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IA CERTIFICATE: SABS MS/23-0835X

Date: 31 August 2023

IS540.M1 INTRINSICALLY SAFE SMARTPHONE

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Expiry Date: August 2026

DESCRIPTION

According to IECEx Certificate of Conformity No: IECEx EPS 23.0002X

Equipment and systems covered by this certificate are as follows:

The intrinsically safe 5G smartphone IS540.M1 for the use mines susceptible to firedamp is equipped with a 6-inch full HD display, supports multiple frequency bands and also NFC, Bluetooth 5.2 and Wi-Fi 6. The high-end Qualcomm chipset ensures fast processing for the most demanding industrial applications such as predictive maintenance. The 16-pin ISM interface provides a secure connection for audio accessories, barcode scanner or other add-ons. Other advantages include the 48MP main camera, an amplified loudspeaker, a replaceable 4400 mAh battery and programmable buttons (for PoC/PTT/lone worker protection/SOS).

Electrical data:

Power supply: changeable Li-Ion Polymer Battery

Interface:

The device has two charging contacts that allow the device to be charged outside hazardous areas via an approved charging adapter. The contacts are intrinsically safe for gas and dust.

Furthermore, the device has an USB-C interface for charging and data transmission outside hazardous areas. It is covered by an IP plugger and is not allowed to be opened in hazardous areas.

The ISM interface of the IS540.M1 can be used within hazardous areas with approved headsets, Remote Speaker Microphones (RSM) and add-ons, making the smartphone a multifunctional equipment for industrial applications. For ISM interface use, the i.safe MOBILE Headsets IS-HS2A.1, IS-HDHS1x.1 and the PTT Button IS-PTTB1A.1 or approved, intrinsically safe accessories may be used, which comply with connection parameters of the ISM interface according to document 1058AD04. If the ISM interface is not used, it must be securely closed by the cover provided for this purpose.

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Headset variants IS-HDS1x. 1:

| Name: | Variant: |
|-------------|----------|
| IS-HDHS1A.1 | Headband |
| IS-HDHS1B.1 | Neckband |

For charging and wired data transmission only i.safe MOBILE approved accessories may be used. This ensures $U_m = 5.88V$.

The microSD cards IS-SD164.1 and IS-SD1128.1 may be used in the corresponding slot in the hazardous area. Alternatively, the SD card port has the following intrinsic safety parameters:

$U_o = 4.35 V$

$C_o = 80 \mu F$

$L_o = 1 \mu H$

A commercially available microSD card may be used in the corresponding slot in potentially explosive atmospheres. The internal electrical capacitance and inductance are negligible, respectively corresponding to the intrinsically safe connection parameters.

Nano-SIM cards which comply with the following intrinsic safety entity parameters, may be used in the corresponding slots in the hazardous area:

$U_o = 4.35 V$

$C_o = 80 \mu F$

$L_o = 1 \mu H$

A commercially available nano-SIM card may be used in the corresponding slot in potentially explosive atmospheres. The internal electrical capacitance and inductance are negligible, respectively correspond to the intrinsically safe connection parameters.

MARKING

Supplied by: i.safe MOBILE GmbH
IS540.M1 Intrinsically Safe Smartphone
IA No: SABS MS/23-0835X

Ex ia I Ma

Ex ib IIC T4 Gb

Ex ib IIIC T135°C Db

Serial No: -----

X - SPECIFIC CONDITIONS OF USE

- The battery may be charged and replaced outside explosion hazardous areas only.
- The device must be protected from impacts with high impact energy, against excessive UV light emission and high electrostatic charge processes.
- The cover for USB-C and ISM interface must be securely closed inside explosion hazardous areas.
- The device shall be protected from the exposure of oils, greases and hydraulic fluids.
- The permitted ambient temperature range is $-20 \text{ }^\circ\text{C}$ to $+55 \text{ }^\circ\text{C}$

Compliance:

The units as described above and examined in SABS test report no: EPT-230830-00035 are hereby certified "Explosion Protected Ex ia I Ma, Ex ib IIC T4 Gb and Ex ib IIIC T135°C Db" and is suitable for

use in hazardous locations as stated below, as determined during inspections conducted in accordance with the relevant requirements of SANS Standards:

- **SANS 60079-0 : 2019 “Explosive atmospheres – Part 0: Equipment – General requirements”**
- **SANS 60079-11: 2012 “Explosive atmospheres – Part 1: Equipment protection by intrinsic safety ‘i’**

| | | |
|----------------------|--|---|
| Locations | Zone 0 (For Mines) and Zone 1 or Zone 21 (For Surface) | Underground or Surface industry |
| Hazardous Frequency | | Intermittent as could occur under normal operations |
| Environment | Group I / IIC / IIIC | Methane and Propane to Hydrogen / Conductive Dust |
| Limiting Temperature | T4 / T135 | |
| Ambient Temperature | -20 °C to +55 °C | |

The use of the apparatus in hazardous locations is subject to the following provision, which shall be adhered to:

- SANS 10086-1: 2014 and SANS 10086-2: 2013 requirements;
- Any relevant requirements of the MHS Act and OHS Act;
- Codes of Practice enforced in terms of Regulations 10.1 of the Minerals Act, by the Chief Inspector of Mines;
- Any restrictions and conditions enforced by the Chief Inspector of Mines, Principal Inspector (Group I equipment) or Chief Inspector of Factories (Group II equipment); and
- Any conditions mentioned in the above report.

Conditions of certification:

- This certificate covers all units sold / used / purchased from the date of this certificate to August 2026.
- Specific conditions for the manufacture of the unit(s) are addressed in the confidential report of assessment to the manufacturer (SABS report no: EPT-230831-00035).

Evaluated by: 
TEST OFFICER

Reviewed by: 
SENIOR TEST OFFICER


Approved and Authorised by: **TE Pheelwane**
TECHNICAL LEAD
SABS EXPLOSION PREVENTION TECHNOLOGY