

Safety - an absolute must



Your wish is our command

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General information

1. Introduction to explosion protection for electrical equipment

Introduction

Wherever flammable gases, vapours or dusts occur and mix with air or oxygen, an explosion risk exists. This is true not only for plants in the fields of chemical engineering and mining. A bottling plant for high-proof spirits or a grain silo are also potential sources of an explosion. Any unwanted explosion will endanger the health and the life of persons located nearby and is very likely to cause serious property damage. Therefore, measures have been developed early on to prevent explosions.

Primary and secondary explosion protection

Two basic possibilities exist to prevent explosions: primary and secondary explosion protection. Primary explosion protection is based on the avoidance of flammable substances. In the absence of flammable substances, no ignitable mixture will be created. As a result, no explosion risk will exist. This approach can, of course, only be applied to a very limited extent. After all, the flammability of many substances is a desired product property that is either indispensable or which cannot be controlled – for example gases and their release in the field of mining. In such cases, secondary explosion protection measures must be taken. They consist in the prevention of ignition sources which might ignite an explosive atmosphere. Such ignition sources include sparks and hot surfaces. It is obvious that, whenever possible, primary explosion protection measures should be taken, since they are inherently safe so that not even an error will lead to an explosion.

2. Explosion protection measures in Europe

Explosion protection regulations were standardised in Europe as far back as in 1980. This allows equipment that has been approved in one country of the EU to be used in all the other member countries.

EC Directive RL 94/EC ATEX 100a

In 1994, the EC Directive RL 94/EC ATEX 100a – abbreviated as "ATEX" – was issued. This Directive provides new regulations for the approval of explosion-proof equipment and defines requirements that the quality management systems of explosion-proof equipment manufacturers must meet.

Explosion protection standards

The explosion protection of electrical equipment is defined in the standards DIN EN 50014 to 50028 and EN 60079. DIN EN 50014 describes the basics of explosion protection, and the subsequent standards the individual ignition protection types. EN 60079 describes the installation of explosion-proof equipment on site.

Classification of explosion risks

Not all gas or dust and air mixtures pose the same explosion risk. Therefore, the cost requirements for preventing explosions will vary. To select the suitable type of explosion protection in a specific application, the standards describe different criteria for characterising the requirements.

Zones and categories

One criterion is the classification into zones posing different explosion risks. A distinction is made between Zones 0, 1 and 2 for gases and Zones 20, 21, 22 for dusts.

Explosion risk	Example	Gas	Dusts	Resulting category
Explosive atmosphere is present permanently or for an extended period of time	Inside vessels	Zone 0	Zone 20	1
Explosive gas atmosphere is present occasionally	In the area surrounding filling and emptying ports	Zone 1	Zone 21	2
Explosive gas atmosphere is rare and, when it does occur, is present only briefly	Areas around Zone 1	Zone 2	Zone 22	3

Explosion groups

Explosion-proof electrical equipment is divided into two groups:

- Group I: Electrical equipment for mining installations exposed to the risk of fire-damps
- Group II: Electrical equipment for all areas exposed to an explosion risk apart from mining installations exposed to the risk of fire-damps

The equipment of Group II is further divided into IIA, IIB, IIC, according to the properties of the explosive atmosphere for which it is destined. An explosive atmosphere rated IIC is easiest to ignite, one rated IIA hardest. As a result, a piece of equipment with – say – IIC approval is also allowed to be applied for IIB and IIA.

General information

Temperature classes

Another method of classifying electrical equipment is by temperature. Every gas and air mixture has a different ignition temperature. To allow a simple allocation of equipment to the ignition temperature, six temperature classes have been created.

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

For example, this means that equipment operated in an atmosphere with hydrogen sulphide with an ignition temperature of 270°C must comply at least with the temperature class T3. Equipment of temperature classes T4 to T6 would, of course, also be allowed.

Possibilities of implementing an explosion protection system

The European standards describe eight possible types of ignition protection. One or more of these types of ignition protection can be applied in a given device to achieve adequate explosion protection.

Types of ignition protection

a) Pressurisation EEx p

Pressurisation is a type of ignition protection **offering the widest variety of applications**. Its design is based on a housing in which a positive pressure of air or inert gas is maintained so that no explosive gases can enter the housing after the housing has been purged with pure air or inert gas. The only requirement that the internal components in the housing must satisfy is that the surface temperature does not exceed the specified temperature class. As a result, this type of ignition protection is especially suitable for retrofitting equipment not designed for such an application in explosive atmospheres.

b) Intrinsic safety EEx i

In the case of the ignition protection type of intrinsic safety, all currents, voltages, inductances and capacitances are limited so that no sparks capable of ignition can be generated. In addition, the equipment must be designed so that no component can be heated to above the specified temperature class. These conditions must also be satisfied in the event of one (Categories 2 and 3) or two (Category 1) faults.

c) Enhanced safety EEx e

The enhanced safety ignition protection type can only be applied for a few simple devices such as terminals, lamps, motors, etc. It is based on the oversizing of the components used so that no sparks or high temperatures are to be expected.

d) Encapsulation EEx m

The part of the equipment capable of ignition is encapsulated in a sealing compound, preventing any explosive atmosphere from reaching these components.

e) Flameproof enclosure EEx d

With a flameproof enclosure, the equipment is incorporated in a stable housing. If the explosive atmosphere ignites inside the housing, the housing will withstand the explosion pressure and the explosion will be restricted to the inside of the housing. Because of the high mechanical strength needed for the pressure-resistant housing, these housings are inevitably large and heavy.

f) Powder filling EEx q

With the powder filling method, the part of the equipment capable of ignition is embedded in quartz sand. Any sparks generated are extinguished by the quartz sand before they can ignite the surrounding explosive atmosphere.

g) Oil encapsulation EEx o

With the oil encapsulation type, the part of the equipment capable of ignition is immersed in oil, preventing any explosive atmosphere from reaching such components.

h) EEx n

The EEx type of ignition protection is different from the ones described above. It is a summary of different modified ignition protection types for Zone z. The relevant standard DIN EN 50021 is currently only available as a draft.

General information

Designation of explosion-proof electrical equipment

Every explosion-proof device must have a designation telling the user for what explosive atmospheres the equipment is suitable. The first part of the designation is made up of the device group and the category.

Zone	Device group	Category	Designation
*1	I	1	M1
*2	I	2	M2
0	II	1	1 G (gases)
1	II	2	2 G (gases)
2	II	3	3 G (gases)
20	II	1	1 D (dusts)
21	II	2	2 D (dusts)
22	II	3	3 D (dusts)

- *1: (M1) Permanant service
- *2: (M2) These devices have been designed to be deactivated in the presence of an explosive atmosphere.

The second part of the designation specifies the ignition protection types and the temperature class.

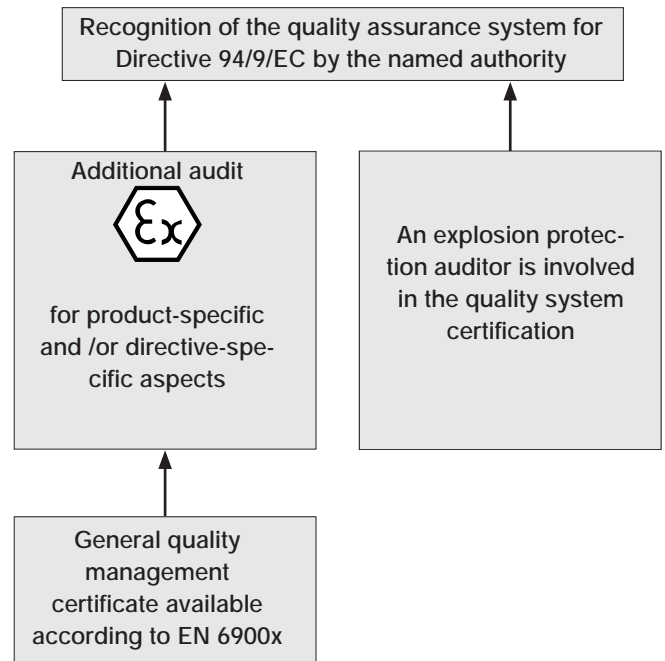
Complies with European standards	Ignition protection type(s)	Explosion group	Temperature class
EEx	me	II	T4 / T5
EEx	d / dMl	IIB	T4 / T5 / T6

The third part of the designation specifies when and by which testing authority the equipment has been certified.

Testing authority	Year	Acc. to ATEX	Laboratory and consecutive No.
SNCH	01	ATEX	3213/3214

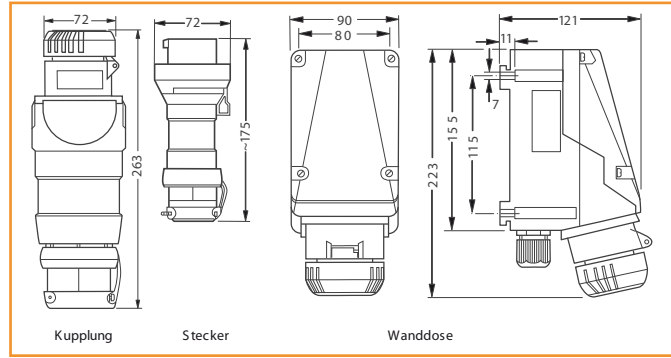
Recognition of quality systems

In the conformity evaluation, one of the core elements of the new concept is the quality assurance module in the production phase. In cases where a type certificate is demanded in the Directive 94/9/EC, also a quality assurance module is necessary, graduated according to categories, i.e. the hazard potential of the product. In other words, a general quality management system certificate (e.g. EN ISO9 ...) is not sufficient for obtaining an ATEX certificate. An additional product-specific or directive-specific rating is required – so to speak a “quality system after-burner” for explosion protection.



The recognition of this additional audit is limited to three years and therefore complies with the common procedure during quality management system certifications.

Explosion-proof CEAG plugs up to 415 V, 3 pins



Description

The most outstanding quality feature of any plug is the design of the transition between the plug and the socket. In designing plugs for applications in explosive atmospheres, the utmost attention has therefore been paid to this area. One crucial factor is the contact resistance at the transition between the pins and the socket holes, especially as a result of environmental influences such as moisture and contamination during service.

At the connection points of explosion-proof CEE plugs, the principle of self-cleaning contacts has been implemented. The heart of this contact consists of a spring-loaded contact lamella cage. The large number of load-bearing contact points minimises the contact resistance and therefore reduces heating. Thanks to the spring-loaded lamella supports, only low mating and unmating forces are needed. Perfect and durable self-cleaning is ensured by the configuration and geometry of the louvre-like contact lamellas. This multi-contact plug is therefore maintenance-free.

These plugs have been designed for extremely rough duty. As a result of the use of a bayonet coupling, the degree of protection IP 66 has proven to be reliable.

Special features

- Self-cleaning lamellar contacts, low contact resistance
- Variable cable entries for wall sockets
- Patented plug-and-rotate activation
- Easy to connect down to the last detail
- High protection thanks to bayonet coupling
- Low mating and unmating forces

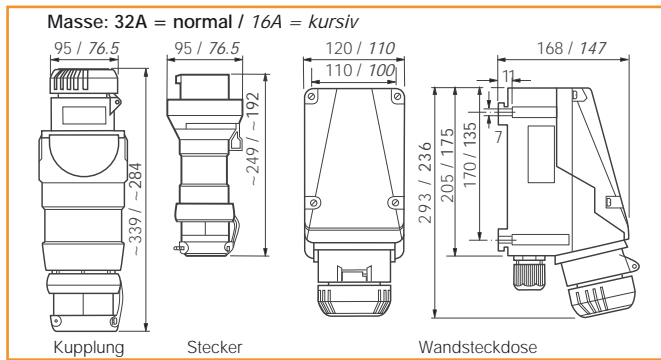
Technical data

Explosion-proof plug according to CEE and IEC 309-1/2

Ignition protection type	EEx de IIC T6 for Zones 1 and 2
Conformity certification	PTB-No. Ex-87.B.1038
Degree of protection	IP66 to EN 60529
Rated voltage	up to 250 V ~
Rated current	max. 16 A
Frequency	50/60 Hz
Switching capacity	AC3 to 250 V ~ / 16 A
Power fuse max.	without thermal protection: 16 A with thermal protection: 25 A
Screw joint	wall socket: 1xM25 (from bottom) plug/plug socket: Ø 9-17 mm
Connection terminals	wall socket: 2x4 mm ² plug/plug socket: 4 mm ²

Item	Type	Current	Number of pins	Voltage
20169	Ex plug	16 A	1P+N+E	up to 415V
20419	Ex plug socket	16 A	1P+N+E	up to 415V
14324	Ex wall socket	16 A	1P+N+E	up to 415V

Explosion-proof CEAG plugs up to 690 V, 5 pins



Technical data

Explosion-proof plug according to CEE and IEC 309-1/2

Ignition protection type	EEx de IIC T6 / T5 for Zones 1 and 2
Conformity certification	PTB-No. Ex-85.B.1115
Degree of protection	IP66 to EN 60529
Rated voltage	up to 415 V ~
Rated current	max. 16 A
Frequency	50/60 Hz
Switching capacity	AC1 to 690 V ~ / 16 A AC3 230 V / 16 A 400 V / 16 A 500 V / 16 A 690 V / 16 A
Power fuse max.	without thermal protection: 16 A with thermal protection: 25 A
Screw joint	wall socket: 1xM25 (from bottom) plug: Ø 9-17 mm plug socket: Ø 13-20 mm
Connection terminals	wall socket: 2x6 mm ² plug/plug socket: 4 mm ²

Technical data

Explosion-proof plug according to CEE and IEC 309-1/2

Ignition protection type	EEx de IIC T6 for Zones 1 and 2
Conformity certification	PTB-No. Ex-85.B.1066
Degree of protection	IP66 to EN 60529
Rated voltage	up to 690 V ~
Rated current	max. 32 A
Frequency	50/60 Hz
Switching capacity	AC1 to 690 V ~ / 32 A AC3 230 V / 32 A 400 V / 32 A 500 V / 32 A 690 V / 32 A
Power fuse max.	without thermal protection: 35 A with thermal protection: 40 A
Screw joint	wall socket: 1xM40 (from bottom) plug: Ø 18-27 mm plug socket: Ø 9-27 mm
Connection terminals	wall socket: 2x10 mm ² plug/plug socket: 6 mm ²

Item	Type	Current	Number of pins	Voltage
16119	Ex plug	16 A	3P+N+E	380-415 V
16056	Ex plug socket	16 A	3P+N+E	380-415 V
16118	Ex wall socket	16 A	3P+N+E	380-415 V

Item	Type	Current	Number of pins	Voltage
16487	Ex plug	32 A	3P+N+E	up to 690V
20418	Ex plug socket	32 A	3P+N+E	up to 690V
18006	Ex wall socket	32 A	3P+N+E	up to 690V

Other execution or products/types upon request.

Explosion-proof Maréchal plugs



Description

The new DXN series comprises explosion-proof deconnectors of the ignition type „ed“ for 16A and 32A. The housings of self-extinguishing glass-fibre-reinforced polyester – a high-strength and corrosion-resistant material – guarantee high mechanical strength and resistance to even the most extreme conditions of application.

Optimal power transmission

Power transmission by Maréchal deconnectors is ensured by pressure face contacts. The contact platelets made of a silver-nickel alloy ensure excellent conductivity even after years of use. The spring action of the anti-loosening device at the connection terminals guarantees a consistently high pressure on the conductor, even in the presence of high temperatures, shock or vibration.

Integrated switching function for load breaking

A simple push on the button on the locking hook of the device breaks the power circuit and releases the plug, which automatically jumps into its home position. Only then can the plug be removed from the socket. DXN deconnectors comply with the European and international standards for plugs, IEC/EN 60309-1, and are manual making and automatic breaking switching devices according to category AC22.

Ignition protection type “ed”

As soon as the plug is inserted in the socket and has been brought into its home position by a turn, it forms an explosion-proof capsule in the area of the contacts together with the socket, producing an ignition protection type “d” (**flameproof enclosure**). The plug can now be switched on and off under load, and the overall system forms a switch of category AC22. The plug can only be removed – loadless – from the socket in its home position by a turn. As in the case of the DSN deconnectors, IP67 protection is automatically obtained in the connected state, i.e. when the lid is closed, eliminating the need for any additional manipulations. The conductors are connected in capsules with enhanced safety of the ignition type “e” so that an overall rating according to ignition protection type EEX “ed” applies for the device.

Special features

- Housing of self-extinguishing glass-fibre-reinforced polyester
- Zones 1 and 2 – EEx ed IIC T6 (Cenelec)
- Degree of protection IP67
- 500 V upon request

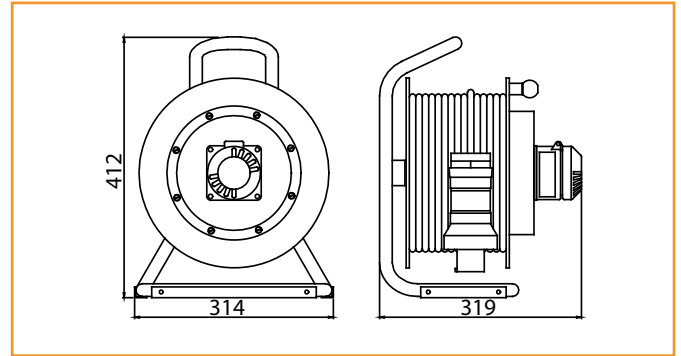
Technical data

ATEX Directive	94/9/EG
European standards	EN 50014, EN 50018, EN 50019
International and European standards	IEC/EN 60309-1
Ignition protection type	„d“ and „e“
Degree of protection	IP67 to EN 60529
Switching capacity	AC22 to IEC/EN 60947-3 DXN1: 400 V/20 A DXN3: 400 V/40 A
max. cable cross-section	DXN1: rigid cable 4 mm ² flexible cable 2,5 mm ² DXN3: rigid cable 10 mm ² flexible cable 6 mm ²
Continuous duty	DXN1: 20 A / DNX3: 40 A

Item	Description	Type	Current	Number of pins	Voltage
53620	Ex plug	DXN1	16 A	1P+N+E	230 V
53623	Ex plug	DXN1	16 A	3P+N+E	400 V
53628	Ex plug	DXN3	32 A	3P+N+E	400 V
53645	Ex coupling	DXN1	16 A	1P+N+E	230 V
53649	Ex coupling	DXN1	16 A	3P+N+E	400 V
53653	Ex couplingt	DXN3	32 A	3P+N+E	400 V
53641	Handle to	DXN1			
53642	Handle to	DXN3			
53634	Adaptateur to	DXN1			
53636	Adaptateur to	DXN3			

The plugs, couplings and wall sockets are composed of 2 components (see above). For order please indicate always both items, e.g. for plug = 1x plug-in + 1x handle etc.

Explosion-proof cable reels type 502



Description

The **502 Ex** cable reel is suitable for applications in explosive atmospheres of Zones 1 and 2. GIFAS cable reels are made of butyl rubber. This material guarantees high mechanical strength. The reels are also resistant to oils and acids. A matured design ensures technical reliability and a high quality standard. The 502 Ex cable reel has an internal brake which does not rub against the reel body.

Spare parts:

For safety reasons, no piece parts or spare parts are offered. All repairs must be carried out by the manufacturer, who must certify that a final test has been performed.

Sites of application:

In areas with potential explosive atmospheres such as chemical engineering, fire-fighting, tank storage facilities, filling equipment, fuel storage systems, etc.

II 2 G EEx de IIC T6

EC type certification: PTB03 ATEX 1186

Special features

- Solid, halogen-free reel body of hard rubber
- Solid, galvanised flat steel frame
- Internal wedge-type brake
- Maintenance-free
- Resistant to impact and aging
- High mechanical strength
- Resistant to chemical influences
- Resistant to UV radiation and weather
- High-quality accessories (Gifas-Euroflex cable, sockets, etc.)

Notes on safety

Before use, always read the labelling on the cable reels!

The 502Ex cable reel is not suitable for Zones 0, 20, 21 and 22. Observe the temperature class and ignition protection types specified on the device. To avoid unallowed heating of the cables, especially when wound up, do not exceed the maximum loads specified.

The use of the cable reel 502Ex in explosion group IIC is only allowed if the cable is first connected or the cable reel is standing on a conductible floor or a conductible and earthed (grounded) base. Otherwise, the cable reel can be used in all zones for explosion groups IIA and IIB only.

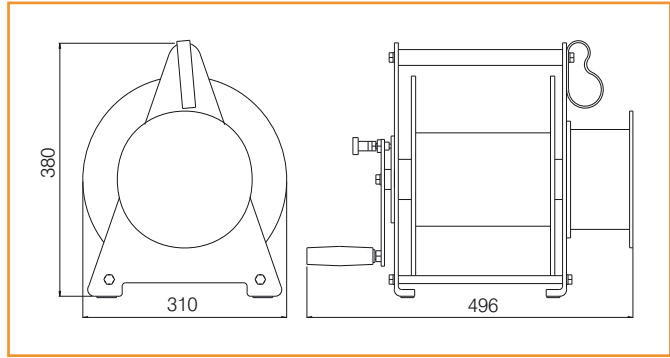
Do not make any modifications or retrofits to the cable reels. Only use the cable reels in an undamaged condition.

Also observe all national safety and accident prevention regulations.

Item	Type	Voltage/Current	Equipment
28054	502 Ex1	230 V/16 A	35 m Gifas-Euroflex cable 3x2.5 with plug and flange socket type CEAG Ex 230 V/16 A/1PNE
28070	502 Ex1	230 V/16 A	35 m Gifas-Euroflex cable 3x2,5 with plug and flange socket type Stahl/Fribos Ex 230 V/16 A/1PNE
28055	502 Ex2	400 V/16 A	30 m Gifas-Euroflex cable 5x2,5 with plug and flange socket type CEAG Ex 400 V/16 A/3PNE
28071	502 Ex2	400 V/16 A	30 m Gifas-Euroflex cable 5x2,5 with plug and flange socket type Stahl/Fribos Ex 400 V/16 A/3PNE

Special designs (3P+E, 380-415 V or 500 V) upon request.

Explosion-proof cable reels type A1



Description

The **A1 Ex** cable reel is suitable for applications in explosive atmospheres of Zones 1 and 2. GIFAS cable reels are made of butyl rubber. This material guarantees high mechanical strength. The reels are also resistant to oils and acids. A matured design ensures technical reliability and a high quality standard.

Spare parts:

For safety reasons, no piece parts or spare parts are offered. All repairs must be carried out by the manufacturer, who must certify that a final test has been performed.

Sites of application:

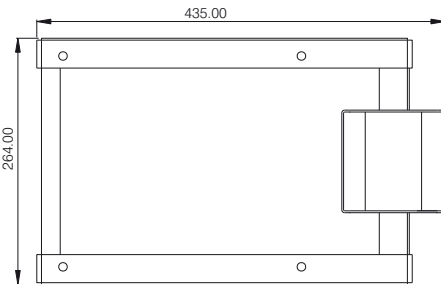
In areas with potential explosive atmospheres such as chemical engineering, fire-fighting, tank storage facilities, filling equipment, fuel storage systems, etc.

II 2 G EEx de IIA T6

EC type certification: PTB03 ATEX 1186

Special features

- Solid, halogen-free reel body of hard rubber
- Solid, galvanised flat steel frame
- Internal wedge-type brake
- Maintenance-free
- Resistant to impact and aging
- High mechanical strength
- Resistant to chemical influences
- Resistant to UV radiation and weather
- High-quality accessories



Notes on safety

Before use, always read the labelling on the cable reels!

The A1 Ex cable reel is not suitable for Zones 0, 20, 21 and 22. Observe the temperature class and ignition protection types specified on the device. To avoid unallowed heating of the cables, especially when wound up, do not exceed the maximum loads specified.

Do not make any modifications or retrofits to the cable reels. Only use the cable reels in an undamaged condition.

Also observe all national safety and accident prevention regulations.

Item	Type	Voltage/Current	Equipment
28056	A1 Ex BD1	230 V/16 A	45 + 5 m Gifas-Euroflex cable 3x2,5 with plug and plug socket type CEAG Ex 230 V/16 A/1PNE
20475	A1 Ex BD1	230 V / 16 A	Cable reel art. no. 28056 with bottom skid and support for plug socket
28057	A1 Ex BD2	400 V/16 A	40 + 5 m Gifas-Euroflex cable 5x2,5 with plug and plug socket type CEAG Ex 400 V/16 A/3PNE
20474	A1 Ex BD2	400 V/16 A	Cable reel art. no. 28057 with bottom skid and support for plug socket

The cable reels could be equipped with Ex connecting system Fribos/Stahl.

Explosion-proof battery- or accumulator-powered hand-lamp



Description

Safe application and high design and production quality of this hand-lamp are ensured by its explosion protection and the incorporation of the lamps in a housing resistant to impact and scratching. The housing is also resistant to acid and alkaline solutions. It is splash-proof and hose-proof, and its glass cover is made of a hardened, 6 mm thick borosilicate glass that can only be scratched or broken with force. The handle is integrated in the lamp body and can be readily gripped even when wearing safety gloves. It is switched on and off by a solenoid sliding switch, which will remain in its selected position even when the torch is exposed to shock and rough duty. A shoulder strap is also part of its equipment to allow the lamp to be attached to the body to have both hands free.

The **PRIMATEX hand-lamp** is battery-powered. In addition, it already has an ATEX certification (BAS 2203). The locking screw prescribed up to now for changing the batteries is no longer needed, thanks to its inherently safe electric circuits and components.

Product characteristics

The light beam is focused in its centre and scattered in the corona. This produces a good combination of searchlight into the distance and scattered light nearby. This has been found to be ideal in practice.

Technical data

Batteries	4 x battery R20 zinc/carbon 1.5V/7.3 Ah
Lamp	krypton 4.8 V/0.5 A
Burning life	depending on the batteries, up to 20 h in permanent service
Weight	1.4 kg
Degree of protection	IP66
Protection class	Ex II GD, Zones 1+2, EEx eIIBICT4
ATEX certification	BAS 2203

Item	Description
57183	PRIMATEX hand-lamp without batteries, black, ATEX-certified
41629	Battery R20 zinc/carbon 1.5 V/7.3 Ah
41630	Spare bulb krypton 4.8 V/0.5 A
13299	Battery cassette
13301	Solenoid switch
13300	Reed switch
13302	Reflector

Description

For a description of the housing and design, see PRIMATEX. The **JUPITER hand-lamp** is powered by rechargeable accumulators. Two different charging stations are available for this purpose: 230 V version or 12–32 V version. This hand-lamp, too, is ATEX-certified (BAS 2176).

Product characteristics

The charging stations are suitable for wall or desk mounting and are supplied with 2 m cord. The JUPITER has an antistatic housing, total discharge protection and an emergency light function. The accumulator is a newly developed high-performance type with a long service life, which achieves over 500 charging cycles and allows the lamp to burn for 7 h when fully charged.

Technical data

Accumulator	4 V/5 Ah, rewelded, leak proof lead-sulphur cells
Lamp	krypton 3,75 V/0,75 A
Burning life	7 h
Charging time	2–7 h depending on the status of accu
Weight	1,75 kg
Degree of protection	IP66
Protection class	II 2 GDEEx e II CT4T 135°
ATEX certification	BAS 2176

Item	Description
13095	JUPITER Ex accumulator-powered hand-lamp, without charging station, black, ATEX-certified
13097	Spare accumulator 4 V/5 Ah
57087	Charging station 230 V
42611	Charging station 12-32 V
15188	Spare bulb krypton 3.75 V/0.75 A

Explosion-proof accumulator-powered hand-lamps



Description

The **ADALIT L-100** hand-lamp is a chargeable model suitable for use in explosive atmospheres. It has a holding device enabling it to be used as a hand or helmet lamp. The extent of supply also includes two light cones (1x red/1x yellow), which can be mounted onto the lamp for signalling and marking purposes. The contact switch is designed to allow use even when wearing safety gloves.

Product characteristics

Housing and protective lens of thermoplastic material resistant to shock and moisture; black housing with yellow head ring. Dust-tight according to IP67. Three modes of operation: normal mode, flashing mode and operation with variable light intensity. Main and secondary lamps with high light flux and an average service life of 300 h.

Technical data

Accumulator	NiMh 6 VDC / 5.8 W
Lamp	Halogen lamp 6 V / 4 W
Burning life	up to 2 h
Weight	320 g
Protection class	II 2 GD EEx ib e IIC T4
ATEX certification	LOM 03 ATEX 2002 X
Dimensions:	
- Hand-lamp	L 160 mm / Ø 75 mm
- Light cone	L 300 mm / Ø 80 mm



Description

The **ADALIT L-2000** handlamp is a chargeable device suitable for use in explosive atmospheres. It is equipped with a belt bracket. Its special switch allows single-hand operation wearing safety gloves.

Product characteristics

Housing and protective lens of thermoplastic material resistant to shock and moisture; black housing with yellow head ring. Dust-tight according to IP67. Two modes of operation: Spotlight and floodlight. Main and secondary lamps with high light flux and an average service life of 300 h. Digital charge indicator.

Technical data

Accumulator	Ni-Mh 6 VDC / 5,8 W
Lamp	Halogen lamp 6 V / 4 W
Burning life	up to 4 h
Weight	800 g
Protection class	II 2 GD EEx ib e IIC T4
ATEX certification	LOM 03 ATEX 2001 X
Dimensions	L 210 mm / Ø 80 mm

Item	Description
18260	Explosion-proof hand-lamp ADALIT L-100, incl. 2 light cones (1x red/1x yellow), without charging unit
18262	Charging station for ADALIT L-100 230 V/50 Hz
18256	Spare bulb 6 V / 4 W
18263	Lamp housing with NiMh accumulator
18266	Glass lens

Item	Description
18254	Explosion-proof hand-lamp ADALIT L-2000, without charging unit
18255	Charging station for ADALIT L-2000 230 V/50 Hz
18256	Spare bulb 6 V / 4 W
18257	Lamp housing with NiMh accumulator
18259	Glass lens

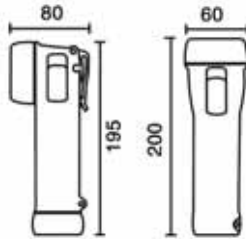
Multiple charging stations upon request.

Explosion-proof battery-operated torches



Description

Use the **VERTEX** as your personal safety torch for any occasion. With the explosion-proof version, you will be safe even in critical "enriched" environments. The Angular model is particularly popular, being equipped with a belt bracket. All models are equipped with a shoulder strap.



Product characteristics

Housing of thermoplastic material resistant to impact and hard to scratch, yellow, with black head ring. Dust-tight and moisture-resistant according to EN 50014. Scratch-resistant glass cover. Single-hand operation.

Technical data

Batteries	2 x battery R20 zinc/carbon 1.5V/7.3 Ah
Lamp	Xenon 2.4 V/0.7 A
Burning life	up to 12 h
Weight	400–500 g, depending on model, incl. batteries
Protection class	Ex II GD Eex e IIC T4
ATEX certification	BAS 2220X



Description

Being small and handy, the **STREAMLIGHT 2AA** is your personal safety torch for all occasions. You can operate the pocket torch with a single hand through the end cap switch to make it flash briefly. For continuous operation, you must tighten the end cap securely. Thanks to its non-slip rubber handle, you have a secure hold on the lamp. In addition, it is equipped with a belt bracket.

Product characteristics

Safety-vented, non-conductive housing of impact-resistant propolymer, yellow, with black head ring. Can also be immersed in water.

Technical data

Lamp	Xenon 3 V/0,9 W
Batteries	2x Size AA Alkali-manganese batteries
Burning life	2 h max. with steady light
Weight	105 g
Dimensions	L 154 mm
Protection class	Ex II 2G Eex ia IIB T 4
ATEX certification	2990

Item	Description
13098	Explosion-proof torch VERTEX Straight, type TS 24 T4, without battery, ATEX-certified
13099	Explosion-proof torch VERTEX Angular, type TS 24 T4, without battery, ATEX-certified
13312	Torch head without lamp insert
13314	Battery housing Straight, without batteries
13381	Battery housing Angular, without batteries
13315	Lamp insert incl. 2 bulbs
13316	Glass cover scratch-resistant
41629	Battery R20 zinc/carbon 1.5 V/7.3 Ah
13307	Spare bulb xenon 2.4 V/0.7 A

Item	Description
18267	Explosion-proof pocket torch STREAMLIGHT 2AA, without battery
18268	Spare lamp module 3 V/0.9 W
14118	Alkali-manganese battery LR6 / 1.5 V

Explosion-proof accumulator-powered handheld searchlight



Description

MITRALUX L160-Ex – the most efficient torch light which is allowed for the use in explosive areas of the zone 1 and 2. The L160-Ex is a product of years of development and improvement work all over. The L160-Ex unites the demanded safety with modern product technology and handy, functional design. The light of a halogen micro projection lamp (20 W) is caught and projected into a variable-focus lens by a double-lens lights optic. Your advantage: The only inspection lamp for hazardous areas with a cone of light which is adjustable and delimited sharply – the light projection just how you need it.

- Certified by SEV 04 ATEX 0117 according the guideline 94/9/EG
- Meets the requirements of the European norms EN 1127-1, EN 50014, EN 50018, EN 50281-1-1
- Approved for use in hazardous areas of zones 1, 2, 21 and 22 and temperature class T5
- Water proof and dust proof IP68
- II 2G EEx d IIC T5

Technical data

- Concentrated white halogen light 20 Watt
- Up to 60 minutes full power operation
- Easy handling (switching ring)
- Continuously variable focus lens (2:1)
- Maintenance free NiMH battery, rechargeable within 14 hours (only outside of the hazardous area)
- Voltage monitoring prevent overcharging as well as complete discharge
- Waterproof up to a depth of 10 meters and dust proof IP68
- Operating temperature range: -20°C to +40°C
- Dimensions l x w: 480 x 75 mm
- Weight: 1,4 kg

Item	Description
14728	MITRALUX L160-Ex, tested by ATEX, hand-held light, complete without accessories
44983	Plug-in battery charger NiCd- and NiMH-accupacks, Euro-plug, 2P, 1,8m cable with special adapter, incl. 3 adapters for worldwide adoption
14808	Plug-in battery charger 110 VAC/7,2 VDC, 60 Hz, plug / 1,8 m cable with special adapter
41604	Shoulder strap to L160-Ex, synthetic fiber, adjustable
14468	Wall bracket, synthetic, to L160-Ex
14807	Belt bracket with safety clamp to L160-Ex
14809	Gaskets (5 pcs) to L160-Ex, for watertightness IP68
44980	Halogen projection lamp 6V/20W
14729	Charging cap complete

Description

Safe use and high design and production quality of the portable searchlight **IL-80** is ensured by explosion protection features and the embedding of the lamps in a housing resistant to impact and scratching. The housing is also resistant to acids and alkaline solutions and is jet-proof (IP66). Emergency light function through safety switching in the event of a power failure during charging. The portable searchlight is suitable for **Zones 1, 2, 21 and 22**.

Technical data

Classification	Eex eib IIC T4
Certificate	VTT 03 ATEX 027X
Designation	Ex II 2 G D
Dimensions	LxHxT=216x21x121 mm
Degree of protection	IP66
Weight	1.4 kg
Lamp	Halogen 6 V/2.4 W PX13,5 S
Burning life	11h at full power, 18h at half power
Accumulator	NiCd 6V / 5.0 Ah
Service temp.	-20°C to +40°C
Housing	Polypropylene/carbon (antistatic)
Glass lens	5 mm mineral glass
Reflector	Point reflector (H0111-4)
Residual capacity	2-step switch for half and full power indicator

Item	Description
18270	Explosion-proof handheld searchlight IL-80 without accessories
18271	Wall support for explosion-proof handheld searchlight IL-80 (without supply cord)
18272	Power pack for explosion-proof handheld searchlight IL-80 230 V/12 VDC with 2 m supply cord
18273	Car plug for explosion-proof handheld searchlight IL-80 12 VDC

Bonding box



Description

The GIFAS bonding box **POTAK 2000** is a portable, enveloped metal construction of stainless material A2, in which eight cable reels are integrated. The housing protects the internal components from mechanical damage and partly also prevents the entry of liquids.

The cables can be unwound and connected by pulling the earth clamps or casting bodies. After use, the cables are rewound using the crank.

The GIFAS bonding box POTAK 2000 is designed for checking electrical bonding (potential charges) and to discharge any existing potential without generating sparks.

The POTAK 2000 is SEV-tested.

Test standards:

EN 50014 / EN 50019 / EN 50028 / SEV TP 31/2B-d / ASEV 00 VGSEB 0176 II 2G Ex ems II T6

Technical data POTAK 2000:

- 8 free-running V2A cable reels each with –2 thrust ball bearings with variable brakes
- 36 m double-insulated high-flex stranded wire 6 mm²
- 6 mounted earth clamps
- 4 brass casting bodies with encapsulated resistors
- incl. integrated hexagon socket tool (for adjusting braking force)
- Dimensions: 404(550) x 402 x 409 mm
- Weight: approx. 62 kg

Technical data POTAK MINI:

- 5 free-running V2A cable reels each with – 2 thrust ball bearings with variable brakes
- 36 m double-insulated high-flex stranded wire 6 mm²
- 4 mounted earth clamps
- 1 brass casting body with encapsulated resistors
- incl. integrated hexagon socket tool (for adjusting braking force)
- Dimensions: 404(550) x 402 x 409 mm
- Weight: approx. 46 kg

Item	Description
54227	POTAK 2000 large, with 8 reels
55832	POTAK 2000 MINI, with 5 reels



Description

Potential cable reel type 502

- Solid-rubber reel body combined with auxiliary reel
- Highly flexible stranded earth wire with high chemical resistance
- Generously sized earth clamp of bronze
- Proven product for preventing potential differences

Potential tension cable reel Series X with earth clamp

- Enclosed housing of impact-resistant plastic
- Factory-equipped with locking device (can be adjusted for permanent tension)
- Earthing to avoid static charging

Spiral earth cable 6 mm²

Design 1 x 6 mm² yellow/green, NL = 2.5 / 5.0 m

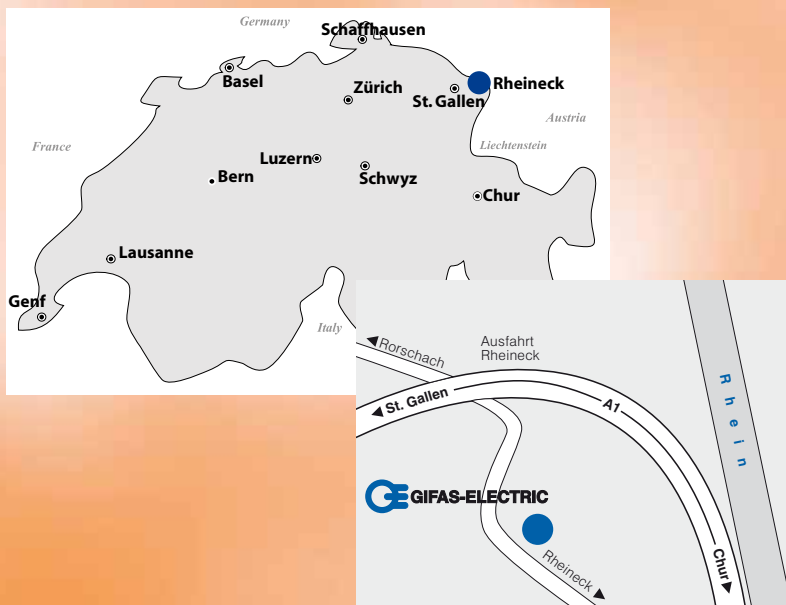
Item	Description	Equipment
23087	Potential cable reel type 502	1 auxiliary reel / 60 m stranded wire, 16 mm ² , yellow/green / 2 earth clamps
52985	Potential tension cable reel Series X with earth clamp	12.5 m stranded earth wire, 6 mm ² , yellow/green, 1 earth clamp
16180	Spiral earth cable	1 cable terminal / 1 earth clamp, 2.5 m useful length
21034	Spiral earth cable	2 earth clamps, 2.5 m useful length
32180	Spiral earth cable	1 cable terminal / 1 earth clamp, 5.0 m useful length
32179	Spiral earth cable	2 earth clamps, 5.0 m useful length

Accessories:

Item	Description
16166	Earth clamp small
10986	Earth clamp large
21943	Earth clamp bronze
16358	Earth rod
40352	Clamping block
23095	Earth ring 4.5 / stranded wire, 16 mm ² , yellow/gre / 2 special press cable terminals

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Energy in the right dimension

GIFAS-ELECTRIC GmbH Telefon +41 71 886 44 44
Dietrichstrasse 2 Fax +41 71 886 44 49
Postfach 275 www.gifas.ch
CH-9424 Rheineck gifas.electric@gifas.ch

