

## DEFINITIONS

### Electrical apparatus:

All apparatus used as a whole or are part responsible for the applications of electrical energy. These include items for generation, transmission, sub transmission, distribution, regulation, storage, and consumption of electrical energy and ALL apparatus for telecommunications. (In the use of explosion protected electrical equipment in hazardous locations, one must distinguish between operation, such as switching, control adjustment etc, maintenance which covers inspection, service and repair and inspection of such equipment.)

### Gas Groups:

Electrical apparatus used in potentially explosive atmospheres are divided into "GROUP I", and "GROUP II".

GROUP I gases occur in mines.

GROUP II gases are surface gases, which are even further divided into groups A, B and C.

### Ex Components:

Components which are part of an electrical apparatus used in a potentially hazardous location, that may not be used on its own without additional certification together with any other Ex apparatus for intended purpose in such areas.

### Explosive atmospheres:

A mixture of flammable substances in the form of a gas, vapour or mist with air under atmospheric conditions in such proportions that it can be ignited by excessive temperature arcs or sparks.

## LIABILITY CLAUSE

"Notwithstanding the fact that this product has been certified by ExVÁ Testing Station for Explosion Proof Equipment Ltd., Accredited by the Council for Accreditation as "Explosion Protected" and as being suitable for use in hazardous locations, no liability will attach to the manufacturer or any person or party concerned with the Explosion Protection modification thereto, for any loss or damage of whatsoever nature arising from or relating to the operation or use of the product in contravention of any procedure recommended in the Product Users Manual, or arising from or relating to any explosion, fire or chemical reaction caused by the use of the product."

## Ex-MANUAL FOR THE: Ex-Mobile-10®

1. The Ex-Mobile-10® is certified as Ex ib IIC T4 for zone 1 & 2. Hazardous locations, which is an area in which the atmosphere is continuously explosive.
2. The mobile phone must be used only with the intrinsically safe battery module type "Ex-Mobile-10®/Battery Pack"
3. The battery module of the mobile phone must be charged out of hazardous location
4. DO NOT attempt to open the Ex-Mobile-10® to repair it. Non-Expert handling of the device is NOT permitted.
5. The battery pack must not be removed from mobile phone in hazardous Location.
6. The mobile phone is not approved for use with any accessories in hazardous Location.
7. The data/program port must not be used in hazardous Location.
8. All connection must be kept sealed in hazardous Location.
9. DO NOT replace your battery in a hazardous Location.
10. Charging of the units MUST be done in a safe area.

The markings will be as follows:

### Type: Ex-Mobile-10®

CE 1418 Ex II 2 G

Ex ib IIC T4

BK112 ATEX0014 X -20° C < T<sub>a</sub> < +60° C

Serial nr: xxxxx

**Warning** - Do not open or charge when an explosive atmosphere may be present!  
Use only with **Ex-Mobile-10®/Battery Pack!**



EXPERTS- Intrinsic Safety Specialists  
P.O.Box 279 - 3190 AG Hoogvliet Rtd. The Netherlands

## ADVANTAGES/SUMMARY

Advantages of using such equipment enable, Industries with Potentially Explosive Atmospheres, communications advantages in these areas, which was never possible before using GSM. They are now able to make and receive a call, receive and send sms (Short Message Service) in these areas.

Many applications including telemetry / data / voice will form a large part of the Plant's everyday use with newer equipment offering better production times and less "downtimes". All these "New" ideas will ONLY become reality, once the units are able to work in Potentially Explosive Atmospheres. The Ex-Mobile-10® offers such an advantage of being able to be utilised in all surface industries, with Potentially Explosive Atmospheres, covering all surface gas groups.

For further information, please contact  
us at: [info@hqc.info](mailto:info@hqc.info) - [www.hqc.info](http://www.hqc.info)



Intrinsic Safety Specialists

## Ex-Mobile-10®



**ATEX - Ex ib IIC T4**

### **Explosion Hazard Zones:**

All areas in which, potentially explosive atmospheres may occur in hazardous quantities are deemed to be Explosion-hazard zones. According to the probability, in terms of time and location, of the presence of potentially explosive atmospheres, these potentially explosive atmospheres are divided in Zones, which allow differentiated evaluation of the explosion hazard. Since the concentration decreases with the increasing distances from the source of risk, the location of the source of risk is very important for the Zone Classification.

#### **Zone 0 ( Formerly class 1 division 0):**

Atmosphere is continuously explosive.

**Common examples:** Volume above volatile liquid in a tank with a fixed roof or 150mm above a solvent or volatile liquid in open air.

**Yardstick in hours per year:** 1000 hours plus

#### **Zone 1 (Formally Class 1 Division 1)**

Likely to be explosive under normal operating conditions

**Common Examples:** Opening or closing Valves taking samples, small mechanical repairs or adjustments.

**Yardstick in hours per year:** 10-1000 hours

#### **Zone 2 (Formally Class 1 Division 2)**

Explosive under Abnormal conditions only – even then for short periods.

**Common Examples:** Construction mechanically strong, chances of leaks very remote.

**Yardstick in hours per year:** Up to 10 Hours per year – in total

#### **Zone 20:**

An Area, in which combustible dusts, as a cloud, is present continuously or frequently, during normal operation. In sufficient quantity to be capable of producing an explosive concentration of combustible, dust mixed with air, and/or where layers of dust of uncontrollable and excessive thickness can be formed. This can be the case inside dust containment areas where dust can from explosive mixtures frequently or for long periods of time. This occurs typically inside equipment.

#### **Zone 21:**

An Area not classified as Zone 20 in which combustible dust, as a cloud, is likely to occur during normal operation in sufficient quantities to be capable of producing an explosive concentration of combustible dust mixed with air. This zone can include, among others, areas in the immediate vicinity of powder filling or emptying points and areas where dust layers can occur and are likely in normal operation to give rise to an explosive concentration of combustible dust mixed with air.

#### **Zone 22:**

Areas not classified as Zone 21, in which combustible dust clouds may occur infrequently, and persist for only a short period, or in which accumulation or layers of combustible dust may be present under abnormal conditions and give rise to combustible mixtures of dust with air. Where, following an abnormal condition, the removal of dust accumulations or layers cannot be assured then the area is to be classified as Zone 22. This Zone can include, among others, areas in the vicinity of equipment containing dust, which dust can escape from leaks and deposits, such as milling rooms in which dust can escape from the mills and then settle.

#### **Intrinsic safety:**

##### **Principles of I.S ‘EN 50020’**

A piece of electrical apparatus is only intrinsically safe, if all circuits are intrinsically safe. A circuit is only intrinsically safe if its amperage and voltage are limited in such a way (function of inductance, capacitance and resistance) that no sparks or thermal effect can occur in it. The energy of such circuits is lower than the minimum ignition energy, required igniting an explosive mixture (gas, solvent, vapour or dust). Intrinsic Safety consists of two categories “ia”, and “ib”. A clear distinction must be made between these two categories. Category “ia” is also required to meet more stringent requirements on the occurrence of faults and combinations of faults. Consequently “ia”, is prescribed for use in Zone 0, and “ib” for use in Zone 1. “ia”, also needs to maintain two faults within its own circuitry, and “ib” only requires maintaining one fault.

#### **Non Sparking:**

##### **Principles of Non Sparking ‘EN50021’**

In the case of this protection type, special conditions are taken to ensure an increased degree of safety and to prevent the occurrence of inadmissible high surface temperatures leading to auto-ignition, sparks or arcs inside, or on external components of electrical apparatus in normal operation. Special notice is taken to maximum surface temperatures. Enclosures containing bare or live parts must comply with a degree of protection not less than IP54. Those containing only insulated parts may be designed to a degree of protection not less than IP44

**\*Note: 98% of all Hazardous Locations are Zone 2 locations.**

#### **Ex-Mobile-10®**

The Ex-Mobile-10® is a Tri-band mobile phone which supports the GSM 900 / DCS 1800 and the PCS 1900 GPRS Mobile Radio with Bluetooth on SAR certification EN50360:2001. The transceiver has a full graphic display, and the user interface is based on two software keys. The transceiver has a leakage tolerant earpiece and omnidirectional microphone providing excellent audio quality. The transceiver supports full rate, enhanced rate and half speech decoding.

## **MODE DESCRIPTION**

**There are five different operation modes:**

- Power off mode
- Idle mode
- Active mode
- Charge mode
- Local mode

In the power off mode, only the circuits needed for power are supplied.

In the Idle mode circuits are supplied with the power although some parts might be in the idle state part of the time.

In the active mode, all the circuits are supplied with the power although some parts might still be in the idle state part of the time.

The charge mode is effective in parallel with all the previous modes. The charge itself consists of two different states i.e.: the charge and the maintenance mode.

The local mode is used for alignment and testing.

#### **· Operating and storage temperatures**

Maximum operating temperature is from -20°C to +60°C; Storage temperature is from -20°C to +60°C

#### **Construction**

The P.C Board is housed in a Polycarbonate/ABS material consisting of Gore-Tex filters, improving mechanical stability and Ingress Protection.

## **EXPLOSION PROTECTION FOR MOBILE PHONES.**

In the manufacture, processing, transport and storage of flammable materials and petroleum products it is inevitable that there will be a leakage of gases and vapours which, in conjunction with the oxygen of the atmosphere may form mixtures of an explosive concentration. Accidental ignition of such a mixture – for example by an electrical spark, mechanical scraping or excessively hot surfaces, may cause an explosion, which will endanger life and property. Electrical apparatus can ignite many explosive dusts in industry, when mixed with oxygen in the air. Since every apparatus is a potential source for an ignition, the authorities impose measures to prevent the risk of ignitions. The fact that explosions seldom occur proves that the safety measures taken are effective and successful.