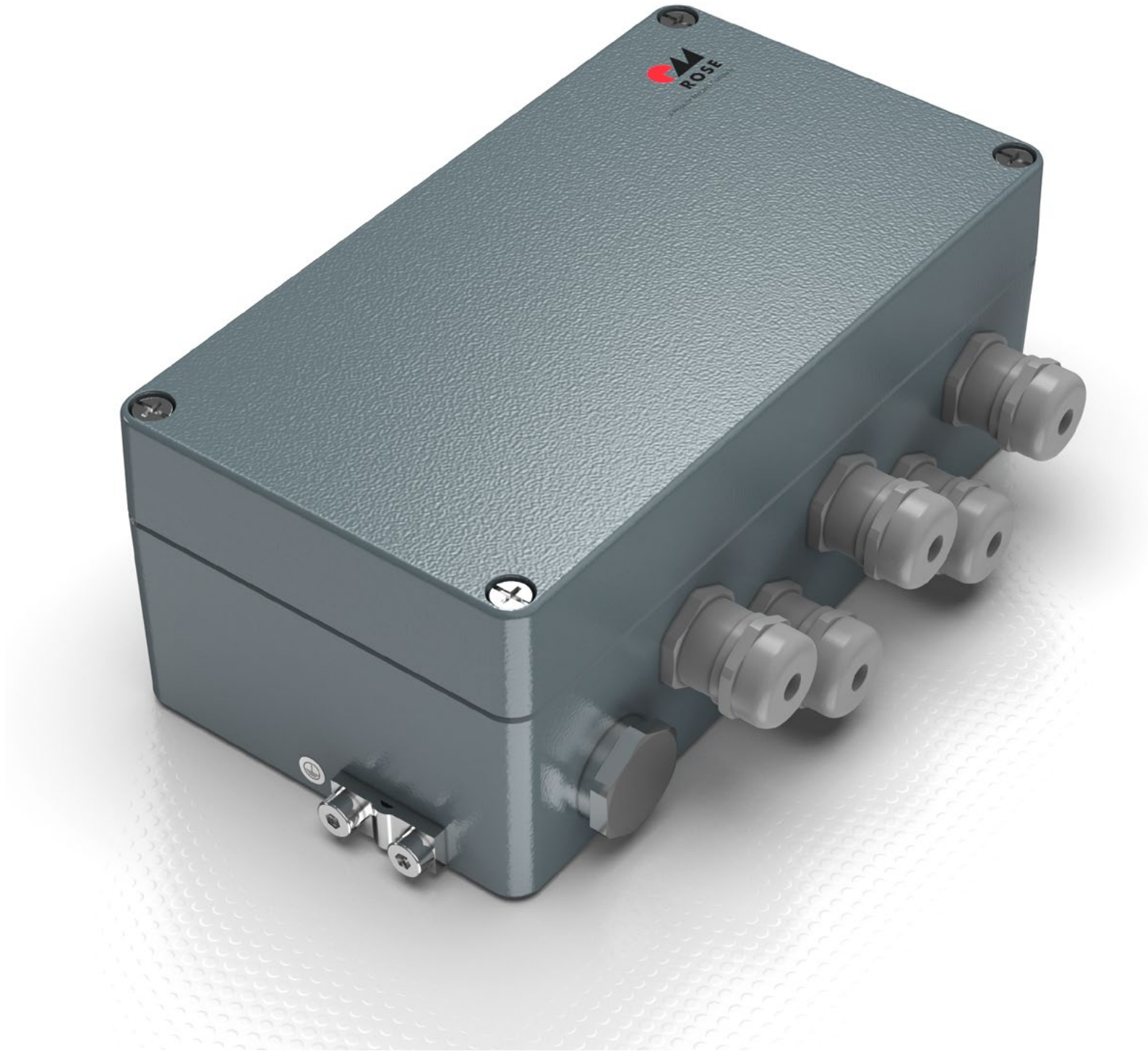
- Reliability
- Quality
- Flexibility
- High IP protection class

Our competent solution team consisting of designers and engineers will develop a suiting special enclosure, should your HVDU-solution not fit with our standard enclosure.



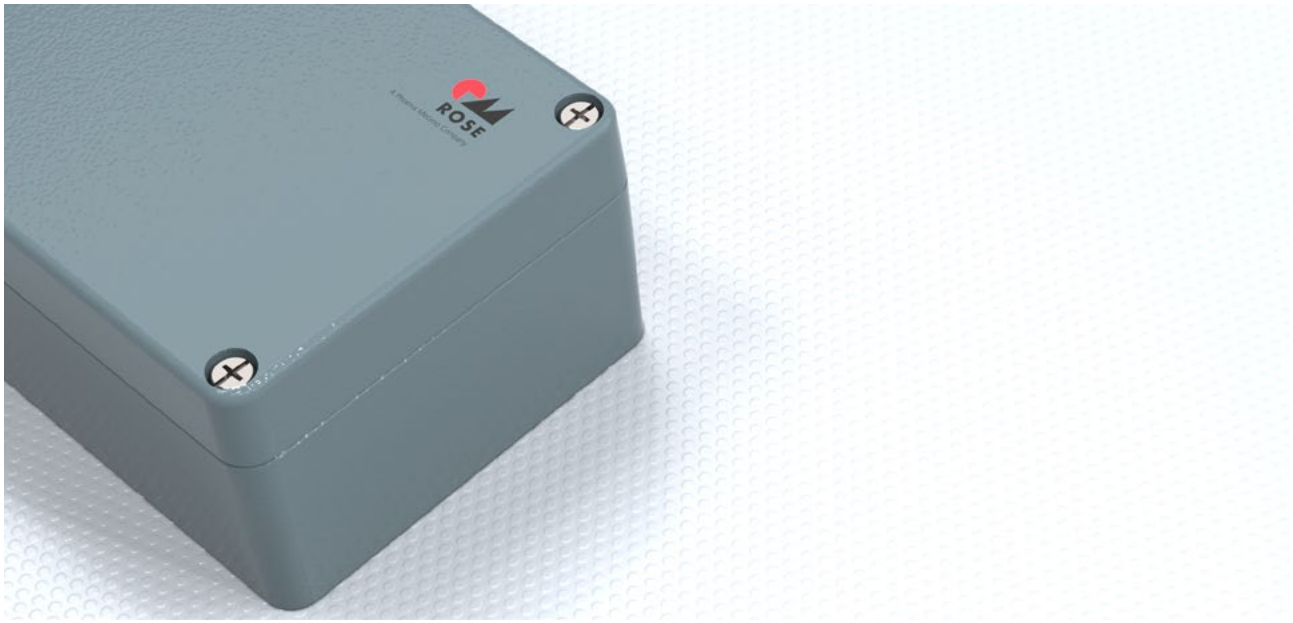
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## Applications



# Ex Aluminium






## Approvals

- Enclosure systems made of aluminium die casting for use in Ex areas Zone 1 / Zone 2 / Zone 21 / Zone 22
- Available as a component (U approval) or as a fully certified device, including the installation of terminals or electronic equipment
- Optional version with viewing window

## Technical data

| | |
|---|---|
| **Material:** | DIN EN 1706 EN AC-AlSi 12 (Fe) |
| **Colour:** | powder coated, RAL 7001, silver grey |
| **Ingress protection:** | IP66 according to EN 60529 |
| **Impact resistance:** | 7 Joule according to EN 60079-0 |
| **Temperature resistance:** | -55 °C up to +135 °C |
| **Further versions available upon request:** | EMC, SBG, SBGL, SWB |

**Included in delivery**

Empty enclosure: Enclosure with silicone gasket and external earth connection.
Terminal enclosure: Enclosure system - depending on the version, with silicone gasket, external earth, mounting rail, internal earth connection, terminals, machining, cable glands.

3-D data and drawings



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## Product overview

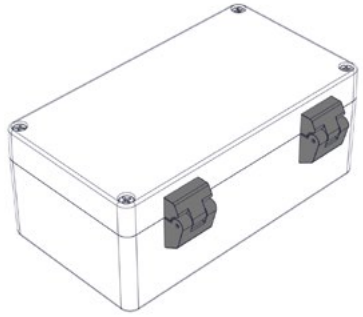
| Ex empty Order no. | Type | Mounting plates | Mounting rails TS15 | Mounting rails TS35 | Earthing rails | Protective earth busbar | W x L x H (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| **250606030** | AExB 25010 | | | | | | 64 x 58 x 34 | 0,2 |
| **250610030** | AExB 25015 | | 10 06 11 07 0 | | | | 64 x 98 x 34 | 0,2 |
| **250615030** | AExB 25020 | | 10 06 10 02 0 | | | | 64 x 150 x 34 | 0,4 |
| **250808060** | AExB 25025 | 10 01 10 01 0 | 10 06 10 03 0 | | | | 80 x 75 x 57 | 0,3 |
| **250813060** | AExB 25030 | 10 01 10 03 0 | 10 06 10 04 0 | | | | 80 x 125 x 57 | 0,4 |
| **250818060** | AExB 25035 | 10 01 10 05 0 | 10 06 10 05 0 | | | | 80 x 175 x 57 | 0,6 |
| **250825050** | AExB 25040 | | 10 06 10 06 0 | | | | 80 x 250 x 52 | 0,7 |
| **251010080** | AExB 25045 | 10 01 10 24 0 | 10 06 10 07 0 | | | | 100 x 100 x 81 | 0,6 |
| **251016080** | AExB 25050 | 10 01 10 25 0 | 10 06 10 08 0 | | | | 100 x 160 x 81 | 0,8 |
| **251020080** | AExB 25055 | 10 01 10 26 0 | 10 06 10 09 0 | | | | 100 x 200 x 81 | 1,0 |
| **251212080** | AExB 25060 | 10 01 10 07 0 | | 10 06 14 21 0 | 10 06 20 01 0 | 10 06 80 01 0 | 120 x 122 x 81 | 0,9 |
| **251212090** | AExB 25065 | 10 01 10 07 0 | | 10 06 14 21 0 | 10 06 20 01 0 | 10 06 80 01 0 | 120 x 122 x 91 | 1,0 |
| **251222080** | AExB 25070 | 10 01 10 08 0 | | 10 06 14 22 0 | 10 06 20 02 0 | 10 06 80 02 0 | 120 x 220 x 81 | 1,4 |
| **251222090** | AExB 25075 | 10 01 10 08 0 | | 10 06 14 22 0 | 10 06 20 02 0 | 10 06 80 02 0 | 120 x 220 x 91 | 1,4 |
| **251236080** | AExB 25080 | 10 01 10 09 0 | | 10 06 14 25 0 | 10 06 20 03 0 | 10 09 10 58 0 | 120 x 360 x 81 | 2,0 |
| **251414090** | AExB 25085 | 10 01 10 27 0 | | 10 06 14 54 0 | 10 06 20 14 0 | 10 09 10 15 0 | 140 x 140 x 91 | 1,5 |
| **251420090** | AExB 25090 | 10 01 10 28 0 | | 10 06 14 55 0 | 10 06 20 08 0 | 10 09 10 60 0 | 140 x 200 x 91 | 2,3 |
| **251616090** | AExB 25095 | 10 01 10 10 0 | | 10 06 14 23 0 | 10 06 20 04 0 | 10 09 10 56 0 | 160 x 160 x 91 | 1,5 |
| **251626090** | AExB 25100 | 10 01 10 11 0 | | 10 06 14 24 0 | 10 06 20 05 0 | 10 09 10 57 0 | 160 x 260 x 91 | 2,0 |
| **251636090** | AExB 25105 | 10 01 10 12 0 | | 10 06 14 25 0 | 10 06 20 03 0 | 10 09 10 58 0 | 160 x 360 x 91 | 2,5 |
| **251656090** | AExB 25110 | 10 01 10 13 0 | | 10 06 14 26 0 | 10 06 20 06 0 | 10 09 10 59 0 | 160 x 560 x 91 | 3,8 |
| **251818100** | AExB 25115 | 10 01 10 29 0 | | 10 06 14 56 0 | 10 06 20 16 0 | 10 09 10 17 0 | 180 x 180 x 101 | 2,3 |
| **251828100** | AExB 25120 | 10 01 10 30 0 | | 10 06 14 57 0 | 10 06 20 09 0 | 10 09 10 18 0 | 180 x 280 x 101 | 2,9 |
| **252310110** | AExB 25125 | 10 01 10 14 0 | | 10 06 14 29 0 | 10 06 20 02 0 | 10 09 10 66 0 | 230 x 100 x 111 | 1,8 |
| **252320110** | AExB 25130 | 10 01 10 15 0 | | 10 06 14 30 0 | 10 06 20 08 0 | 10 09 10 60 0 | 232 x 202 x 111 | 2,4 |
| **252320180** | AExB 25135 | 10 01 10 15 0 | | 10 06 14 30 0 | 10 06 20 08 0 | 10 09 10 60 0 | 232 x 202 x 181 | 4,0 |
| **252328110** | AExB 25140 | 10 01 10 16 0 | | 10 06 14 31 0 | 10 06 20 09 0 | 10 09 10 18 0 | 230 x 280 x 111 | 3,0 |
| **252333110** | AExB 25145 | 10 01 10 17 0 | | 10 06 14 32 0 | 10 06 20 10 0 | 10 09 10 62 0 | 230 x 330 x 111 | 3,4 |
| **252333180** | AExB 25150 | 10 01 10 17 0 | | 10 06 14 32 0 | 10 06 20 10 0 | 10 09 10 62 0 | 230 x 330 x 181 | 5,3 |
| **252340110** | AExB 25155 | 10 01 10 18 0 | | 10 06 14 27 0 | 10 06 20 11 0 | 10 09 10 63 0 | 230 x 400 x 111 | 3,8 |
| **252340230** | AExB 25160 | 10 01 10 18 0 | | 10 06 14 27 0 | 10 06 20 11 0 | 10 09 10 63 0 | 230 x 400 x 225 | 6,8 |
| **252360110** | AExB 25165 | 10 01 10 19 0 | | 10 06 14 28 0 | 10 06 20 12 0 | 10 09 10 65 0 | 230 x 600 x 111 | 7,0 |
| **253140110** | AExB 25170 | 10 01 10 20 0 | | 10 06 14 27 0 | 10 06 20 11 0 | 10 09 10 63 0 | 313 x 404 x 111 | 5,3 |
| **253140140** | AExB 25175 | 10 01 10 20 0 | | 10 06 14 27 0 | 10 06 20 11 0 | 10 09 10 63 0 | 312 x 403 x 141 | 6,7 |
| **253140180** | AExB 25180 | 10 01 10 20 0 | | 10 06 14 27 0 | 10 06 20 11 0 | 10 09 10 63 0 | 313 x 404 x 181 | 8,5 |
| **253140230** | AExB 25185 | 10 01 10 20 0 | | 10 06 14 27 0 | 10 06 20 11 0 | 10 09 10 63 0 | 313 x 404 x 227 | 8,7 |
| **253160110** | AExB 25190 | 10 01 10 21 0 | | 10 06 14 28 0 | 10 06 20 12 0 | 10 09 10 65 0 | 310 x 600 x 111 | 8,7 |
| **253160180** | AExB 25195 | 10 01 10 21 0 | | 10 06 14 28 0 | 10 06 20 12 0 | 10 09 10 65 0 | 310 x 600 x 181 | 11,1 |
| **256060200** | AExB 25200 | 10 01 10 22 0 | | 10 06 14 33 0 | | 10 09 10 19 0 | 600 x 600 x 202 | 26,0 |

## Accessories



**External mounting brackets**
(Set = 4 pieces)

| Order no. | for enclosures |
|---|---|
| **10 03 11 01 0** | for XX 08 08 06 0 - XX 10 20 08 0 |
| **10 03 11 02 0** | for XX 12 12 08 0 - XX 31 60 18 0, XX 14 01 00 0 - XX 14 03 00 0 |



**External hinges**
Swivel range 150°
(Set = 2 pieces)
**Order no. 10 02 70 01 0**



**Internal hinges**
Swivel range 150°
(Set = 2 pieces)
**Order no. 10 02 20 01 0**



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## Applications



# Ex Polyester






## Approvals

- Glass fibre reinforced enclosure system made of polyester resin for use in Ex areas Zone 1 / Zone 2 / Zone 21 / Zone 22
- Available as a component (U approval) or as a fully certified device, including the installation of terminals or electronic equipment
- Optional version with viewing window

## Technical data

| | |
|---|---|
| **Material:** | glass fibre reinforced, thermosetting polyester with graphite additive |
| **Colour:** | RAL 9011, graphite black |
| **Ingress protection:** | IP66 according to EN 60529 |
| **Impact resistance:** | 7 Joule according to EN 60079-0 |
| **Flammability:** | self-extinguishing, UL 94 V-0 |
| **Surface resistance:** | <109 Ohm according to IEC 60093 |
| **Toxicity:** | halogen-free |
| **Temperature resistance:** | -55 °C up to +127 °C |
| **Further versions available upon request:** | EMC |

**Included in delivery**

Empty enclosure: Enclosure with silicone gasket.
Terminal enclosure: Enclosure system - depending on the version, with silicone gasket, mounting rail, internal earth connection, terminals, offshore plate, machining, cable glands

3-D data and drawings



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## Product overview

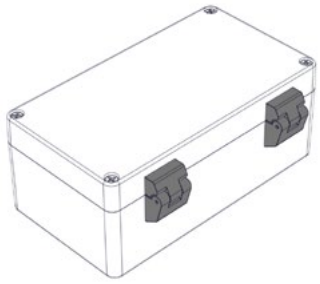
| Ex empty Order no. | Type | W x L x H (mm) | Weight (kg) | Mounting plates | Earthing rails | Protective earth busbar | Mounting rails TS15 | Mounting rails TS35 | Earth plate Side A/B | Earth plate Side C/D |
|---|---|---|---|---|---|---|---|---|---|---|
| **26 08 08 06 0** | PExB 26010 | 75 x 80 x 56 | 0,2 | 10 01 11 01 0 | | | 10 06 10 03 0 | | 10 09 53 31 0 | 10 09 53 31 0 |
| **26 08 08 08 0** | PExB 26015 | 75 x 80 x 75 | 0,3 | 10 01 11 01 0 | | | 10 06 10 03 0 | | 10 09 53 67 0 | 10 09 53 67 0 |
| **26 08 11 06 0** | PExB 26020 | 75 x 110 x 56 | 0,3 | 10 01 11 03 0 | | | 10 06 11 02 0 | | 10 09 53 32 0 | 10 09 53 31 0 |
| **26 08 11 08 0** | PExB 26025 | 75 x 110 x 75 | 0,4 | 10 01 11 03 0 | | | 10 06 11 02 0 | | 10 09 53 68 0 | 10 09 53 67 0 |
| **26 08 16 06 0** | PExB 26030 | 75 x 160 x 56 | 0,4 | 10 01 11 05 0 | | | 10 06 10 08 0 | | 10 09 53 33 0 | 10 09 53 31 0 |
| **26 08 16 08 0** | PExB 26035 | 75 x 160 x 75 | 0,5 | 10 01 11 05 0 | | | 10 06 10 08 0 | | 10 09 53 69 0 | 10 09 53 67 0 |
| **26 08 19 06 0** | PExB 26040 | 75 x 190 x 56 | 0,5 | 10 01 11 07 0 | | | 10 06 10 10 0 | | 10 09 53 34 0 | 10 09 53 31 0 |
| **26 08 19 08 0** | PExB 26045 | 75 x 190 x 75 | 0,5 | 10 01 11 07 0 | | | 10 06 10 10 0 | | 10 09 53 70 0 | 10 09 53 67 0 |
| **26 08 23 06 0** | PExB 26050 | 75 x 230 x 56 | 0,6 | | | | 10 06 11 05 0 | | 10 09 53 36 0 | 10 09 53 31 0 |
| **26 08 23 08 0** | PExB 26055 | 75 x 230 x 75 | 0,7 | | | | 10 06 11 05 0 | | 10 09 53 71 0 | 10 09 53 67 0 |
| **26 12 12 09 0** | PExB 26060 | 120 x 122 x 91 | 0,8 | 10 01 10 07 0 | 10 06 20 01 0 | 10 06 80 01 0 | | 10 06 14 21 0 | 10 09 53 35 0 | 10 09 53 35 0 |
| **26 12 22 09 0** | PExB 26065 | 120 x 220 x 91 | 1,1 | 10 01 10 08 0 | 10 06 20 01 0 | 10 06 80 02 0 | | 10 06 14 22 0 | 10 09 53 36 0 | 10 09 53 36 0 |
| **26 16 16 09 0** | PExB 26070 | 160 x 160 x 91 | 1,3 | 10 01 10 10 0 | 10 06 20 04 0 | 10 09 10 56 0 | | 10 06 14 23 0 | 10 09 53 37 0 | 10 09 53 37 0 |
| **26 16 26 09 0** | PExB 26075 | 160 x 260 x 91 | 1,7 | 10 01 10 11 0 | 10 06 20 05 0 | 10 09 10 57 0 | | 10 06 14 24 0 | 10 09 53 38 0 | 10 09 53 37 0 |
| **26 16 36 09 0** | PExB 26080 | 160 x 360 x 91 | 2,2 | 10 01 10 12 0 | 10 06 20 03 0 | 10 09 10 58 0 | | 10 06 14 25 0 | 10 09 53 39 0 | 10 09 53 37 0 |
| **26 16 56 09 0** | PExB 26085 | 160 x 560 x 91 | 3,2 | 10 01 10 13 0 | 10 06 20 06 0 | 10 09 10 59 0 | | 10 06 14 26 0 | 10 09 53 40 0 | 10 09 53 37 0 |
| **26 25 26 12 0** | PExB 26090 | 250 x 255 x 121 | 2,7 | 10 01 11 15 0 | 10 06 20 05 0 | 10 09 11 41 0 | | 10 06 14 34 0 | 10 09 53 41 0 | 10 09 53 41 0 |
| **26 25 26 16 0** | PExB 26095 | 250 x 255 x 161 | 3,3 | 10 01 11 15 0 | 10 06 20 05 0 | 10 09 11 41 0 | | 10 06 14 34 0 | 10 09 53 41 0 | 10 09 53 41 0 |
| **26 25 40 12 0** | PExB 26100 | 250 x 400 x 121 | 3,7 | 10 01 11 16 0 | 10 06 20 11 0 | 10 09 10 63 0 | | 10 06 14 27 0 | 10 09 53 42 0 | 10 09 53 41 0 |
| **26 25 40 16 0** | PExB 26105 | 250 x 400 x 161 | 4,8 | 10 01 11 16 0 | 10 06 20 11 0 | 10 09 10 63 0 | | 10 06 14 27 0 | 10 09 53 42 0 | 10 09 53 41 0 |
| **26 25 60 12 0** | PExB 26110 | 250 x 600 x 121 | 5,2 | 10 01 11 17 0 | 10 06 20 12 0 | 10 09 10 64 0 | | 10 06 14 28 0 | 10 09 53 43 0 | 10 09 53 41 0 |
| **26 36 36 09 0** | PExB 26115 | 360 x 360 x 91 | 4,2 | 10 01 11 18 0 | 10 06 20 03 0 | 10 09 10 58 0 | | 10 06 14 25 0 | 10 09 53 39 0 | 10 09 53 37 0 |
| **26 41 40 12 0** | PExB 26120 | 405 x 400 x 121 | 5,6 | 10 01 11 19 0 | 10 06 20 11 0 | 10 09 10 63 0 | | 10 06 14 27 0 | 10 09 53 42 0 | 10 09 53 41 0 |
| **26 41 40 20 0** | PExB 26125 | 405 x 400 x 201 | 6,7 | 10 01 11 19 0 | 10 06 20 11 0 | 10 09 10 63 0 | | 10 06 14 27 0 | 10 09 57 50 0 | 10 09 57 50 0 |

## Accessories



**External mounting brackets**
(Set = 4 pieces)

| Order no. | for enclosures |
|---|---|
| **10 03 11 01 0** | for XX 08 08 06 0 - XX 10 20 08 0 |
| **10 03 11 02 0** | for XX 12 12 08 0 - XX 31 60 18 0, XX 14 01 00 0 - XX 14 03 00 0 |

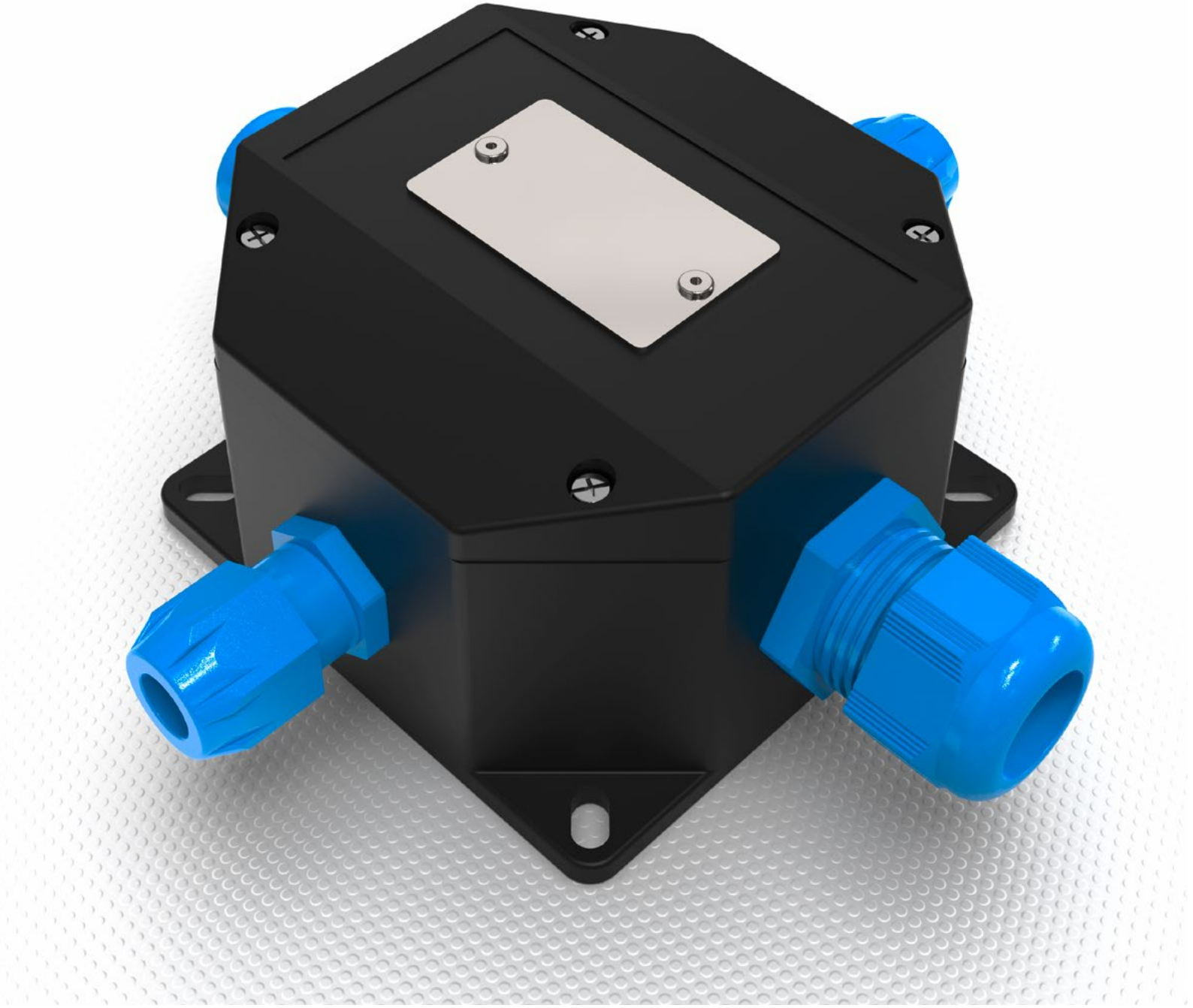


**External hinges**
Material aluminium
Swivel range 150°
(Set = 2 pieces)
**Order no. 10 02 70 01 0**



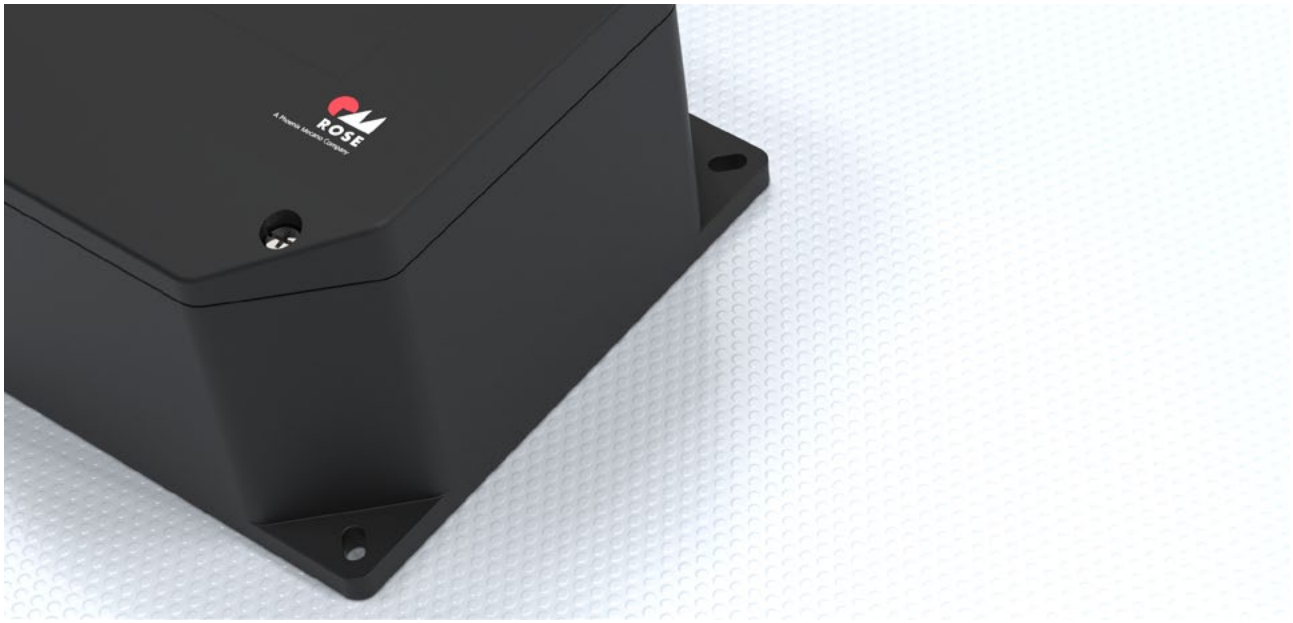
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## Applications



# Ex Polyester Okta-Box






## Approvals

- Glass fibre reinforced enclosure systems made of polyester resin for use in Ex areas Zone 1 / Zone 2 / Zone 21 / Zone 22
- Available as a component (U approval) or as a fully certified device, including the installation of terminals or electronic equipment
- Enclosures with external brackets

## Technical data

| | |
|---|---|
| **Material:** | glass fibre reinforced, thermosetting polyester with graphite additive |
| **Colour:** | RAL 9011, graphite black |
| **Protection class:** | IP 66 according to EN 60529 |
| **Impact resistance:** | 7 Joule according to EN 60079-0 |
| **Flammability:** | self-extinguishing, UL 94 V-0 |
| **Surface resistant:** | <109 Ohm according to IEC 60093 |
| **Toxicity:** | halogen-free |
| **Temperature resistance:** | -55°C up to +127 °C |
| **Further versions available upon request:** | EMC |

**Included in delivery**

Empty enclosure: Enclosure with silicone gasket.
Terminal enclosure: Enclosure system - depending on the version, with silicone gasket, offshore plate, mounting rail, internal earth connection, terminals, machining, cable glands.

3-D data and drawings

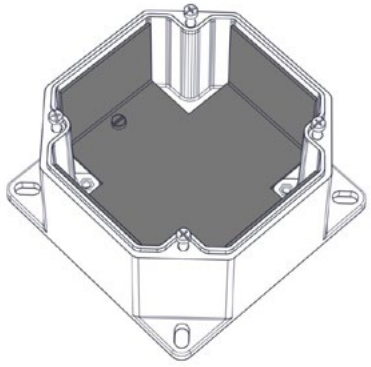


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## Product overview

| Order no. | Type | Mounting rails TS15 horizontal | Mounting rails TS35 horizontal | Mounting rails TS15 diagonal | Mounting rails TS35 diagonal | W x L x H (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|
| **26 88 01 00 0** | Okta ExB 2601 | 10 06 12 01 0 | | 10 06 12 07 0 | | 81 x 81 x 75 | 0,320 |
| **26 88 02 00 0** | Okta ExB 2602 | 10 06 10 50 0 | 10 06 14 83 0 | 10 06 11 02 0 | 10 06 13 33 0 | 121 x 121 x 75 | 0,500 |
| **26 88 03 00 0** | Okta ExB 2603 | 10 06 10 08 0 | 10 06 14 72 0 | 10 06 10 04 0 | 10 06 14 86 0 | 161 x 161 x 93 | 0,320 |
| **26 88 04 00 0** | Okta ExB 2604 | | 10 06 13 35 0 | 10 06 10 05 0 | 10 06 14 75 0 | 200 x 200 x 125 | 2,1 |

## Accessories



### Offshore plates

for the mounting of electromechanical components

| Order no. | for enclosures |
|---|---|
| **10 01 60 15 0** | for XX 88 01 00 0 |
| **10 01 60 16 0** | for XX 88 02 00 0 |
| **10 01 60 17 0** | for XX 88 03 00 0 |
| **10 01 60 18 0** | for XX 88 04 00 0 |



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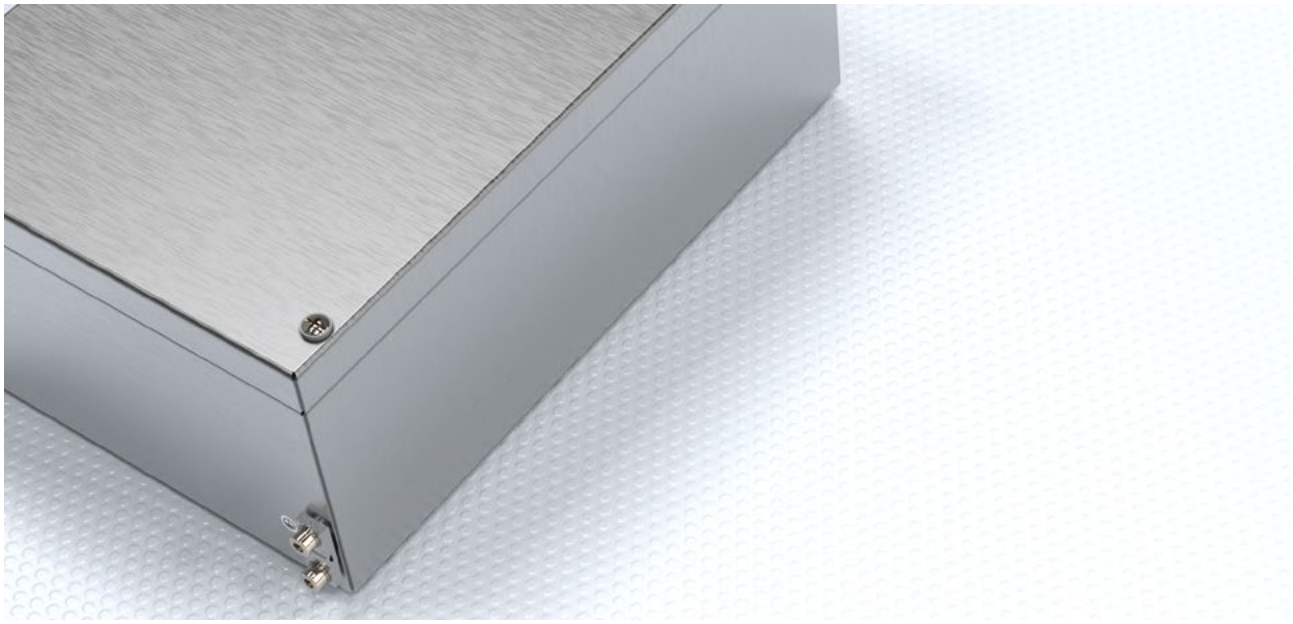
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## Applications



# Ex Stainless Steel





## Approvals

- Enclosure system made of stainless steel for use in Ex areas Zone 1 / Zone 2 / Zone 21 / Zone 22
- Available as a component (U approval) or as a fully certified device, including the installation of terminals or electronic equipment
- Optional version with viewing window

## Technical data

| | |
|---|---|
| **Material:** | Stainless steel 1,25 mm resp. 1,5 mm; 1.4404 / 316L |
| **Protection class:** | IP66 according to EN 60529 |
| **Surface:** | ground, grain 240 |
| **Impact resistance:** | 7 Joule according to EN 60079-0 |
| **Temperature resistance:** | -60 °C up to +135 °C |
| **Further versions available upon request:** | EMC |

**Included in delivery**

Empty enclosure: Enclosure with silicone gasket and external earth connection.
Terminal enclosure: Enclosure system - depending on the version, with silicone gasket, mounting rail, internal earth connection, terminals, machining, cable glands. Mounting kit to be ordered separately.

3-D data and drawings

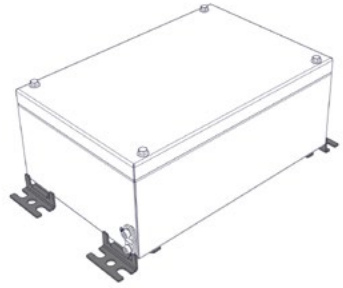


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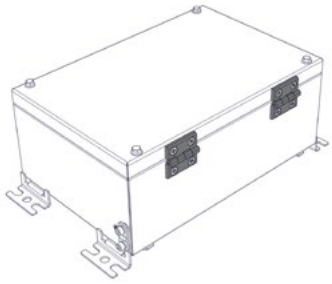
## Product overview

| Ex empty<br>Order no. | Type | Dimensions<br>L x W x H (mm) | Weight<br>(kg) | Mounting plates | Earthing rails | Protective earth busbar | Mounting rails<br>TS35 |
|---|---|---|---|---|---|---|---|
| **34 10 10 06 0** | IGExB 34010 | 100 x 100 x 61 | 0,6 | 10 01 10 53 0 | 10 06 20 26 0 | 10 06 81 27 0 | 10 06 14 41 0 |
| **34 15 10 06 0** | IGExB 34015 | 100 x 150 x 61 | 0,7 | 10 01 10 54 0 | 10 06 20 04 0 | 10 09 10 56 0 | 10 06 14 35 0 |
| **34 15 15 08 0** | IGExB 34020 | 150 x 150 x 81 | 1,2 | 10 01 10 38 0 | 10 06 20 04 0 | 10 09 10 56 0 | 10 06 14 35 0 |
| **34 20 10 06 0** | IGExB 34025 | 100 x 200 x 61 | 0,9 | 10 01 10 55 0 | 10 06 20 22 0 | 10 06 81 22 0 | 10 06 14 37 0 |
| **34 20 20 08 0** | IGExB 34030 | 200 x 200 x 81 | 1,8 | 10 01 10 40 0 | 10 01 10 40 0 | 10 06 81 22 0 | 10 06 14 37 0 |
| **34 20 20 12 0** | IGExB 34035 | 200 x 200 x 121 | 2,1 | 10 01 10 40 0 | 10 01 10 40 0 | 10 06 81 22 0 | 10 06 14 37 0 |
| **34 30 15 08 0** | IGExB 34040 | 150 x 300 x 81 | 1,9 | 10 01 10 39 0 | 10 01 10 39 0 | 10 06 81 21 0 | 10 06 14 36 0 |
| **34 30 20 08 0** | IGExB 34045 | 200 x 300 x 81 | 2,4 | 10 01 10 41 0 | 10 01 10 41 0 | 10 06 81 21 0 | 10 06 14 36 0 |
| **34 30 20 12 0** | IGExB 34050 | 200 x 300 x 121 | 2,8 | 10 01 10 41 0 | 10 01 10 41 0 | 10 06 81 21 0 | 10 06 14 36 0 |
| **34 30 30 12 0** | IGExB 34055 | 300 x 300 x 121 | 3,8 | 10 01 10 44 0 | 10 01 10 44 0 | 10 06 81 21 0 | 10 06 14 36 0 |
| **34 30 30 16 0** | IGExB 34060 | 300 x 300 x 161 | 4,1 | 10 01 10 44 0 | 10 01 10 44 0 | 10 06 81 21 0 | 10 06 14 36 0 |
| **34 38 38 16 0** | IGExB 34065 | 380 x 380 x 161 | 5,9 | 10 01 10 45 0 | 10 01 10 45 0 | 10 06 81 24 0 | 10 06 14 39 0 |
| **34 40 15 08 0** | IGExB 34070 | 150 x 400 x 81 | 2,4 | 10 01 10 56 0 | 10 01 10 56 0 | 10 06 81 23 0 | 10 06 14 38 0 |
| **34 40 20 12 0** | IGExB 34075 | 200 x 400 x 121 | 3,4 | 10 01 10 43 0 | 10 01 10 43 0 | 10 06 81 23 0 | 10 06 14 38 0 |
| **34 40 30 16 0** | IGExB 34080 | 300 x 400 x 161 | 5,3 | 10 01 10 48 0 | 10 01 10 48 0 | 10 06 81 23 0 | 10 06 14 38 0 |
| **34 50 30 16 0** | IGExB 34085 | 300 x 500 x 161 | 6,3 | 10 01 10 57 0 | 10 01 10 57 0 | 10 06 81 25 0 | 10 06 14 40 0 |
| **34 50 40 16 0** | IGExB 34090 | 400 x 500 x 161 | 7,4 | 10 01 10 49 0 | 10 01 10 49 0 | 10 06 81 25 0 | 10 06 14 40 0 |
| **34 60 20 12 0** | IGExB 34095 | 200 x 600 x 121 | 5,8 | 10 01 10 58 0 | 10 01 10 58 0 | 10 06 81 28 0 | 10 06 14 42 0 |

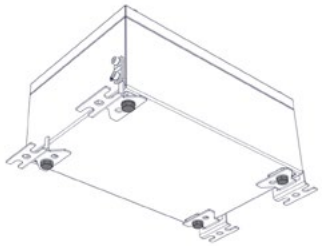
## Accessories



**External mounting brackets**
(Set = 4 pieces)
**Order no. 37 10 50 00 0**



**External hinge set**
Swivel range 150°
(Set = 2 pieces)
**Order no. 37 00 00 02 0**



**Mounting set**
Sealing discs, nuts and screws
**Order no. 37 99 00 01 0**



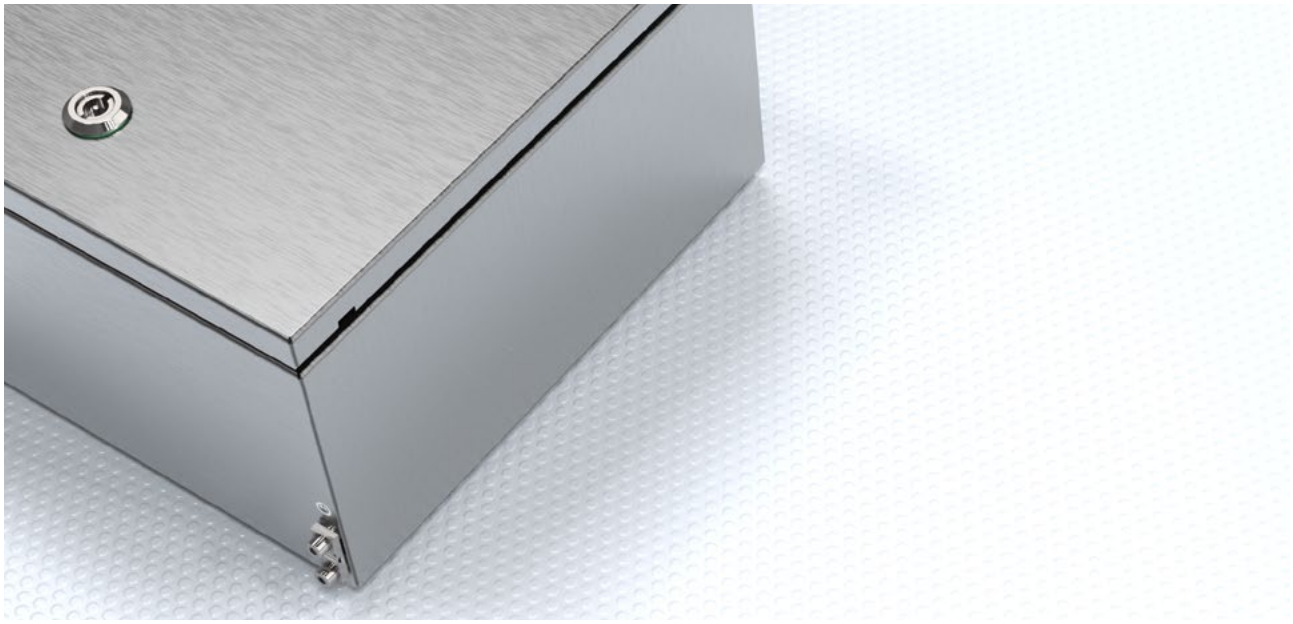
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## Applications



# Ex Stainless Steel hinged





## Approvals

- Enclosure system made of stainless steel for use in Ex areas Zone 1 / Zone 2 / Zone 21 / Zone 22
- Available as a component (U approval) or as a fully certified device, including the installation of terminals or electronic equipment
- Optional version with viewing window
- With concealed hinges and double-bitted lock

## Technical data

| | |
|---|---|
| **Material:** | Stainless steel 1,25 mm resp. 1,5 mm; 1.4404 / 316L |
| **Protection class:** | IP66 according to EN 60529 |
| **Surface:** | ground, grain 240 |
| **Impact resistance:** | 7 Joule according to EN 60079-0 |
| **Temperature resistance:** | -60 °C up to +135 °C |
| **Further versions available upon request:** | EMC |

**Included in delivery**

Empty enclosure: Enclosure with silicone gasket and external earth connection.
Terminal enclosure: Enclosure system - depending on the version, with silicone gasket, mounting rail, internal earth connection, terminals, machining, cable glands. Mounting kit to be ordered separately.

3-D data and drawings



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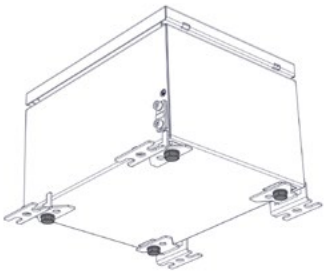
## Product overview

| Ex empty<br>Order no. | Type | Dimensions<br>L x W x H (mm) | Weight<br>(kg) | Mounting plates | Earthing rails | Protective earth busbar | Mounting rails<br>TS35 |
|---|---|---|---|---|---|---|---|
| **34 00 22 09 0** | IGSExB 34010 | 250 x 200 x 97 | 2,4 | 10 01 10 66 0 | 10 06 20 22 0 | 10 06 81 22 0 | 10 06 14 37 0 |
| **34 00 22 15 0** | IGSExB 34015 | 250 x 200 x 157 | 2,9 | 10 01 10 66 0 | 10 06 20 22 0 | 10 06 81 22 0 | 10 06 14 37 0 |
| **34 00 32 09 0** | IGSExB 34020 | 250 x 350 x 97 | 3,5 | 10 01 10 67 0 | 10 06 20 03 0 | | 10 06 14 25 0 |
| **34 00 33 16 0** | IGSExB 34025 | 300 x 300 x 167 | 4,4 | 10 01 10 44 0 | 10 06 20 21 0 | 10 06 81 21 0 | 10 06 14 36 0 |
| **34 00 44 16 0** | IGSExB 34030 | 380 x 380 x 167 | 6,1 | 10 01 10 45 0 | 10 06 20 24 0 | 10 06 81 24 0 | 10 06 14 39 0 |
| **34 00 44 21 0** | IGSExB 34035 | 380 x 380 x 217 | 6,9 | 10 01 10 45 0 | 10 06 20 24 0 | 10 06 81 24 0 | 10 06 14 39 0 |
| **34 00 53 16 0** | IGSExB 34040 | 300 x 500 x 167 | 6,4 | 10 01 10 57 0 | 10 06 20 25 0 | 10 06 81 25 0 | 10 06 14 40 0 |
| **34 00 63 16 0** | IGSExB 34045 | 300 x 600 x 167 | 8,8 | 10 01 10 68 0 | 10 06 20 27 0 | 10 06 81 28 0 | 10 06 14 42 0 |
| **34 00 64 21 0** | IGSExB 34050 | 380 x 600 x 217 | 11,4 | 10 01 10 69 0 | 10 06 20 27 0 | 10 06 81 28 0 | 10 06 14 42 0 |

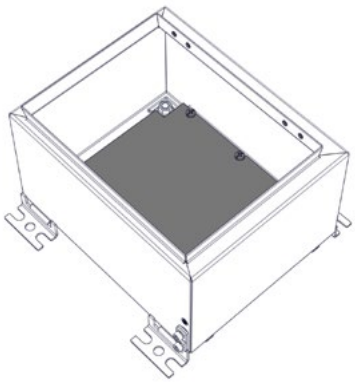
## Accessories



**External mounting brackets**
(Set = 4 pieces)
**Order no. 37 10 50 00 0**



**Mounting set**
(Sealing discs, nuts and screws)
**Order no. 37 99 00 01 0**



**Mounting plates**
for the mounting of electromechanical components

| Order no. | for enclosure |
|---|---|
| **10 01 10 66 0** | for XX 00 22 09 0, XX 00 22 15 0 |
| **10 01 10 67 0** | for XX 00 32 09 0 |
| **10 01 10 44 0** | for XX 30 30 12 0, XX 30 30 16 0, XX 00 33 16 0 |
| **10 01 10 45 0** | for XX 38 38 16 0, XX 00 44 16 0, XX 00 44 21 0 |
| **10 01 10 57 0** | for XX 50 30 16 0, XX 00 53 16 0 |
| **10 01 10 68 0** | for XX 00 63 16 0 |
| **10 01 10 69 0** | for XX 00 64 21 0 |



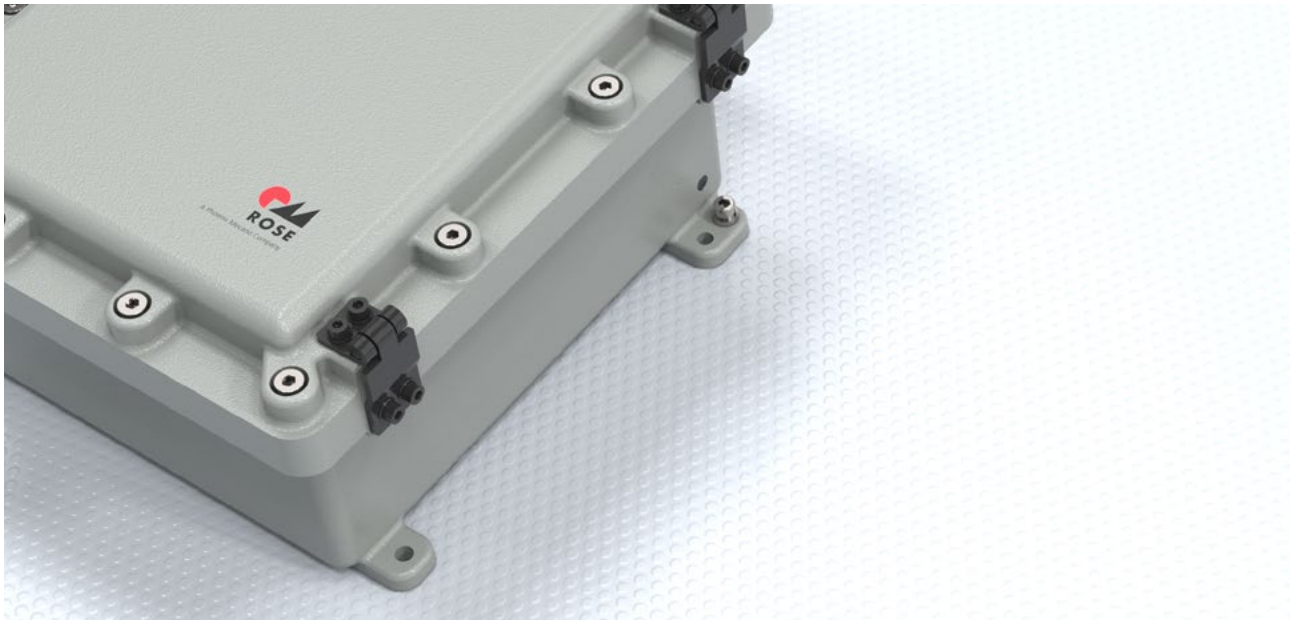
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## Applications



# Ex d IIB+H2 Enclosure series EJB






## Approvals

- Pressure-resistant enclosure made of aluminium or stainless steel for the installation of non-Ex certified components and terminals
- Available as a component (U-approval) or as a fully certified device for the installation of terminals or electronic equipment
- Optional version with viewing window

## Technical data

| | |
|---|---|
| **Material:** | Copper-free aluminium<br>Stainless steel 1.4404/316L |
| **Protection class:** | IP66 according to EN 60529 |
| **Colour:** | Aluminium: RAL 7035, light grey<br>Stainless steel: unpainted, painting optional |
| **Impact resistance:** | 7 Joule according to EN 60079-0 |
| **Temperature resistance:** | -60 °C up to + 135 °C, depending on the enclosure dimensions |

**Included in delivery**

Enclosure system consisting of a base and lid with screws, external earth connection, hinge, and external mounting lugs

3-D data and drawings



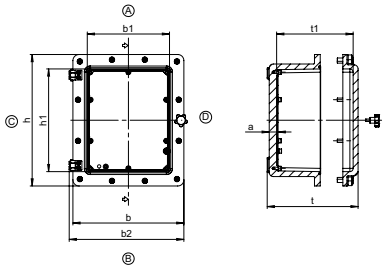
L'IMPULSION Retrouvez nous sur www.limpulsion.fr

## Product overview

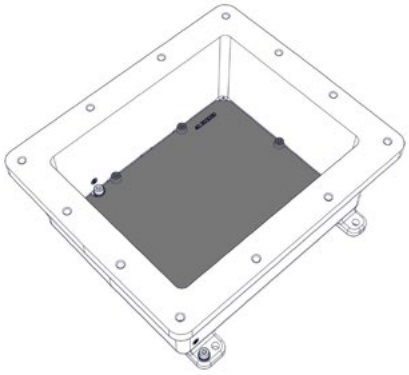
| Order no. | Type | External dimensions L x W x H (mm) | Internal dimensions L x W x H (mm) | Weight (kg) |
|---|---|---|---|---|
| **Aluminium** | | | | |
| 40 10 30 10 0 | EJB 01 AL | 220 x 170 x 152 | 150 x 100 x 119 | 4,3 |
| 40 10 30 20 0 | EJB 02 AL | 270 x 220 x 158 | 200 x 150 x 125 | 6,6 |
| 40 10 30 30 0 | EJB 03 AL | 320 x 270 x 166 | 250 x 200 x 129 | 10,1 |
| 40 10 30 60 0 | EJB 06 AL | 490 x 440 x 250 | 400 x 350 x 195 | 30,2 |
| 40 10 30 90 0 | EJB 09 AL | 780 x 580 x 440 | 650 x 450 x 361 | 115 |
| 40 10 31 00 0 | EJB 10 AL | 980 x 680 x 487 | 850 x 550 x 387 | 202 |
| **Stainless steel** | | | | |
| 40 20 30 10 0 | EJB 01 SS | 220 x 170 x 152 | 150 x 100 x 119 | 12,6 |
| 40 20 30 20 0 | EJB 02 SS | 270 x 220 x 158 | 200 x 150 x 125 | 19,6 |
| 40 20 30 30 0 | EJB 03 SS | 320 x 270 x 166 | 250 x 200 x 129 | 30,3 |

## Dimensions

| Order no. | b | h | t | b1 | h1 | t1 | a | h2 |
|---|---|---|---|---|---|---|---|---|
| 40 10 30 10 0 | 170 | 220 | 152,0 | 100 | 150 | 121 | 19,5 | 181 |
| 40 10 30 20 0 | 220 | 270 | 158,0 | 150 | 200 | 127 | 19,5 | 229 |
| 40 10 30 30 0 | 270 | 320 | 161,0 | 200 | 250 | 131 | 21,5 | 279 |
| 40 10 30 60 0 | 440 | 490 | 250,0 | 350 | 400 | 195 | 32,5 | 449 |
| 40 10 30 90 0 | 580 | 780 | 440,0 | 450 | 650 | 360 | 47,5 | 589 |
| 40 10 31 00 0 | 680 | 980 | 487,0 | 550 | 850 | 387 | 59,5 | 689 |
| 40 20 30 10 0 | 170 | 220 | 152,0 | 100 | 150 | 121 | 19,5 | 181 |
| 40 20 30 20 0 | 220 | 270 | 158,0 | 150 | 200 | 127 | 19,5 | 229 |
| 40 20 30 30 0 | 270 | 320 | 161,0 | 200 | 250 | 131 | 21,5 | 279 |




## Accessories



### Mounting Plates

for mounting electromechanical components

| Order no. | Mouting plate | Dimensions L x W x H (mm) |
|---|---|---|
| 40 10 30 10 0 | 40 30 30 10 0 | 142 x 92 x 1,5 |
| 40 10 30 20 0 | 40 30 30 20 0 | 192 x 142 x 1,5 |
| 40 10 30 30 0 | 40 30 30 30 0 | 242 x 192 x 1,5 |
| 40 10 30 60 0 | 40 30 30 60 0 | 375 x 325 x 1,5 |
| 40 10 30 90 0 | 40 30 30 90 0 | 590 x 390 x 1,5 |
| 40 10 31 00 0 | 40 30 31 00 0 | 780 x 480 x 1,5 |
| 40 20 30 10 0 | 40 30 30 10 0 | 142 x 92 x 1,5 |
| 40 20 30 20 0 | 40 30 30 20 0 | 192 x 142 x 1,5 |
| 40 20 30 30 0 | 40 30 30 30 0 | 242 x 192 x 1,5 |

# Ex d IIB+H2 Enclosure series EJB



## Technical details

| Type | Temperature class | T6 | | | T5 | | | | | T4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | max. surface temperature | T85 °C | | | T100 °C | | | | | T135 °C | | | | |
| | max. ambient temperature | +40 °C | +50 °C | +60 °C | +40 °C | +50 °C | +55 °C | +60 °C | +75 °C | +40 °C | +50 °C | +60 °C | +90 °C | +110 °C |
| **EJB 01** | max. allowed power dissipation (W) | 60 | - | 36 | - | - | 60 | - | 36 | - | - | - | 60 | 36 |
| **EJB 02** | | 76 | - | 42 | - | - | 76 | - | 42 | - | - | - | 76 | 42 |
| **EJB 03** | | 87 | - | 60 | - | - | 87 | - | 60 | - | - | - | 87 | 60 |
| **EJB 04** | | 190 | 150 | 105 | 292 | 230 | 190 | 185 | 105 | 530 | 455 | 390 | 190 | 105 |
| **EJB 06** | | 209 | 166 | 114 | 338 | 260 | 209 | 206 | 114 | 584 | 514 | 436 | 209 | 114 |
| **EJB 07** | | 365 | 290 | 205 | 570 | 440 | 365 | 320 | 205 | 1050 | 890 | 760 | 365 | 205 |
| **EJB 09** | | 467 | 319 | 236 | 728 | 555 | 467 | 353 | 236 | 1238 | 1145 | 956 | 467 | 236 |
| **EJB 10** | | 726 | 568 | 400 | 1085 | 864 | 726 | 712 | 400 | 2038 | 1709 | 1454 | 726 | 400 |

## Assembly possibilities

| Type | Control equipment | Window (mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 44x44 | 68x68 | 92x92 | 92x140 | 140x140 | 140x186 | 186x186 | 234x234 | 280x280 | 328x376 | 376x376 |
| **EJB 01 AL** | 4 | 1 | | | | | | | | | | |
| **EJB 02 AL** | 9 | 4 | 1 | 1 | | | | | | | | |
| **EJB 03 AL** | 16 | 9 | 4 | 1 | 1 | 1 | | | | | | |
| **EJB 06 AL** | 49 | 25 | 9 | 4 | 2 | 1 | 1 | 1 | 1 | | | |
| **EJB 09 AL** | 88 | 56 | 20 | 12 | 6 | 4 | 4 | 2 | 1 | 1 | 1 | |
| **EJB 10 AL** | 140 | 64 | 25 | 16 | 8 | 4 | 4 | 4 | 1 | 1 | 1 | 1 |
| **EJB 01 SS** | 4 | 1 | | | | | | | | | | |
| **EJB 02 SS** | 9 | 4 | 1 | 1 | | | | | | | | |
| **EJB 03 SS** | 16 | 9 | 4 | 1 | 1 | 1 | | | | | | |

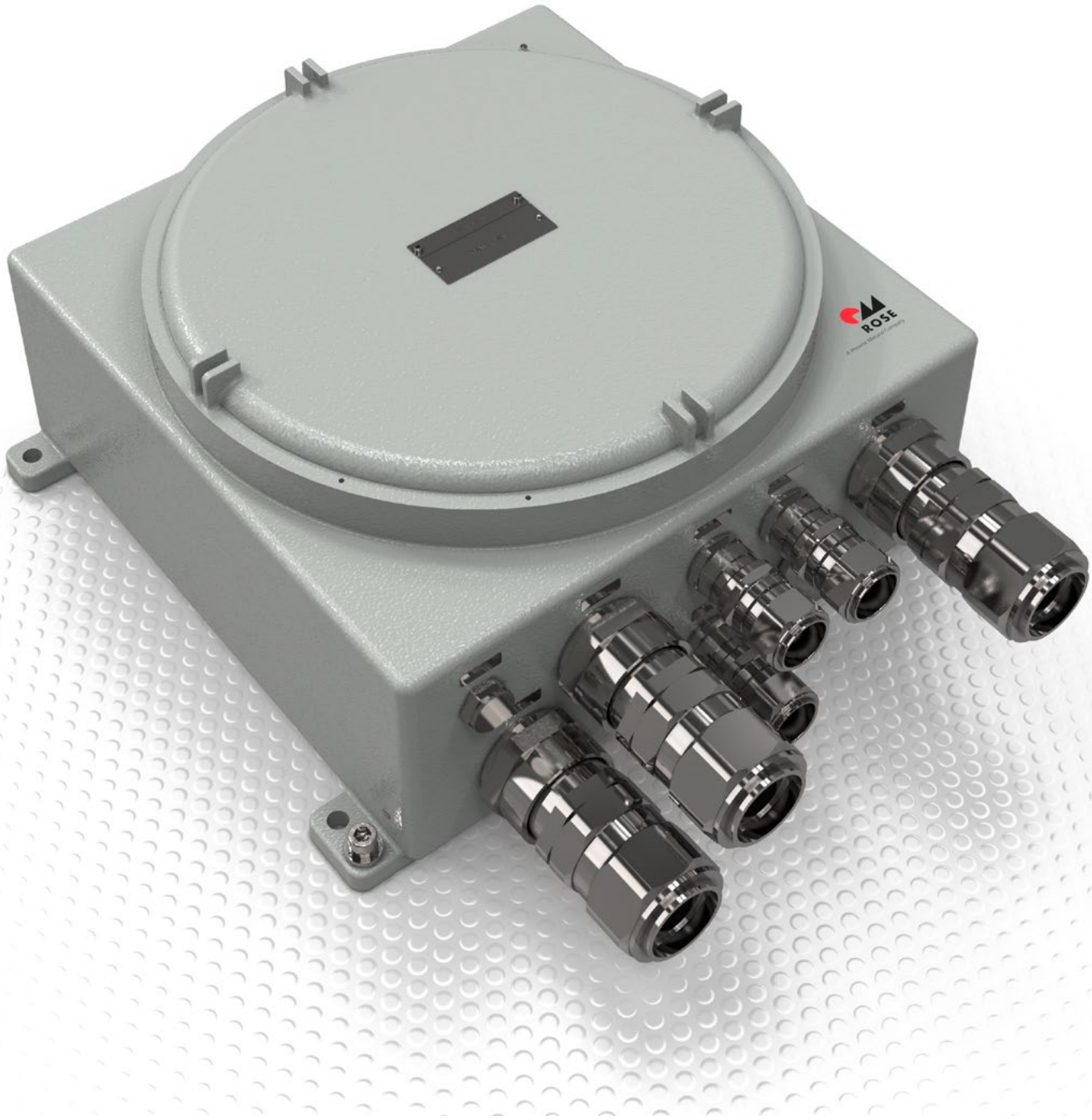
| | | Side | Type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **M** | **NPT** | | **EJB 01 AL** | **EJB 02 AL** | **EJB 03 AL** | **EJB 06 AL** | **EJB 09 AL** | **EJB 10 AL** | **EJB 01 SS** | **EJB 02 SS** | **EJB 03 SS** |
| **20** | 1/2" | A/B | 4 | 6 | 8 | 21 | 54 | 66 | 4 | 6 | 8 |
| **20** | 1/2" | C/D | 6 | 8 | 10 | 24 | 84 | 108 | 6 | 8 | 10 |
| **25** | 3/4" | A/B | 2 | 4 | 6 | 17 | 33 | 54 | 2 | 4 | 6 |
| **25** | 3/4" | C/D | 4 | 5 | 8 | 20 | 54 | 90 | 4 | 5 | 8 |
| **32** | 1" | A/B | 1 | 3 | 4 | 11 | 28 | 36 | 1 | 3 | 4 |
| **32** | 1" | C/D | 2 | 4 | 5 | 12 | 43 | 60 | 2 | 4 | 5 |
| **40** | 1 1/4" | A/B | | 2 | 3 | 8 | 18 | 28 | | 2 | 3 |
| **40** | 1 1/4" | C/D | | 3 | 3 | 10 | 28 | 44 | | 3 | 3 |
| **50** | 1 1/2" | A/B | | | 2 | 4 | 12 | 18 | | | 2 |
| **50** | 1 1/2" | C/D | | | 3 | 5 | 21 | 28 | | | 3 |
| **63** | 2" | A/B | | | | 3 | 11 | 15 | | | |
| **63** | 2" | C/D | | | | 4 | 17 | 24 | | | |
| **75** | 2 1/2" | A/B | | | | 3 | 6 | 9 | | | |
| **75** | 2 1/2" | C/D | | | | 3 | 9 | 15 | | | |
| **90** | 3" | A/B | | | | | 5 | 7 | | | |
| **90** | 3" | C/D | | | | | 8 | 12 | | | |
| **100** | 4" | A/B | | | | | 5 | 6 | | | |
| **100** | 4" | C/D | | | | | 7 | 10 | | | |



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## Applications



# Ex d IIC Enclosure series GUB






## Approvals

- Flameproof housing made of aluminium or stainless steel for the installation of non-Ex-certified components and terminals
- For gas group IIC

## Technical data

| | |
|---|---|
| **Material:** | Copper-free aluminium |
| **Ingress protection:** | IP66 nach EN 60529 |
| **Colour:** | RAL 7035, light grey |
| **Impact resistance:** | 7 Joule nach EN 60079-0 |
| **Temperature range:** | -20 °C up to +130 °C, depending on the enclosure dimensions |

**Included in delivery**

Enclosure system consisting of a base and a screwed lid, with an external earth connection and external lugs

3-D data and drawings



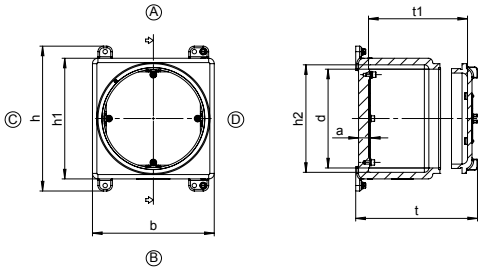
L'IMPULSION | Retrouvez nous sur www.limpulsion.fr

## Product overview

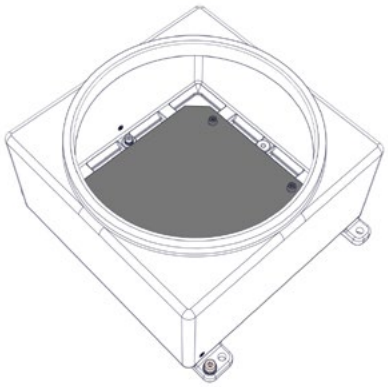
| Order no. | Type | External dimensions L x W x H (mm) | Internal dimensions L x W x H (mm) | Weight (kg) |
|---|---|---|---|---|
| **40 10 20 10 0** | GUB 01 AL | 220 x 220 x 182 | 196 x 196 x 133 | 6,2 |
| **40 10 20 20 0** | GUB 02 AL | 270 x 270 x 182 | 246 x 246 x 128 | 8,8 |
| **40 10 20 30 0** | GUB 03 AL | 320 x 320 x 211 | 292 x 292 x 150 | 15,5 |
| **40 10 20 40 0** | GUB 04 AL | 370 x 370 x 217 | 342 x 342 x 151 | 21,0 |
| **40 10 20 50 0** | GUB 05 AL | 420 x 420 x 239 | 388 x 388 x 170 | 30,0 |
| **40 10 20 60 0** | GUB 06 AL | 470 x 470 x 247 | 434 x 434 x 173 | 39,3 |

## Dimensions

| Order no. | b | h | t | h1 | t1 | h2 | a | d |
|---|---|---|---|---|---|---|---|---|
| **40 10 20 10 0** | 220 | 264 | 180,0 | 220,0 | 139 | 196 | 21,5 | Ø180 |
| **40 10 20 20 0** | 270 | 314 | 180,0 | 270,0 | 139 | 246 | 21,5 | Ø226 |
| **40 10 20 30 0** | 320 | 372 | 209,0 | 320,0 | 161 | 292 | 25,5 | Ø262 |
| **40 10 20 40 0** | 370 | 430 | 216,0 | 370,0 | 161 | 342 | 27,5 | Ø308 |
| **40 10 20 50 0** | 420 | 480 | 238,0 | 420,0 | 181 | 388 | 29,5 | Ø344 |
| **40 10 20 60 0** | 470 | 538 | 246,0 | 470 | 184 | 434 | 31,5 | Ø394 |




## Accessories



### Mounting Plates

for mounting electromechanical components

| Order no. | Mouting plate | Dimensions L x W x H (mm) |
|---|---|---|
| **40 10 20 10 0** | 40 30 20 10 0 | 170 x 170 x 1,5 |
| **40 10 20 20 0** | 40 30 20 20 0 | 205 x 205 x 1,5 |
| **40 10 20 30 0** | 40 30 20 30 0 | 245 x 245 x 1,5 |
| **40 10 20 40 0** | 40 30 20 40 0 | 290 x 290 x 1,5 |
| **40 10 20 50 0** | 40 30 20 50 0 | 330 x 330 x 1,5 |
| **40 10 20 60 0** | 40 30 20 60 0 | 380 x 380 x 1,5 |

## Technical Details

| Type | Temperature class | T6 | | | T5 | | | | | T4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | max. surface temperature* | T85 °C | | | T100 °C | | | | | T135 °C | | | | |
| | max. ambient temperature | +40 °C | +50 °C | +60 °C | +40 °C | +50 °C | +55 °C | +60 °C | +75 °C | +40 °C | +50 °C | +60 °C | +90 °C | +110 °C |
| GUB 01 | max. allowed power dissipation (W) | 82 | - | 38 | - | - | 82 | - | 38 | - | - | - | 82 | 38 |
| GUB 01W | | | - | | - | - | | - | | - | - | - | - | - |
| GUB 02 | | 86 | - | 45 | - | - | 86 | - | 45 | - | - | - | 86 | 45 |
| GUB 02W | | | - | | - | - | | - | | - | - | - | - | - |
| GUB 03 | | 114 | - | 64 | - | - | 114 | - | 64 | - | - | - | 114 | 64 |
| GUB 03W | | | - | | - | - | | - | | - | - | - | - | - |
| GUB 04 | | 170 | 120 | 70 | 230 | 180 | 170 | 126 | 70 | 410 | 376 | 316 | 170 | 70 |
| GUB 04W | | | | | | | | | | - | - | - | - | - |
| GUB 05 | | 218 | 168 | 91 | 291 | 226 | 218 | 159 | 91 | 491 | 451 | 400 | 218 | 91 |
| GUB 05W | | | | | | | | | | - | - | - | - | - |
| GUB 06 | | 250 | 182 | 150 | 405 | 282 | 250 | 215 | 150 | 723 | 609 | 472 | 250 | 150 |
| GUB 06W | | | | | | | | | | - | - | - | - | - |

* values have been determined without a dust layer

- = W types are not suitable for T4 / T135 °C

| | | Side | Type | | | | | |
|---|---|---|---|---|---|---|---|---|
| M | NPT | | GUB 01 AL | GUB 02 AL | GUB 03 AL | GUB 04 AL | GUB 05 AL | GUB 06 AL |
| 20 | 1/2" | A/B | 9 | 12 | 18 | 21,0 | 24,0 | 27 |
| 20 | 1/2" | C/D | 9 | 12 | 18 | 21,0 | 24,0 | 27 |
| 25 | 3/4" | A/B | 6 | 8 | 12 | 14,0 | 20,0 | 23 |
| 25 | 3/4" | C/D | 6 | 8 | 12 | 14,0 | 20,0 | 23 |
| 32 | 1" | A/B | 5 | 6 | 8 | 9,0 | 12,0 | 14 |
| 32 | 1" | C/D | 5 | 6 | 8 | 9,0 | 12 | 14 |
| 40 | 1 1/4" | A/B | 3 | 4 | 6 | 8 | 9,0 | 11 |
| 40 | 1 1/4" | C/D | 3 | 4 | 6 | 8,0 | 9,0 | 11 |
| 50 | 1 1/2" | A/B | | | 3 | 4,0 | 6,0 | 6 |
| 50 | 1 1/2" | C/D | | | 3 | 4,0 | 6,0 | 6 |
| 63 | 2" | A/B | | | | 3,0 | 4,0 | 5 |
| 63 | 2" | C/D | | | | 3,0 | 4,0 | 5 |
| 75 | 2 1/2" | A/B | | | | | | 3 |
| 75 | 2 1/2" | C/D | | | | | | 3 |

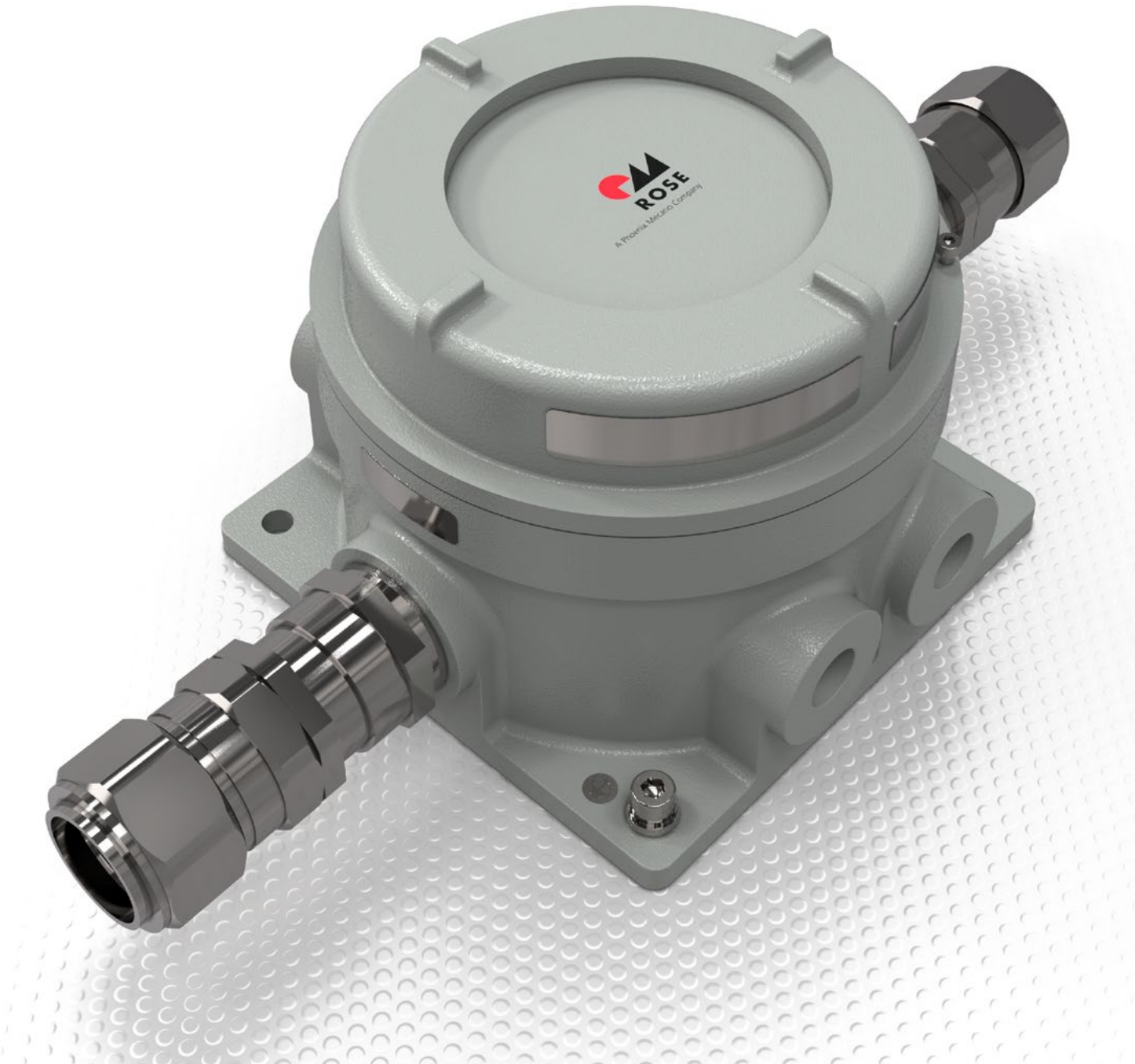
Max. options for cable entries




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## Applications



# Ex d IIC Enclosure series TBE






## Approvals

- Small distribution enclosure for the installation of terminals and small devices
- Available in aluminium and stainless steel
- For gas group IIC
- Optional version with viewing window

## Technical data

| | |
|---|---|
| **Material:** | Copper-free aluminium<br>Stainless steel 1.4404/316L |
| **Ingress protection:** | IP66 accoding to EN 60529 |
| **Colour:** | Aluminium: RAL 7035, light grey<br>Stainless steel: unpainted, painting on request |
| **Impact resistance:** | 7 Joule according to EN 60079-0 |
| **Surface:** | Powder coating |
| **Temperature range:** | -60 °C up to +110 °C, depending on the enclosure dimensions |

**Included in delivery**

Enclosure system consisting of a base and a screwed lid, with an external earth connection and external lugs

3-D data and drawings



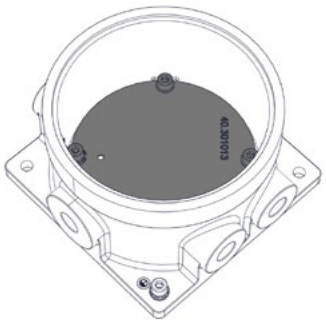
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## Product overview

| Order no. | Type | External dimensions L x W x H (mm) | Internal dimensions L x W x H (mm) | Weight (kg) |
|---|---|---|---|---|
| ***Aluminium*** | | | | |
| **40 10 10 10 0** | TBE 100T AL | 116 x 116 x 98 | 98 x 98 x 66 | 1,1 |
| **40 10 10 13 0** | TBE 130T AL | 148 x 148 x 107 | 127 x 127 x 71 | 1,8 |
| **40 10 10 16 0** | TBE 160T AL | 180 x 180 x 116 | 157 x 157 x 78 | 2,9 |
| ***Stainless steel*** | | | | |
| **40 20 10 10 0** | TBE 100T SS | 116 x 116 x 98 | 98 x 98 x 66 | 3,0 |
| **40 20 10 13 0** | TBE 130T SS | 148 x 148 x 107 | 127 x 127 x 71 | 5,2 |
| **40 20 10 16 0** | TBE 160T SS | 180 x 180 x 116 | 157 x 157 x 78 | 8,6 |

## Accessories



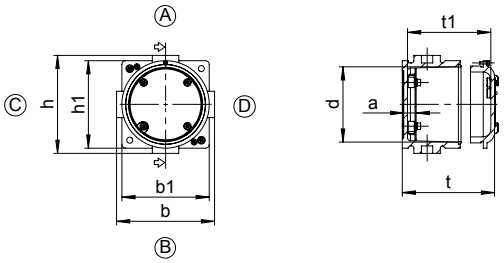
### Mounting Plates

for mounting electromechanical components

| Order no. | Mouting plate | Dimensions L x W x H (mm) |
|---|---|---|
| **40 10 20 10 0** | 40 30 10 10 0 | 91 x 1,5 |
| **40 10 20 20 0** | 40 30 10 13 0 | 125 x 1,5 |
| **40 10 20 30 0** | 40 30 10 16 0 | 150 x 1,5 |
| **40 10 20 40 0** | 40 30 10 10 0 | 91 x 1,5 |
| **40 10 20 50 0** | 40 30 10 13 0 | 120 x 1,5 |
| **40 10 20 60 0** | 40 30 10 16 0 | 150 x 1,5 |

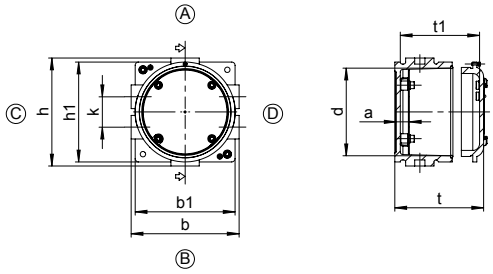
## Dimensions

| Order no. | b | h | t | b1 | h1 | t1 | a | d |
|---|---|---|---|---|---|---|---|---|
| **40 10 10 10 0** | 130 | 130 | 97,5 | 116 | 116 | 80,5 | 17 | Ø100 |
| **40 20 10 10 0** | 130 | 130 | 97,5 | 116 | 116 | 80,5 | 17 | Ø100 |



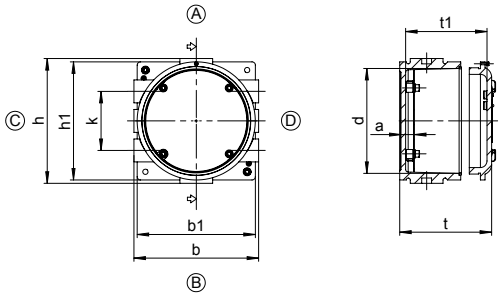

## Dimensions

| Order no. | b | h | t | b1 | h1 | t1 | a | k | d |
|---|---|---|---|---|---|---|---|---|---|
| **40 10 10 13 0** | 160 | 160 | 106,5 | 148 | 148 | 87,5 | 20 | 45 | Ø130 |
| **40 20 10 13 0** | 160 | 160 | 106,5 | 148 | 148 | 87,5 | 20 | 45 | Ø130 |



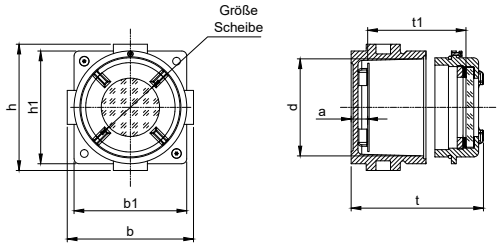

## Dimensions

| Order no. | b | h | t | b1 | h1 | t1 | a | k | d |
|---|---|---|---|---|---|---|---|---|---|
| **40 10 10 16 0** | 190 | 190 | 116 | 180 | 180 | 94 | 21 | 90 | Ø160 |
| **40 20 10 16 0** | 190 | 190 | 116 | 180 | 180 | 94 | 21 | 90 | Ø160 |



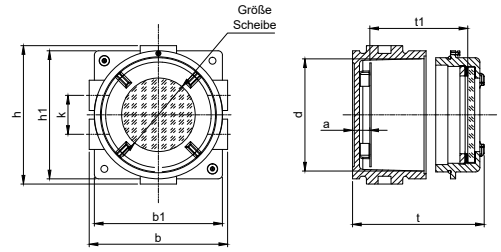
## Dimensions

| Order no. | b | h | t | b1 | h1 | t1 | a | d | window |
|---|---|---|---|---|---|---|---|---|---|
| **40 10 15 10 0** | 130 | 130 | 110 | 116 | 116 | 75 | 17 | Ø100 | Ø60 |
| **40 10 16 10 0** | 130 | 130 | 110 | 116 | 116 | 71 | 17 | Ø100 | Ø60 |



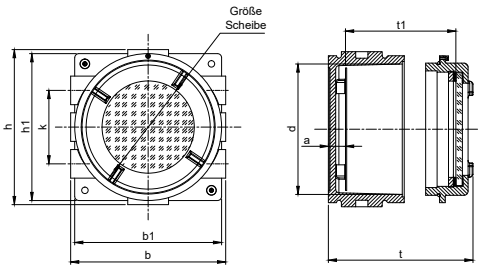

## Dimensions

| Order no. | b | h | t | b1 | h1 | t1 | a | k | d | window |
|---|---|---|---|---|---|---|---|---|---|---|
| **40 10 15 13 0** | 160 | 160 | 124 | 148 | 148 | 85 | 20 | 45 | Ø130 | Ø85 |
| **40 10 16 13 0** | 160 | 160 | 124 | 148 | 148 | 81 | 20 | 45 | Ø130 | Ø85 |




## Dimensions

| Order no. | b | h | t | b1 | h1 | t1 | a | k | d | window |
|---|---|---|---|---|---|---|---|---|---|---|
| **40 10 15 16 0** | 160 | 160 | 124 | 148 | 148 | 85 | 20 | 45 | Ø130 | Ø85 |
| **40 10 16 16 0** | 160 | 160 | 124 | 148 | 148 | 81 | 20 | 45 | Ø130 | Ø85 |



## Technical Details

| Type | Dimensions L x W x H (mm) | Temperature class | T6 | T5 | T4 | T6 | T5 | T4 |
|---|---|---|---|---|---|---|---|---|
| | | max. surface temperature* | T85 °C | T100 °C | T135 °C | T85 °C | T100 °C | T135 °C |
| | | max. ambient temperature | +40 °C | +55 °C | +90 °C | +60 °C | +75 °C | +110 °C |
| **TBE 100T** | 130 x 116 x 98 | max. allowed power dissipation (W) | 20 | | | 12 | | |
| **TBE 130T** | 160 x 148 x 107 | | 29 | | | 15 | | |
| **TBE 160T** | 190 x 180 x 116 | | 41 | | | 24 | | |
| **TBE 100TW** | 130 x 116 x 110 | | 20 | | - | 12 | | - |
| **TBE 130TW** | 160 x 148 x 124 | | 29 | | - | 15 | | - |
| **TBE 160TW** | 190 x 180 x 134 | | 41 | | - | 24 | | - |

* values have been determined without a dust layer

- = TW types are not suitable for T4 / T135 °C

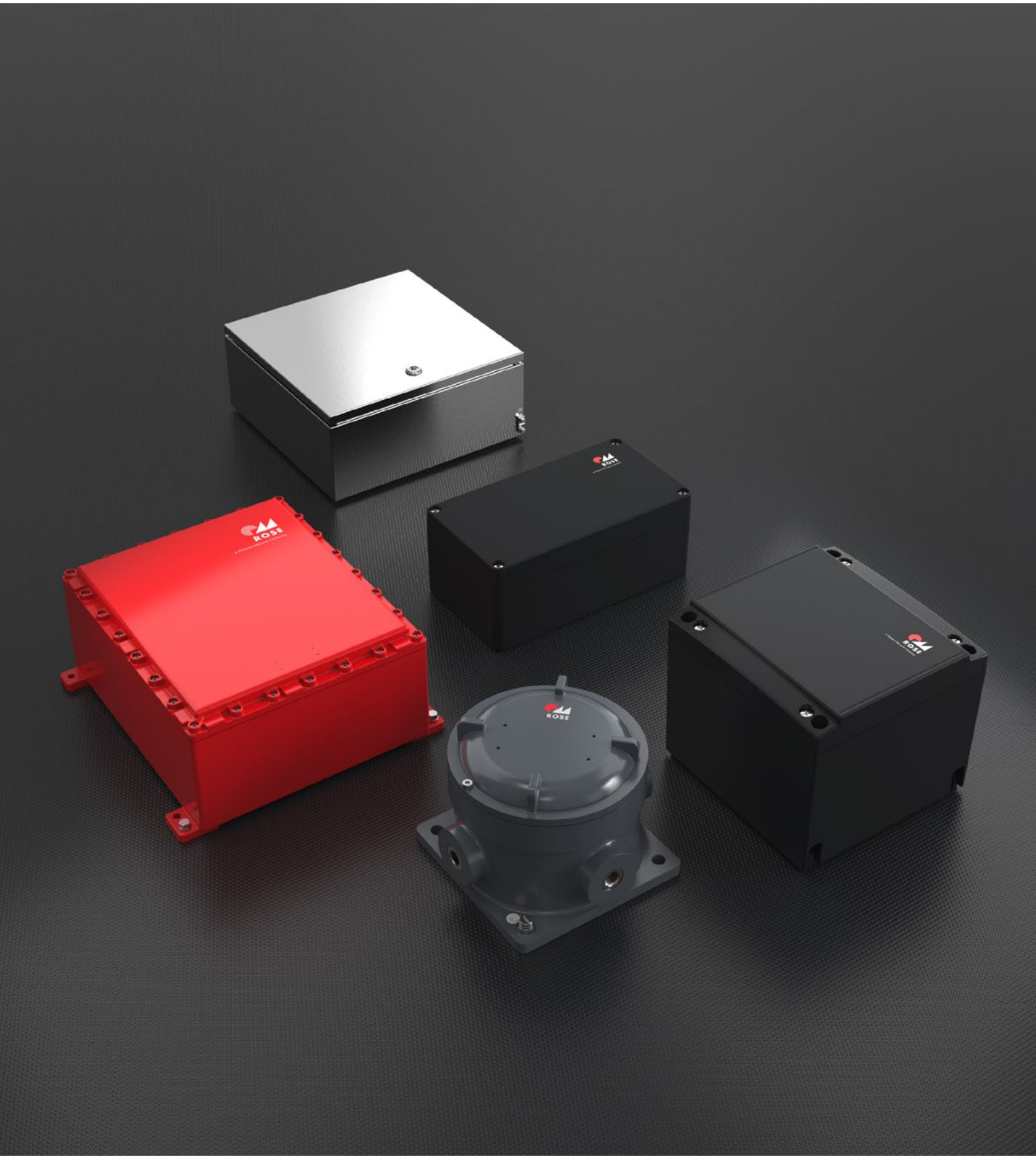
| | | Side | Type | | | | | |
|---|---|---|---|---|---|---|---|---|
| **M** | **NPT** | | **TBE 100T AL** | **TBE 130T AL** | **TBE 160T AL** | **TBE 100T SS** | **TBE 130T SS** | **TBE 160T SS** |
| **20** | 1/2" | A/B | 1 | 1 | 1 | 1 | 1 | 1 |
| **20** | 1/2" | C/D | 1 | 2 | 3 | 1 | 2 | 3 |
| **25** | 3/4" | A/B | 1 | 1 | 1 | 1 | 1 | 1 |
| **25** | 3/4" | C/D | 1 | 2 | 3 | 1 | 2 | 3 |
| **32** | 1" | A/B | | 1 | 1 | | 1 | 1 |
| **32** | 1" | C/D | | | | | | |
| **40** | 1 1/4" | A/B | | | 1 | | | 1 |
| **40** | 1 1/4" | C/D | | | | | | |

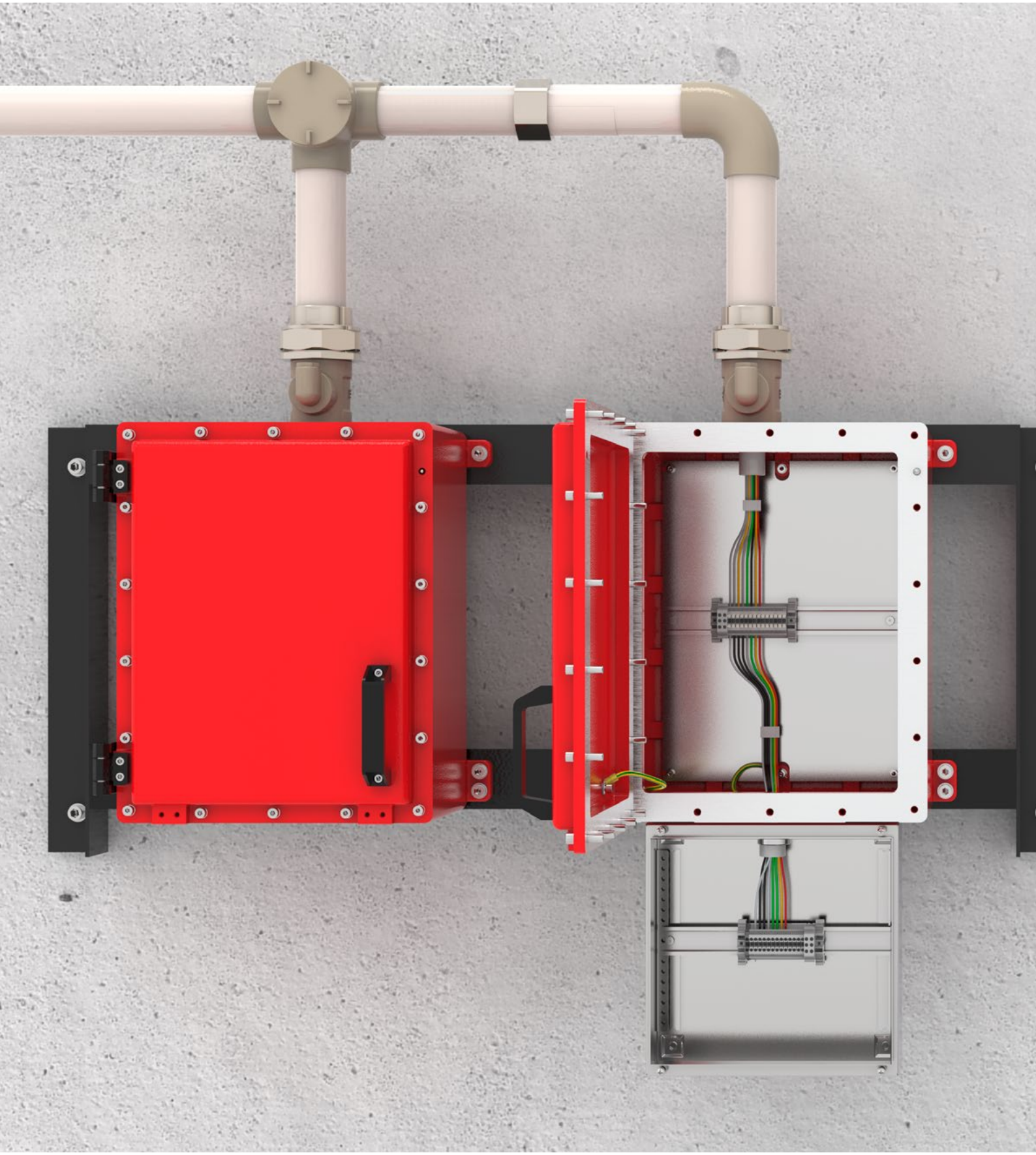
Max. options for cable entries




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ROSE



## Conduit Fittings & Line Bushings

Our comprehensive product portfolio includes conduit fittings and line bushings specifically designed to meet the highest safety and quality standards.

### Conduit Fittings

Conduit fittings are essential components for the protection and routing of electrical cables in hazardous areas. They not only ensure mechanical strength and sealing but also provide optimal protection against external influences such as moisture, dust, and chemical substances. Our conduit fittings are characterised by the following features:

**Safety**: Developed and certified according to the stringent requirements of ATEX and IECEx directives, our fittings guarantee the highest level of safety in explosive atmospheres.
**Robustness**: Made from aluminium, our conduit fittings offer outstanding resistance to corrosion and mechanical stresses.
**Versatility**: Available in various sizes and designs to meet the requirements of a wide range of installations.
**Easy Installation**: The straightforward and quick assembly saves time and costs without compromising safety.

### Line Bushings

Line bushings are specially designed conduits that allow for a secure and tight connection between different enclosures and cables in hazardous areas. The advantages of our line bushings include:

**Reliability**: Excellent insulation and sealing properties ensure long-term and reliable use in demanding environments.
**Flexibility**: Available in a variety of sizes and materials to meet the specific requirements of your applications.
**Safety Certifications**: Our line bushings are certified according to international standards for use in explosive atmospheres, thereby meeting all relevant safety requirements.
**Durability**: Resistant to extreme temperatures, aggressive chemicals, and mechanical stresses, our bushings guarantee a long service life and reduce maintenance efforts.

### Applications

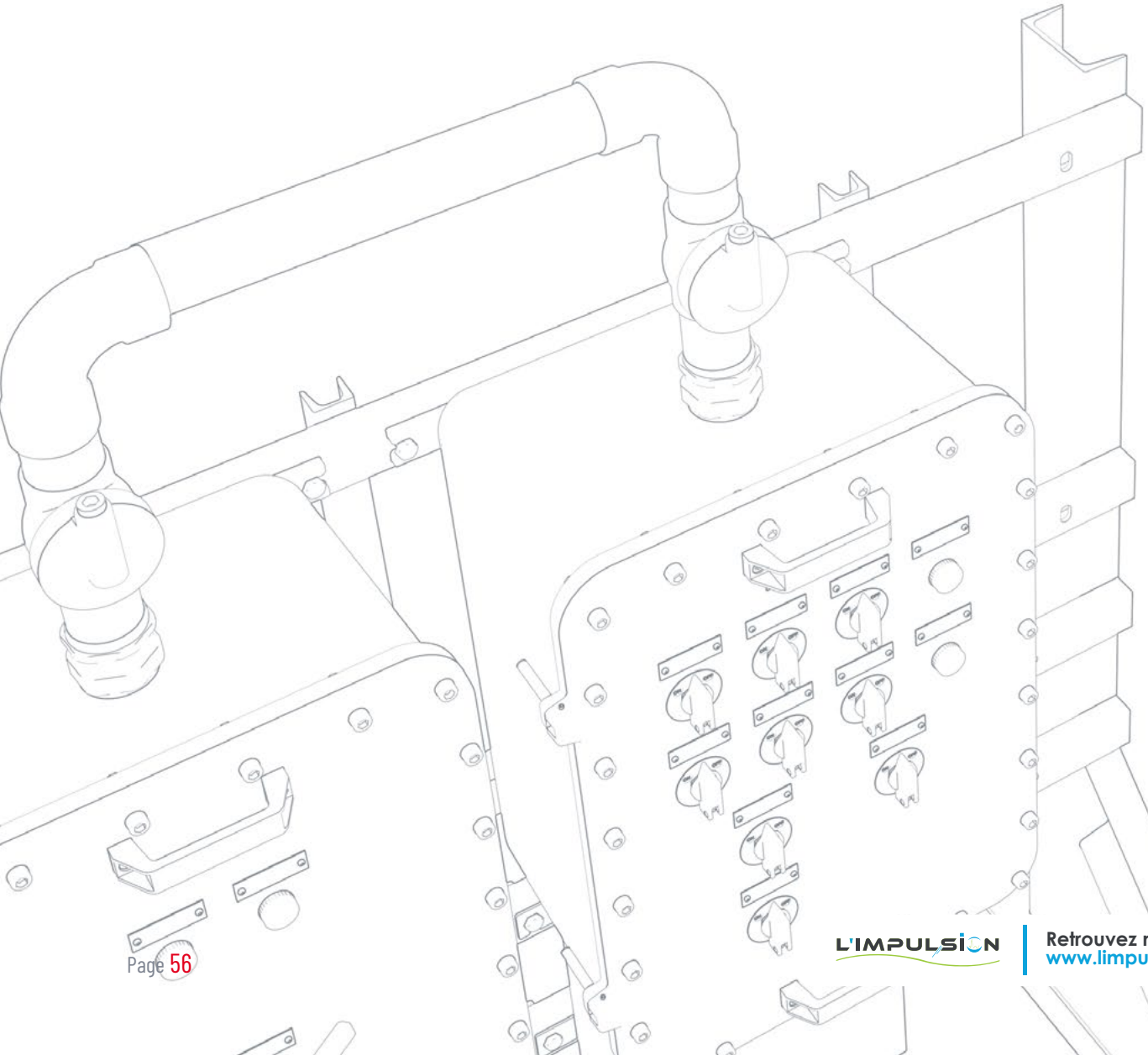
**Oil and Gas Industry**: For the safe installation and protection of cables in refineries, drilling platforms, and pipelines.
**Chemical Industry**: In chemical plants where high demands for protection against explosive atmospheres exist.
**Pharmaceutical Industry:** In clean rooms and production facilities where the highest safety and hygiene standards must be met.
**Food Industry:** For use in areas with potentially explosive dusts or gases.

With the high-quality conduit fittings and line bushings from ROSE Systemtechnik GmbH, you choose safe, reliable, and durable solutions for your electrical installations in hazardous areas. Our products provide optimal protection and significantly contribute to the safety of your facilities. Trust in our expertise and experience in explosion protection technology and benefit from tailored solutions for your specific requirements.

# Ex Field Distribution & Control Panels

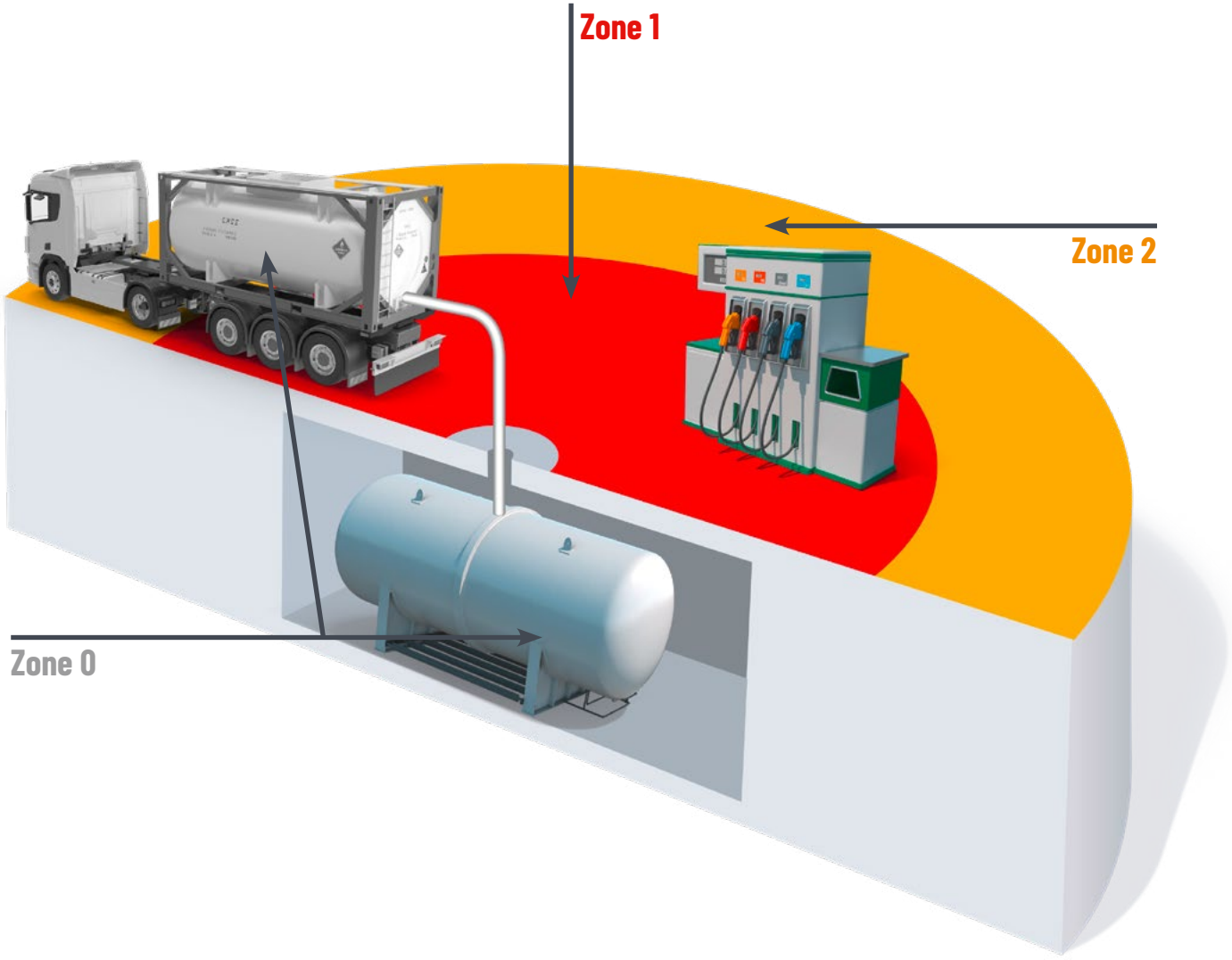


- Ex field distributors and switch panels as integrated units
- Customised solutions linked with our conduit systems
- Application-specific development tailored to customer requirements
- Completely factory-assembled and wired control cabinets
- Complete assembly in a single order



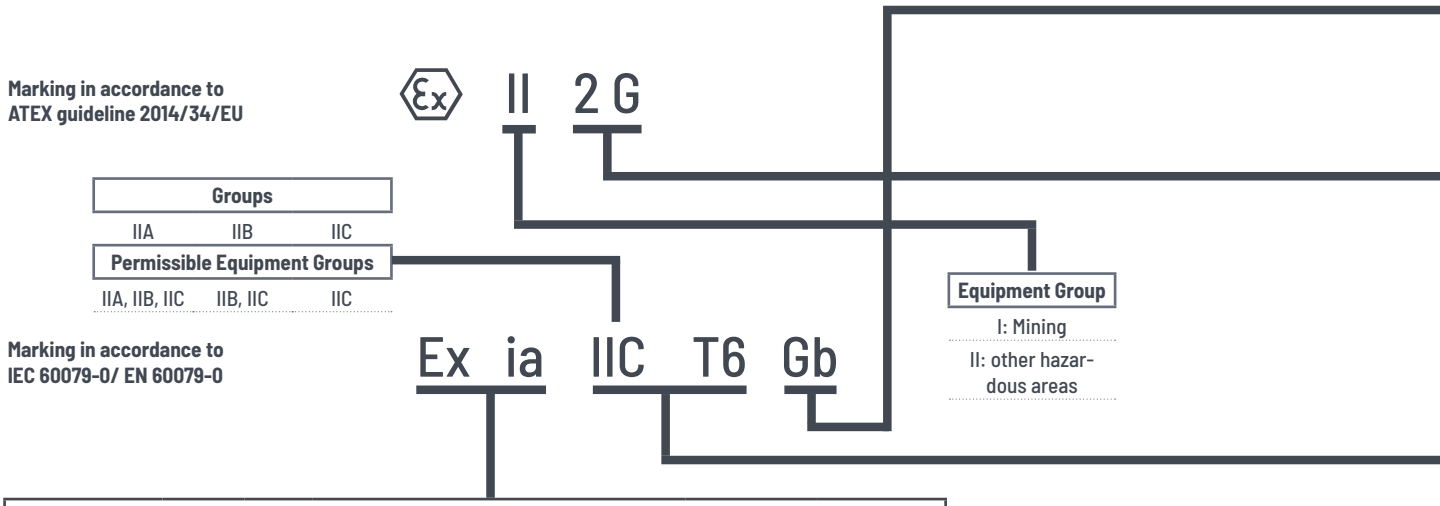


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Zone 1
Zone 2
Zone 0

# Explosive atmospheres

## Marking in areas with flammable gases




**Types of Protection for electrical Apparatus in hazardous Areas**

| Protection Method | Symbol | Zone | Protection Concept | IEC Norm | CENELEC Norm |
|---|---|---|---|---|---|
| | | | *General Requirements* | IEC 60079-0 | EN 60079-0 |
| Increased safety | eb | 1 | No arcs, sparks or hot surfaces | IEC 60079-7 | EN 60079-7 |
| | ec | 2 | | | |
| Flameproof enclosure | da | 0 | Parts that can ignite a hazardous atmosphere are installed in flameproof enclosures which prevent the transmission of an explosion to the ambient atmosphere | IEC 60079-1 | EN 60079-1 |
| | db | 1 | | | |
| | dc | 2 | | | |
| Intrinsic safety | ia | 0 | Energy limitation of sparks and temperatures | IEC 60079-11 | EN 60079-11 |
| | ib | 1 | | | |
| | ic | 2 | | | |
| Type of protection n | nC | 2 | hermetically sealed | IEC 60079-15 | EN 60079-15 |
| | nR | 2 | fume-resistant enclosures | | |
| Encapsulation | ma | 0 | The explosive atmosphere is kept away from the ignition source | IEC 60079-18 | EN 60079-18 |
| | mb | 1 | | | |
| | mc | 2 | | | |
| Pressurized enclosure | pxb | 1 | The explosive atmosphere is kept away from the ignition source | IEC 60079-2 | EN 60079-2 |
| | pyb | 1 | | | |
| | pzc | 2 | | | |
| Sand Encapsulation | q | 1 | The explosive atmosphere is kept away from the ignition source | IEC 60079-5 | EN 60079-5 |
| Optical radiation | op is | 0 | Avoid or limit the transfer of energy from optical radiation<br>op is = inherently safe optical radiation<br>op pr = protected optical radiation<br>op sh = optical radiation interlock | IEC 60079-28 | EN 60079-28 |
| | op pr | 1 | | | |
| | op sh | 0 | | | |
| Fluid Encapsulation | ob | 1 | The explosive atmosphere is kept away from the ignition source | IEC 60079-6 | EN 60079-6 |
| | oc | 2 | | | |

Symbol IIA, IIB or IIC for electrical apparatus in hazardous gas areas



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| | Equipment category according to ATEX-Directive 2014/34/EU | EPL (Equipment Protection Level) | Zone | Type of danger |
|---|---|---|---|---|
| Gas | 1 G | Ga | 0 | Continous, long, frequent |
| | 2 G | Gb | 1 | Occasional |
| | 3 G | Gc | 2 | Not usually present, short periods only |
| Mi-ning | M1 | Ma | | Continous, long, frequent |
| | M2 | Mb | | Occasional |

| | Temperature Classification | | | | | |
|---|---|---|---|---|---|---|
| Gas Group | T1 450 °C | T2 300 °C | T3 200 °C | T4 135 °C | T5 100 °C | T6 85 °C |
| IIA | Ammonia 630°C | 1,2-Dichlorethane 440 °C | Benzine 220-300 °C | Acetaldehyde 140 °C | | |
| | Carbon Monoxide 605 °C | Ethylbenzene 431 °C | Diesel Fuel 220-300 ° | Trimethylamine 190 °C | | |
| | Phenol 595 °C | Ethanol 400 °C | Fuel Oil 220-300 °C | | | |
| | Methane 595 °C | Nitromethane 415 °C | Jetfoil 220-300 °C | | | |
| | Benzol 555 °C | Trichlorethylene 410 °C | Naphthalene 540 °C | | | |
| | Acetone 535 °C | Methylamine 408 °C | Petroleum 288 °C | | | |
| | Toluene 535 °C | n-Propanoll 385 °C | Pentane 288 °C | | | |
| | Ethane 515 °C | Ethylene-Diamin 385°C | Turpentine 254 °C | | | |
| | Acetic Acid 485 °C | i-Amyl Acetat 380 °C | n-Hexane 230 °C | | | |
| | Propane 470 °C | n-Butane 365 °C | Heptane 215 °C | | | |
| | Xylene 464 °C | 1-Butanol 340 °C | Octane 205 °C | | | |
| | Ethylacetate 470 °C | Pentanol 300 °C | Nonane 205 °C | | | |
| | Methanol 440 °C | | | | | |
| IIB | City Gas ca. 560 °C | Ethylene Oxide 435 °C | Hydrosulphide 270 °C | Dibutylaether 185 °C | | |
| | Hydrogen-Cynaid 538 °C | Ethylene 440 °C | Ethylenglycol 235 °C | Ethylaether 175 °C | | |
| IIC | | Formaldehyde 424 °C | Tetrahydrofuran 224 °C | Dipropylaether 170 °C | | |
| | Hydrogene 560 °C | Acetylene 305 °C | | | | Carbon Disulphide 95 °C |

# Explosive atmospheres

## Marking in areas with combustable dust

**Marking in accordance to ATEX guideline 2014/34/EU**




**Equipment Group**

I: Mining

II: other hazardous areas

| | Equipment category according to ATEX-Directive 2014/34/EU | EPL (Equipment Protection Level) | Zone | Type of danger |
|---|---|---|---|---|
| Dust | 1 D | Da | 20 | Continous, long, frequent |
| | 2 D | Db | 21 | Occasional |
| | 3 D | Dc | 22 | Not usually present, short periods only |
| Mining | M1 | Ma | | Continous, long, frequent |
| | M2 | Mb | | Occasional |

**Marking in accordance to IEC 60079-0/EN 60079-0**




**Classification of Dusts**

| Permitted Equip. Groups | Groups | Dusts |
|---|---|---|
| IIIA, IIIB, IIIC | IIIA | combustible lint |
| IIIB, IIIC | IIIB | non-conductive |
| IIIC | IIIC | conductive |

**Maximum Permissible Surface Temperature**

**Ignition Temperature for Combustible Dusts**

Typical Ignition Temperature (°C)

| *Dust* | *Mist* |
|---|---|
| Aluminium | 590 |
| Coal dust (lignite) | 380 |
| Flour | 490 |
| Grain dust | 510 |
| Methylzellulose | 420 |
| Phenolic resin | 530 |
| Polythene | 420 |
| PVC | 700 |
| Soot | 810 |
| Starch | 460 |
| Sugar | 490 |

**Types of Protection for electrical apparatus in areas with combustible dust**

| Protection Type Against Ignition | Symbol | Zone | Protection concept | IEC Norm | CENELEC Norm |
|---|---|---|---|---|---|
| | | | *General Requirements* | IEC 60079-0 | EN 60079-0 |
| Protection by enclosure | ta | 20 | Ex atmosphere is kept apart from ignition source and temperature limitation old marking: tD A21 = under procedure A for Zone 21 tD B21 = under procedure B for Zone 21 | IEC 60079-31 | EN 60079-31 |
| | tb | 21 | | | |
| | tc | 22 | | | |
| Intrinsic Safety | ia | 20 | Energy limitation of sparks and high temperatures | IEC 60079-11 | EN 60079-11 |
| | ib | 21 | | | |
| | ic | 22 | | | |
| Encapsulation | ma | 20 | Ex atmosphere is kept apart from ignition source | IEC 60079-18 | EN 60079-18 |
| | mb | 21 | | | |
| | mc | 22 | | | |
| Pressurized Encapsulation | pxb | 21 | Ex atmosphere is kept apart from ignition source | IEC 60079-2 | EN 60079-2 |
| | pyb | 21 | | | |
| | pzc | 22 | | | |
| Optical Radiation | op is | 20 | Avoid or limit energy transfer from optical radiation op is = intrinsically safe optical radiation op pr = protected optical radiation op sh = optical radiation blocking | IEC 60079-28 | EN 60079-28 |
| | op pr | 21 | | | |
| | op sh | 20 | | | |



Symbols IIIA, IIIB, or IIIC for electrical equipment in areas with dust-explosive atmospheres

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# Protection classes and tightening torques





# Protection Classes and Tightening Torques



On request, ROSE Systemtechnik develops and manufactures enclosures in accordance with protection classes IP and NEMA (dust and water resistance) as well as IK (impact resistance). All enclosures can be tested for compliance with the guidelines in our in-house laboratory.

**Meaning of the NEMA protection class:**

| | Code number | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indoor/outdoor environmental conditions** | 1 | 2 | 3 | 3R | S | 4 | 4X | 5 | 6 | 6P | 12 | 12K | 13 |
| Incidental contact with devices | x | x | | | | x | x | x | x | x | x | x | x |
| Falling dirt | x | x | | | | x | x | x | x | x | x | x | x |
| Falling and slightly splashing liquids | | x | | | | x | x | x | x | x | x | x | x |
| Flying dust, fluff and fibres | | | | | | x | x | x | x | x | x | x | x |
| Splash and jet water | | | | | | x | x | | x | x | | | |
| Seeping oil and coolant | | | | | | | | | | x | x | x | x |
| Spraying and splashing oil or coolant | | | | | | | | | | | | | x |
| Corrosive agents | | | | | | | x | | x | | | | |
| Occasional temporary submersion | | | | | | | | x | x | | | | |
| Occasional permanent submersion | | | | | | | | | x | | | | |
| Incidental contact with devices | | | x | x | x | x | x | | x | x | | | |
| Rain, snow and sleet | | | x | x | x | x | x | | x | x | | | |
| Sleet | | | | x | x | x | x | | x | x | | | |
| Flying dust | | | | | x | x | x | | x | x | | | |
| Jet water | | | | | x | x | | | x | x | | | |
| Corrosive agents | | | | | | | | | | x | | | |
| Occasional temporary submersion | | | | | | | | | x | x | | | |
| Occasional permanent submersion | | | | | | | | | | x | | | |

**Protection classes and tightening torques**

| NEMA protection classes | IP protection classes |
|---|---|
| 1 | IP20 |
| 2 | IP21 |
| 3 | IP54 |
| 3R | IP24 |
| 3S | IP54 |
| 4, 4x | IP56 |
| 5 | IP52 |
| 6, 6P | IP67 (IP68) |
| 12, 12K | IP52 |
| 13 | IP54 |

**Degrees of protection for contact and foreign body protection in accordance with EN 60529**

| First digit | Naming |
|---|---|
| 0 | No protection |
| 1 | Protection against large foreign bodies |
| 2 | Protection against medium-sized foreign bodies |
| 3 | Protection against small foreign bodies |
| 4 | Protection against granular foreign bodies |
| 5 | Protection against dust deposits |
| 6 | Protection against dust ingress |

**Degrees of protection for water protection**

| Second digit | Naming |
|---|---|
| 0 | No protection |
| 1 | Protection against vertically falling dripping water |
| 2 | Protection against dripping water falling at an angle |
| 3 | Protection against water spray |
| 4 | Protection against splash water |
| 5 | Protection against water jets |
| 6 | Protection against flooding |
| 7 | Protection during immersion |
| 8 | Protection during submersion |
| 9K | Protection against water during high-pressure/steam jet cleaning |



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# Protection Classes and Tightening Torques



## IK protection classes

| IK code | Protection against mechanical impact |
|---|---|
| IK00 | No protection |
| IK01-05 | Impact < 1 joule |
| IK06 | Blow 1 joule (500 g from 20 cm) |
| IK07 | IK07 Impact 2 joule (500 g from 40 cm) |
| IK08 | Impact 5 joules (1.7 kg from 29.5 cm) |
| IK09 | Impact 10 joules (5 kg from 20 cm) |
| IK10 | Impact 20 joules (5 kg from 40 cm) |

To ensure that enclosures provide optimum protection, they should be fitted and sealed correctly. ROSE Systemtechnik recommends the following tightening torques for fastening the required fixtures and the lid:

| Product group | Description | Size of the lid screw | Tightening torque in Nm |
|---|---|---|---|
| 01/05/15/25 | AL- enclosures | M4 | 1 - 2,5 |
| 01/05/15/25 | AL- enclosures | M6 | 1 - 3,0 |
| 02/06/16/26 | Polyester enclosures | M4 | 1 - 1,5 |
| 02/06/16/26 | Polyester enclosures | M6 | 1 - 3,0 |
| 03 | PC- enclosures | M4 | 1 - 2,0 |
| 03 | PC- enclosures | M6 | 1 - 2,5 |
| 04 | AluForm enclosures | M4 | 1 - 2,0 |
| 04 | AluForm enclosures | M6 | 1 - 2,5 |
| 37/34/35/36 | Stainless steel enclosures | M5 | 1,2 - 1,5 |

# Approvals



| Productgroup | ATEX (Europe) | CCC (China) | CCOE (India) | DNV (Maritime) | EAC/TRTS (EAWU States) | IA (Southafrica) | IECEx (international) | INMETRO (Brasil) | KTL (Korea) | LR (Lloyd's Register) | UKCA (England) | UkrSEPRO (Ukraine) | UL Ex(File E203312) | UL 508A (File E66473) | ABS (American Buerau of Shipping) | ECAS (United Arab Emirates) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | | | | | | | | | | X | | | | X | | |
| 02 | | | | | | | | | | X | | | | X | | |
| 04 | | | | | | | | | | X | | | | X | | |
| 05 | X | X | | X | X | X | X | X | X | | X | X | X | X | X | |
| 06 | X | X | | X | X | X | X | X | | | X | X | X | X | X | X |
| 15 | X | X | | X | X | X | X | X | | | X | X | | X | X | |
| 16 | X | X | | X | X | X | X | X | | | X | X | | X | X | X |
| 19 | | | | | | | | | | | | | | X | | |
| 21 | | | | | | | | | | | | | | X | | |
| 25 | X | X | X | X | X | | X | X | | X | X | X | X | X | X | |
| 26 | X | X | X | X | X | | X | X | | X | X | X | X | X | X | |
| 34 | X | X | X | X | X | | X | X | | X | X | X | X | X | X | |
| 35 | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X |
| 36 | X | X | | X | X | X | X | X | | | X | X | | X | X | X |
| 37 | | | | | | | | | | X | | | | X | | |
| 38 | | | | | | | | | | | | | | X | | |
| 40-EJB | X | X | X | X | X | | X | X | | | X | | | | | |
| 40-EFJB | X | | | | | | X | | | | | | | | | |
| 40-ELJB | X | | | | | | X | | | | | | | | | |
| 40-EJS | X | | | | | | X | | | | | | | | | |
| 40-GUB | X | X | X | | X | | X | X | | | X | | | | | |
| 40-IJB | X | X | X | | X | | X | X | | | X | | | | | |
| 40-IFJB | X | | | | | | X | | | | | | | | | |
| 40-TBE | X | X | X | | X | | X | X | | | X | | | | | |
| 40-CA | X | | X | | X | | X | X | | | | | | | | |
| 46 | X | | X | | X | | X | | | | | | | | | |
| 64 | | | | | | | | | | | | | | X | | |
| 68 | | | | | | | X | | | | | | | | | |
| 90 | X | | X | | | | X | | | | | | | | | |
| 91 | X | | X | | | | X | | | | | | | | | |
| 92 | X | | X | | | | X | | | | | | | | | |



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# Approvals

CANADA

**CEC 18-000 ff**

CSA standards with significant deviations from IEC standards

GREAT BRITAIN

**UKSI 2016:1107**

Recognition of EN standards with national deviations where applicable

EUROPE

**ATEx Directive 2014/34/EU**

EN standards based on IEC standards with national deviations where applicable

UKRAINE

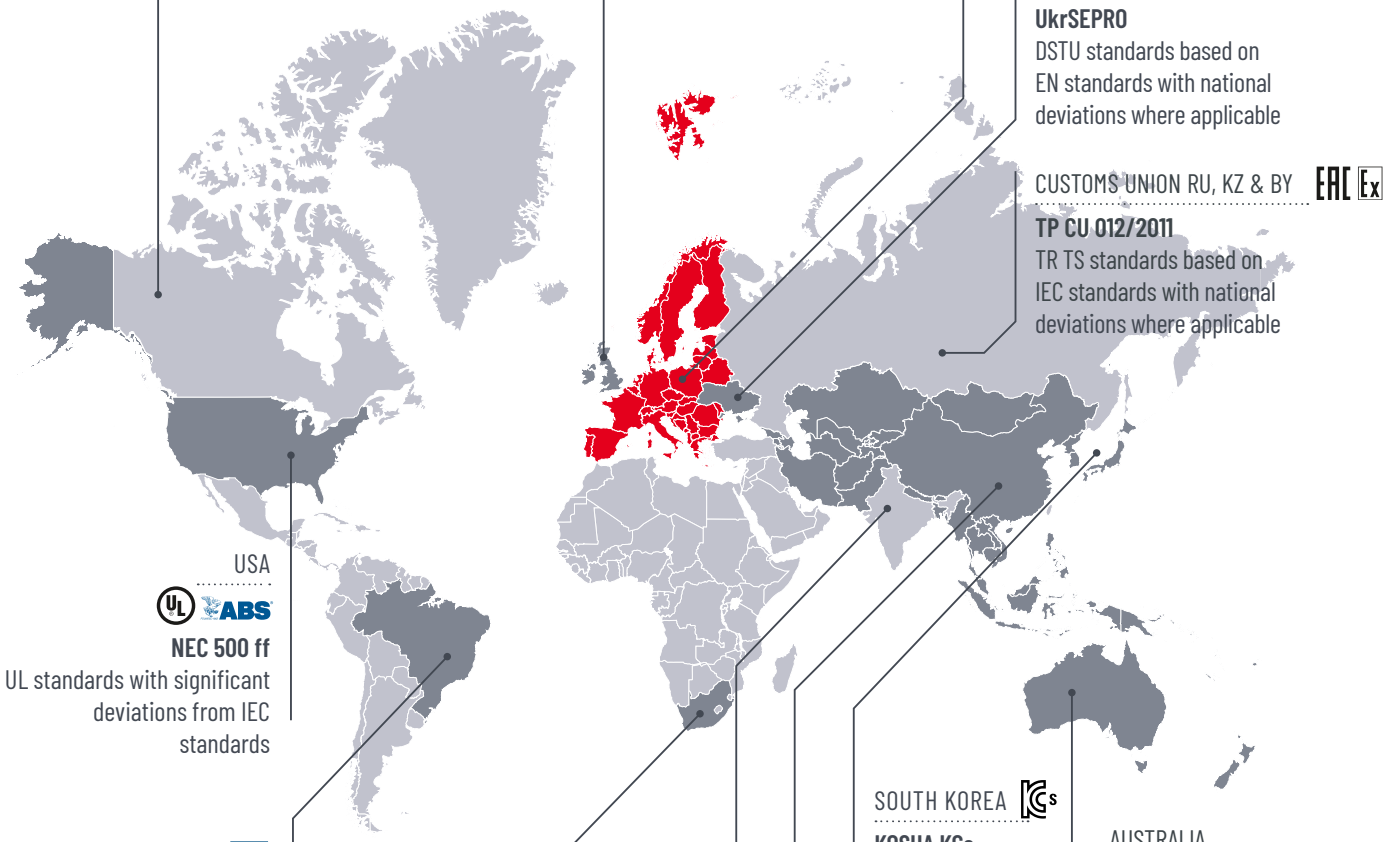
**UkrSEPRO**

DSTU standards based on EN standards with national deviations where applicable

CUSTOMS UNION RU, KZ & BY

**TP CU 012/2011**

TR TS standards based on IEC standards with national deviations where applicable



USA

**NEC 500 ff**

UL standards with significant deviations from IEC standards

BRAZIL

**INMETRO DIRECTIVE No. 179**

ABNT NBR IEC standards based on IEC standards with national deviations where applicable

SOUTH KOREA

**KOSHA KCs**

Recognition of IEC standards with national deviations where applicable

AUSTRALIA AND NEW ZEALAND

Recognition of IEC standards without national deviations

SOUTH AFRICA

IA certification

SANS standards based on IEC standards with national deviations where applicable

IEC 60079-0 becomes SANS 60079-0

CHINA

**CNCA-23-01:2019**

GB standards based on IEC standards with national deviations where applicable

INDIS

**PESO Petroleum Rules 2002**

CCoE certification

Recognition of IEC standards with national deviations where applicable

INTERNATIONAL

IECEx scheme or national standards IEC standards as a basis, national deviations where applicable

**IEC members:** 62 (each member represents one country)

**Connected countries:** 69

## The path to the right enclosure

There are various criteria to consider when selecting an enclosure:

- the installation location (indoor/outdoor area, hazardous area, seawater area, etc.)
- the size (depends on the fixtures)
- the protective function (protection class, EMC resistance, Ex)

The following lists will help you select the right enclosure for your specific application.

## I. Enclosure material specifications

**Aluminium enclosure**

- lightweight, robust metal enclosure
- good chemical resistance (see table)
- Can be used in a wide temperature range
- EMC basic shielding (optional full shielding)
- Good processing options
- Areas of application:
  Suitable for indoor and outdoor use, special version or Ex version for outdoor use in aggressive or seawater-containing atmospheres

**Polyester enclosure**

- plastic enclosure for rough environments
- good chemical resistance (see table)
- use in a wide temperature range
- good insulation properties
- V-0 version (according to UL)
- Areas of application: suitable for indoor and outdoor use; standard industrial enclosures

**Polycarbonate enclosure**

- lightweight plastic enclosure
- good chemical resistance (see table)
- use in a wide temperature range
- good insulation properties
- good processing options
- transparent versions possible (lid)
- areas of application: suitable for indoor and outdoor use

**ABS enclosure**

- plastic enclosure with low weight
- good chemical resistance (see table)
- use in standard temperature ranges

**Polystyrene enclosure**

- plastic enclosure with low weight
- good chemical resistance (see table)

**Stainless steel enclosures**

- robust metal enclosure
- very good resistance to chemicals
- can be used in a wide temperature range up to 200 °C
- EMC basic shielding (optional full shielding)
- special sizes possible
- areas of application:
  Suitable for indoor and outdoor use, special version or Ex version for outdoor use in aggressive or seawater-containing atmospheres

## Chemical resistance

| Chemicals | Alumi-nium | ABS | Polycar-bonate | Polyester | Polystyrene | Poly-amide | Chloro-prene | EPDM | NBR | Pocan | Polyure-thane | PVC | Silico-ne |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acetone | + | - | - | - | - | • | + | + | - | + | - | - | • |
| Formic acid | • | - | 30 % | 10 % | • | - | + | + | - | 10 % | / | <50 % | • |
| Ammonia | + | - | - | - | + | 20 % | + | + | + | 10 % | / | • | + |
| Petrol | + | - | • | + | • | + | + | • | + | + | + | + | + |
| Benzene | + | - | - | + | - | - | - | - | - | + | + | - | - |
| Brake fluid | / | / | - | + | / | 60° | • | - | / | + | / | / | + |
| Butane | + | / | + | / | - | + | + | / | + | + | / | 50 % | - |
| Butanol | / | / | / | + | / | + | + | / | - | + | / | • | - |
| Calcium chloride | + | / | + | + | + | + | / | / | / | 10 % | / | + | / |
| Chlorobenzene | + | - | - | + | - | • | - | - | - | - | - | - | - |
| Diesel oil | / | + | • | + | • | / | • | • | / | + | + | • | • |
| Acetic acid | + | 10 % | • | 10 % | 40 % | + max. 50 % | - | - | / | - | 10 % | / | 25 % | - |
| Formaldehyde | + | + | / | 30 % | + max. 40 % | + | - | / | + | / | / | 40 % | + |
| Frigen 113 | / | / | + | + | / | / | + | / | + | + | / | / | / |
| Fruit juice | / | / | + | + | / | + | + | + | / | + | + | + | + |
| Glycerine | + | + | • | + | + | + | + | + | + | + | + | + | + |
| Heating oil | + | • | • | + | • | + | • | • | + | + | + | • | • |
| Hydraulic oil | / | / | + | + | • | + | + | / | / | + | / | / | • |
| Potassium hydroxide solution | / | / | - | - | + max. 50 % | - | + | / | / | 10 % | / | + | / |
| Potassium chloride | • | / | + | + | + | + | + | + | + | 10 % | + | + | + |
| Potassium hydroxide | - | + | / | - | + | / | + | + | + | - | - | / | • |
| Linseed oil | + | / | + | + | + | + | + | + | + | + | + | + | • |
| Methanol | + | / | - | - | + | • | + | / | • | + | / | / | + |
| Methylene chloride | + | / | - | - | - | - | - | / | - | - | - | - | - |
| Lactic acid | + | + | 10 % | + | + max. 80 % | 10 % | + | + | + | / | / | 10 % | / |
| Mineral oils | / | + | + | + | + | + | • | • | + | + | + | + | + |
| Engine oils | / | / | + | + | + | + | • | • | + | + | + | / | + |
| Sodium carbonate | • | / | + | + | + | + | / | / | / | 10 % | / | / | / |
| Sodium chloride | • | / | + | + | + | 10 % | + | + | + | 10 % | + | + | + |
| Sodium hydroxide | + | + | / | - | / | / | + | + | • | - | - | • | • |
| Caustic soda | / | - | - | 40 % | + max. 50 % | 10 % | 50 % | / | - | / | / | 60 % | - |
| Nitric acid | + | 30 % | 10 % | 10 % | + max. 25 % | - | • | + | • | 10 % | - | 30 % | - |
| Hydrochloric acid | / | 10 % | • | 20 % | + | + max. 10 % | - | + | + | < 65 % | • | 10 % | - | 30 % | / |
| Lubricating oil | + | / | + | + | / | + | • | • | + | + | + | + | + |
| Carbon disulphide | + | / | - | - | - | • | - | / | - | + | / | • | - |
| Sulphuric acid | • | 30 % | 50 % | 70 % | + max. 50 % | - | 50 % | / | 25 % | 10 % | / | 80 % | 25 % |
| Soap suds | / | / | • | + | / | + | + | / | + | 10 % | • | • | + |
| Washing-up liquid | / | / | + | / | / | / | + | • | / | + | • | / | + |
| Turpentine oil | / | / | / | + | - | + | - | / | + | + | / | + | - |
| Carbon tetrachloride | + | - | / | + | - | • | - | - | - | + | - | • | - |
| Toluene | + | - | - | + | - | + | - | - | - | • | - | - | - |
| Trichloroethylene | + | - | / | - | - | - | - | - | - | • | - | - | - |
| Water (distilled water, river water, tap water, sea water) | / | + | + | + | + | + | + | + | 80 C° | + | + | 40 C° | + |
| Tartaric acid | / | / | 10 % | + | + | + | + | + | + | / | + | 10 % | + |
| Xylene | + | - | - | + | - | + | - | - | - | • | - | - | - |
| Zinc sulphate | • | / | + | + | + | / | + | + | + | / | / | 40 % | + |
| Citric acid | + | 10 % | 10 % | + | + | 10 % | + | + | + | 10 % | / | 10 % | + |

**Explanation of symbols**

**+** resistant to all concentrations
**%** resistant to maximum % concentration
**C°** resistant up to maximum C°
**•** conditionally resistant
**-** unstable
**/** without specification

Unless otherwise stated, the tests were carried out at room temperature. If different media come into contact with each other, the resistances may change. Therefore, we cannot accept any liability for the information provided.

# > EX EQUIPMENT

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A Phoenix Mecano Company

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