

**Digitalizing hazardous areas.
Enabling connectivity.
Enhancing mobility.**

Mobile Computing and Communication



Your automation, our passion.

 **PEPPERL+FUCHS**

Notifications



Data Capturing



Drawings and Documents

Networked Operations

Lone Worker / Man Down

Augmented Reality (AR)



Inspection and Repairs

Work Orders



Operator Rounds

Staging / MDM

Photo / Video

Smart Loggers and Analyzers




Asset Management / Localization

Push-to-Talk (PTT)



Contents

ecom Portfolio	4
Exploring Mobility	5
Customization	6
 Smartphone and Feature Phone	
Smart-Ex® 02	8
Ex-Handy 10	11
 Tablets	
Tab-Ex® 02	15
Pad-Ex® 01 P8	19
 Peripherals	
CUBE 800	23
Smart-Ex® Watch 01	26
Ident-Ex® 01	29
Loc-Ex® 01	32
RSM-Ex 01	35



**Predictive
Maintenance**

Ensuring Safety across the Globe

Explosion protection is a matter of trust. That is why ecom sets the highest standards by collaborating directly with our customers. Only by working together can we tailor our solutions to our customers' exact requirements. Our global service network allows us to integrate this concept into the life cycle of our products. Personalized support is always just a phone call away.



Efficiency and Connectivity Anytime and Anywhere

Companies from a range of industries are facing mobile workforce challenges including:

- Maximizing workforce productivity
- Providing the right information when and where it is needed
- Accurate data capture for real-time decision-making
- Minimizing time and costs
- Improving knowledge retention

Exploring Mobility

Organizations are starting to realize how mobility solutions can benefit their business. Today, the focus is on technologies that reduce costs and improve efficiency. Game-changing breakthroughs in mobile computing and communication technologies are enabling industries to improve workforce productivity, data quality, and the speed and accuracy of decision-making. The Internet of Things (IoT) will become increasingly important in the industrial sector and will change the way companies deploy labor to use resources more effectively.



Customization

Digital Products and Services

Digital Products and Services is a solution that combines automated staging, mobile device management, and device analytics. It can also be used as a full-fledged enterprise mobility management system if desired.

At the customer's request, ecom's mobile devices can ship from the factory with predefined custom configurations such as security settings, applications, and wireless setup. This allows devices to be used anywhere in the world immediately upon delivery—manual configuration is not necessary.

The devices can be managed via the ecom online platform and updated remotely at any time during operation without having to be sent to local IT staff or the head office.

Cloud servers hosted in Germany meet the highest data protection standards and guarantee high data availability and security.

One-time staging and enrolling can also be done internally via ecom's production servers. If desired, device diagnostics and analytics can collect real-time operating data and fault analyses to continuously monitor device status and fix malfunctions preventively or immediately.

Additionally, the platform analyzes historical data to detect critical software events, installations, and other safety-critical processes. A statistical accumulation of events can be used to establish correlations and causalities between software errors, geographical data, and Wi-Fi coverage, for example.

Digital Products and Services is a ready-to-use service that ensures quality and security for all devices. This saves time and valuable resources.

Digital Products and Services

Staging and Enrolling

eCSL—Custom Service Load

- Custom device preconfiguration
- Delivered ready-to-use

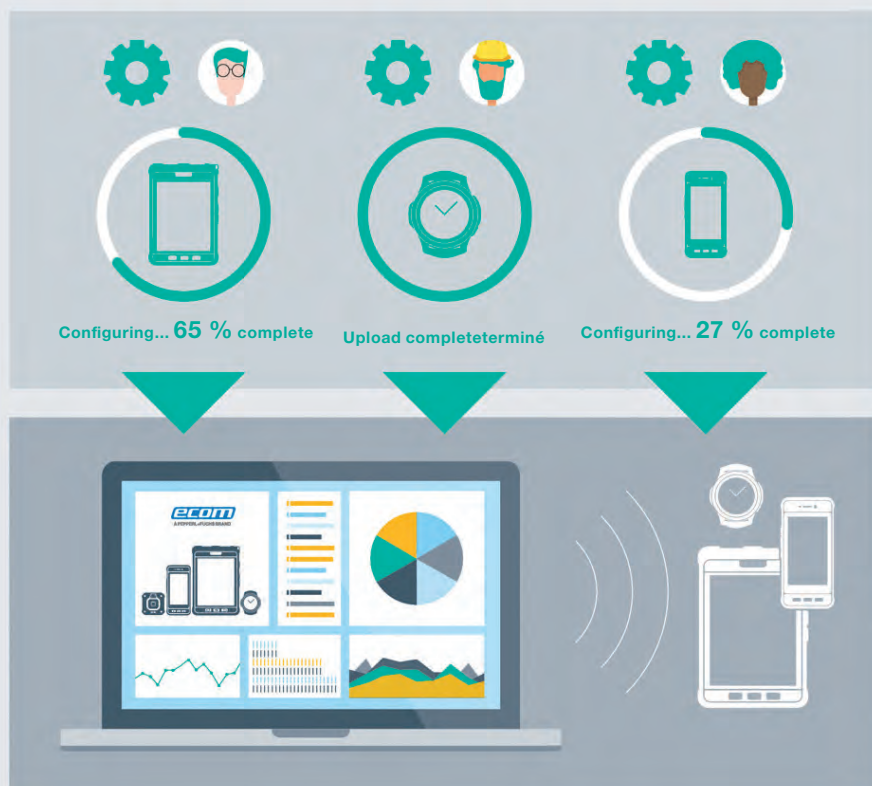
Configuring and Management

eMDM—Mobile Device Management

- Update devices around the world simultaneously

Device Diagnostics

- Analytics help avoid problems and correct errors



The Next Generation of Rugged and Intrinsically Safe Smartphones

Smart-Ex® 02



Smart-Ex® 02—The Intrinsically Safe Smartphone for Hazardous Areas

The Smart-Ex® 02 is the world's first intrinsically safe smartphone for Zone 1/21 and Div. 1 areas that meets Google's sophisticated Android Enterprise Recommended (AER) validation. In addition, it meets all important global hazardous location and regulatory certifications.

The rugged smartphone has a large, high-resolution display, powerful features, and optimized accessories. Its extended temperature range makes it suitable for even the harshest environments.

Designed to support 21 LTE frequency bands, the Smart-Ex® 02 has no SIM lock and can be connected to different networks worldwide. An Android™ 9 operating system enables the intrinsically safe device to work safely, quickly, and efficiently.

The ergonomic design and intuitive user interface enhance the user experience, and optimized accessories and peripherals ensure total compatibility with current and future ecom products. Equipped with the most powerful replaceable battery (4400 mAh) on the market, the device can handle unexpectedly long shifts and runtimes.

The Smart-Ex® 02 also sets new standards when it comes to security. The Android Enterprise Recommended certification and regular security updates prevent unauthorized access to confidential personal and company data.

To ensure unlimited, long-term use of the smartphone, ecom offers a three-year service level agreement. Pepperl+Fuchs' global sales and service network provides excellent customer service around the globe. Support from ecom's system engineers and development teams is also available when software requirements change.



Operating System

- Android™ AER

Connectivity

- WiFi Standard 802.11 a/b/g/n/ac/e/k/r/h
- WiFi 2.4 GHz and 5 GHz support
- Bluetooth® 4.2 incl. BLE
- GPS/A-GPS/Glonass/Beidou/Galileo/NFC

Band

- Supports 21 LTE frequency bands
- Dual SIM allows flexible integration in business environments

Ports

- Waterproof magnetic USB 2.0 connection

2 Cameras (Front and Rear)

- 12 MP camera with autofocus and LED flash + 5 MP camera

Dedicated Keys

- User programmable buttons for special functions, e.g. camera, alarms

Memory

- 3 GB RAM, 32 GB ROM
- Up to 128 GB additional memory with microSD

Power

- Powerful replaceable battery, for a full working day (4400 mAh)

Extended Temperature Range

- 20 °C ... +60 °C



Highlights



World's 1st Android Enterprise Recommended smartphone with ATEX/IECEx Zone 1/21, Div.1



Latest Android™ operating system: quick, safe, and efficient



Ultra-rugged, 5" multi-touch display can be operated with gloves



Ergonomic design and an intuitive user interface: dedicated keys like push-to-talk and volume control can be configured individually



21 LTE frequency bands, no SIM-lock, and SIM-free for flexible use around the world



Individualized service and support around the globe with faster response times

Smart-Ex® 02



Smart-Ex® 02 DZ1



Smart-Ex® 02 DZ2

Extensive Range of Accessories and Peripherals from a Single Source

Components such as remote speaker microphone (RSM) and headsets expand the range of applications for the new Smart-Ex® 02 and are perfectly suited for future IIoT applications.

Accessories

- Travel charger TC S02
- Desktop charger DS S02
- Battery charger DC Ex-BP S02
- USB data cable PC S02

Additional accessories can be found at
www.pepperl-fuchs.com/smart-ex-02

Compatible Peripherals

Smart-Ex® Watch 01

Smartwatch



Ident-Ex® 01

Auto ID Scanner



CUBE 800

Ex-Camera



RSM-Ex® 01

Remote
Speakermic

Technical Data	
Operating system	Android™ Latest available Android firmware release Details see https://www.ecom-ex.com/products/communication/cell-phones/
Chipset	Qualcomm Snapdragon 450 platform
Band	Cellular frequency bands: 4G LTE FDD: B1, B2, B3, B4, B5, B7, B8, B11, B12, B13, B20, B21, B25, B26, B28, B66, B71 4G LTE TDD: B38, B39, B40, B41 3G UMTS: 850 / 900 / 1700 / 1900 / 2100 MHz 2G GSM: 850 / 900 / 1800 / 1900 MHz
WiFi	<ul style="list-style-type: none"> WiFi 2.4 GHz and 5 GHz support WiFi standards 802.11 a/b/g/n/ac/e/k/r/h
Memory	3 GB RAM, 32 GB ROM
User memory	SD card up to 128 GB
Applications	Google Play Store certified
Bluetooth® SMS, MMS (text, image, audio, video)	<ul style="list-style-type: none"> Bluetooth® 4.2 incl. BLE (Bluetooth Low Energy) Support SMS and MMS
GPS, NFC	GPS / A-GPS / Glonass / Beidou / Galileo / NFC
Email client	EAS, Gmail, POP3, IMAP
Power	Li-Ion 3.7 V / 4400 mAh / 16.28 Wh
Ambient temperature	-20 °C ... +60 °C
Protection class	IP68, MIL-STD-810G
Size	163 x 82 x 22 mm
Weight	approx. 380 g
Dedicated keys	Alarm / Power / Multifunction / Volume / Hardware buttons for Android features
Ports	<ul style="list-style-type: none"> 3.5 mm jack connection with special ecom mounting solution Waterproof magnetic USB 2.0 connection
Display size	12.7 cm (5.0 in)
Display type	Extreme shock- and scratch-resistant Gorilla® Glass with glove touch and wet mode
Microphone	Dual mic solution with three selectable background noise suppression options
Speaker	Loud speaker with Gore® Protective Vents
Camera	12 MP rear with autofocus and LED flash with flashlight function / 5 MP front (optional)
Video streaming	Support MP4, M4V, 3GP, 3G2, TS, WMV, ASF, AVI, FLV, MKV, WEBM
LED flashlight	Yes

The Next Generation of Rugged and Intrinsically Safe Feature Phones

Ex-Handy 10



Ex-Handy 10— Flexible Communication in Hazardous Areas

Simple, rugged, and practical: The Zone 1/21 and Div. 1 certified 4G / LTE feature phone is ideal for a wide range of applications—from pure communication to lone worker protection and innovative Industry 4.0 applications.

The Ex-Handy 10 is suitable for global 4G communication, supports 21 LTE bands, and offers both keypad and touch screen operation. The display is made of extremely durable, scratch-resistant Gorilla® Glass (IP68-rated) and can even be operated with gloves. The Ex-Handy 10 is designed for the harshest environments—it is operable in temperatures from -20 °C to +60 °C and has good readability in direct sunlight.

The feature phone has an optional 8 MP camera, which includes autofocus, LED flash, and flashlight. An advanced rechargeable battery and energy management enable outstanding operating times.

The Android™ operating system offers regular patches and security updates. To ensure unlimited, long-term use of the feature phone, ecom offers a three-year service level agreement. Pepperl+Fuchs' sales and support network provides excellent customer service around the globe. Support from ecom's system engineers and development teams is also available when software requirements change.



Operating System

- Android™

Connectivity

- WiFi 2.4 GHz and 5 GHz support
- WiFi standards 802.11 a/b/g/n/e/k/r/h
- Bluetooth® 4.2 (incl. BLE)
- NFC
- GPS/A-GPS/Glonass/Beidou

LTE

- Supports 21 LTE bands

Ports

- Waterproof magnetic USB 2.0 connection

Camera

- 8 MP camera with autofocus, LED flash and flashlight function

Dedicated Keys

- User programmable buttons for special functions, e.g. alarms

Memory

- 2 GB RAM + 16 GB ROM
- SD card up to 128 GB

Power

- Powerful battery for a full working day

android 

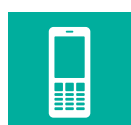
Highlights



Global approvals for Zone 1/21, Div. 1 and Zone 2/22, Div. 2



Supports 21 LTE frequency bands and has no SIM lock for use around the world



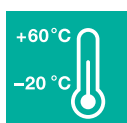
Extremely rugged dust and waterproof housing with a scratch-resistant display



Powerful battery for a full working day



Supports both keypad and touch screen operation



Made for use in ambient temperatures from -20 °C to +60 °C

Ex-Handy 10



Ex-Handy 10 DZ1



Ex-Handy 10 DZ2

Extensive Range of Accessories and Peripherals from a Single Source

Components such as remote speaker microphone (RSM) and headsets expand the range of applications for the new Ex-Handy 10 and are perfectly suited for future IIoT applications.

Accessories

- Leather case LC H10
- Leather holster LH H10
- Cradle CR-Ex H10

Additional accessories can be found at www.pepperl-fuchs.com/ex-handy-10

Compatible Peripherals

Smart-Ex® Watch 01

Smartwatch



Ident-Ex® 01

Auto ID Scanner



CUBE 800

Ex-Camera



RSM-Ex® 01

Remote
Speakermic



Technical Data	
Operating system	Android™ Latest available Android firmware release Details see https://www.ecom-ex.com/products/communication/cell-phones/
Chipset	Qualcomm Snapdragon MSM8909 platform
Band	Cellular frequency bands: 4G LTE FDD: B1, B2, B3, B4, B5, B7, B8, B11, B12, B13, B20, B21, B25, B26, B28, B66, B71 4G LTE TDD: B38, B39, B40, B41 3G UMTS: 850 / 900 / 1700 / 1900 / 2100 MHz 2G GSM: 850 / 900 / 1800 / 1900 MHz
WiFi	<ul style="list-style-type: none"> WiFi 2.4 GHz and 5 GHz support WiFi standards 802.11 a/b/g/n/e/k/r/h
Memory	2 GB RAM + 16 GB ROM
User memory	SD card up to 128 GB
Applications	Google Play Store certified
Bluetooth® SMS, MMS (text, image, audio, video)	<ul style="list-style-type: none"> Bluetooth® 4.2 incl. BLE (Bluetooth Low Energy) Support SMS and MMS
GPS, NFC	GPS / A-GPS / Glonass / Beidou / NFC
Email client	EAS, Gmail, POP3, IMAP
Power	Li-Ion 3,7V / 4400 mAh / 16,28 Wh
Battery life	Up to 600 hours standby
Ambient temperature	-20 °C ... +60 °C
Protection class	IP68, MIL-STD-810G
Size	148 x 67 x 24 mm
Weight	approx. 330 g
Dedicated keys	Alarm / Power / Multifunction / Volume / Hardware buttons for Android features
Ports	<ul style="list-style-type: none"> 3.5 mm jack connection with special ecom mounting solution Waterproof magnetic USB 2.0 connection
Display size	6.6 cm (2.6 in)
Display type	Extreme shock- and scratch-resistant Gorilla® Glass with glove touch and wet mode
Microphone	Dual mic solution with three selectable background noise suppression options
Speaker	Loud speaker with Gore® Protective Vents
Camera	8 MP rear camera with autofocus and LED flash (optional)
Video streaming	Support MP4, M4V, 3GP, 3G2, TS, WMV, ASF, AVI, FLV, MKV, WEBM
LED flashlight	Yes



Tablets for Industrial and Hazardous Areas

Tab-Ex® 02 Series

Successor of the World's First Intrinsically Safe Tablet

ecom's hazardous area tablet, the **Tab-Ex® 02**, leverages Samsung's know-how and brings a new level of customer focused solutions and increased ease of use to mobile workers in the oil and gas, refining, chemical, pharmaceuticals, and other hazardous industries.

Since many tasks are performed in both hazardous and non-hazardous areas, ecom offers an entire family of tablets, peripherals, and accessories suitable for use in Zones 1/21, 2/22, Div.1 / Div.2, and rugged environments.

Professional

Meet the New Tab-Ex® 02

Designed for powerful performance and safe operation, the Tab-Ex 02 is a stylish, portable tablet device that can go anywhere to get the job done. ecom offers customized configurations via its MDM system.

- **Thermal endurance testing**—samples placed within an environmental test chamber and subjected to 4 weeks of extreme heat and humidity and 1 day of extreme cold.
- **Impact tests**—test weights were dropped onto the samples from different heights.
- **Drop tests**—samples were dropped onto a concrete floor from heights of 1 m.
- **Overpressure and flame propagation test**—the samples then underwent hydrostatic overpressure testing to verify the strength and integrity of the enclosure. Following this, an internal explosion of test gases was triggered to ensure that the flames did not spread from the interior to the exterior.
- **Ingress protection**—following the tests above, the objects were tested for resistance to the ingress of water and dust in accordance with IP64.

2 Cameras

- 8 MP rear + 5 MP front camera
- optional: Non-Camera

Sensors

- Face recognition, NFC, Accelerometer, Proximity, Light, Gyroscope, Geomagnetic, Hall, GPS

Power

- Li-Ion battery 4450 mAh
- Up to 11 hours battery life

Safety

- KNOX 3.2
- Face recognition

Operating system

- Android™
Latest firmware release

Memory

- RAM: 3 GB, Memory: 16 GB, with external MicroSD up to 256 GB



android 

Highlights



Global certifications for Zone 1/21 and Div. 1 and Zone 2/22 and Div. 2



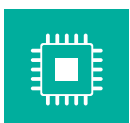
High-performance Android™



A high-resolution, 8" touch screen, operable with gloves



Rugged design: dust-, water-, and shock-resistant



Fast processor and high storage capacity enable augmented reality applications



Samsung Knox: reliable enterprise mobile data security

Tab-Ex® 02



Tab-Ex® 02 DZ1



Tab-Ex® 02 DZ1 Mining



Tab-Ex® 02 DZ2

Extensive Range of Accessories and Peripherals from a Single Source

Components such as remote speaker microphone (RSM) and headsets expand the range of applications for the new Tab-Ex® 02 and are perfectly suited for future IIoT applications.

Accessories

- Five-bay desktop charger
DC T01 X2
- Leather case
LC T01 X2
- Chest-strap carrying system
CH T01 X2

Additional accessories can be found at
www.pepperl-fuchs.com/tab-ex-02

Compatible Peripherals

Smart-Ex® Watch 01

Smart Watch



Ident-Ex® 01

Auto ID Scanner



CUBE 800

Ex-Camera



RSM-Ex® 01

Remote
Speakermic



Technical Data	
Operating system	Android™ Latest available Android firmware release Details see https://www.ecom-ex.com/products/mobile-computing/tablets-android/
Chipset	Exynos 7 Octa, 1.6 GHz Octa-Core (Cortex®-A53)
Memory	RAM: 3 GB, Memory: 16 GB, with external MicroSD up to 256 GB*
Display	1280 x 800 pixels (WXGA), 20.32 cm (8.0 in), TFT, 480 nit brightness, Operation: also with gloves / in wet conditions and snow
Sensors	Face recognition, NFC, Accelerometer, Proximity, Light, Gyroscope, Geomagnetic, Hall, GPS
Dimensions	<ul style="list-style-type: none"> ■ DZ2: 127.6 x 214.7 x 9.9 mm, 575 g (Wi-Fi) / 579 g (LTE) ■ DZ1: 162.1 x 256.0 x 33.3 mm, ca. 1250 g
Operating temperature	-20 °C ... +50 °C (DZ1) / -20 °C ... +55 °C (DZ2 / D2)
Wireless capability with	<ul style="list-style-type: none"> ■ LTE Cat. 6 (300 Mbps)—in LTE model ■ Wi-Fi 802.11 a/b/g/n/ac (2.4 GHz + 5 GHz) ■ Wi-Fi Direct ■ Bluetooth® 4.2
Safety	KNOX 3.2, face recognition
Front and rear camera	8 MP AF + 5 MP / optional: Non-Camera
Power	Li-Ion battery 3.8 V / 4,450 mAh / 16.91 Wh / up to 11 hours battery life
Degree of protection	IP64

* Please note: For safety reasons, the SD card cannot be installed or replaced after delivery.

Windows Tablet Rugged Mobility at Its Finest for Zone 2 and Div. 2

Pad-Ex® 01 P8

Pad-Ex® 01 P8 redefines the mobile tablet PC with Windows® support. In addition to its incredible ruggedness, Pad-Ex 01 P8 meets all demands and supports the 8th generation Intel® Core™ i5 processor. It also provides battery life up to 7 / 14 hours and Windows® 10 support. The combination of durability, superior performance, and a large display makes the device an ideal addition to or replacement for desktop PCs, laptops, or wall-mounted displays in the field.

Reliably Rugged: Thin, Light, and Strong

Pad-Ex® 01 P8 is rugged mobility at its finest. Its ultra-thin, lightweight exterior measures only 20 mm in height and 1.2 kg in weight.

With its ultra-compact design, Pad-Ex 01 P8 complies with IP64 and MIL-STD 810G for vibration. Additional display protection offers durability in harsh environments and an ergonomic design makes it easy to transport.

11.6" Widescreen Display

- Sunlight-readable display
- Capacitive multi-touch screen

Integrated Options for Various Applications

- Data collection
- 1-D / 2-D barcode scanner (optional)
- 5MP autofocus camera with LED flashlight



Power

- Li-Ion battery 3950 mAh
- Up to 7 hours battery life

2 Cameras

- 2 MP front-facing camera + 5 MP rear camera with flashlight

Operating system

- Windows® 10 Pro (64 Bit)

Memory

- One DDR4 socket for 8 GB

Storage

- M2-SATA SSD 256 GB

Connectivity

- WWAN LTE + GPS Combo
- Intel Wireless AC9260 802.11 a/b/g/n/ac
- Bluetooth® 5.0

Expansion Slots

- One microSD card slot supports SDHC and SDXC
- One SIM card slot for WWAN data communication

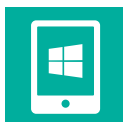
VO Ports

- Two USB 3.0
- One headphone-out / mic-in jack
- One docking connector
- One expansion connector for expansion modules
- Two RF pass-through connectors for WWAN and GPS

Highlights



Global certifications for Zone 2/22 and Div. 2



High-speed Windows® 10 Operating system



Thin, light, and strong design



Sunlight-readable, 11.6" capacitive multi-touch display with an optional display protection



Optional various applications like barcode scanner

Technical Data	
Rugged features	<ul style="list-style-type: none"> ■ IP64 according to EN/IEC 60079-0 (ATEX/IECEX) ■ IP65 according to EN/IEC 60529 (industrial standard) ■ MIL-STD 810G certified (Drop, Shock, Vibration, Rain, Dust, Altitude, Freeze/Thaw, High/Low Temperature, Temperature Shock, Humidity) MIL-STD 461 certified (Conduction, Radiation, Conducted Susceptibility, Radiated Susceptibility) ■ ANSI/ISA 12.12.01-2000, Class I, Division 2 ■ 4' drop 26 faces
Environment	<p>Temperature Operating: -10 °C - 55 °C (14 °F - 131 °F)</p> <p>Temperature Storage: -10 °C - 55 °C (14 °F - 131 °F)</p> <p>Humidity Operating: 5 % to 95 %</p>
Operating system	Windows® 10 Pro (64 Bit)
CPU	Intel® Core™ i5-8250U (8th Gen.) 1.6 GHz processor with Turbo Boost Technology up to 3.4 GHz, 6 MB cache
Memory	One DDR4 socket for 8 GB
Storage	M2-SATA SSD 256 GB (extended temperature range)
Display	<ul style="list-style-type: none"> ■ 29.46 cm / 11.6" (1920 x 1080) FHD LCD Panel ■ Capacitive Multi-Touch ■ Optical, sunlight-readable display
Audio	<ul style="list-style-type: none"> ■ Speaker x1 / 70 dB ■ Microphone x1
Camera	<ul style="list-style-type: none"> ■ 2-MP front facing camera ■ 5 MP rear camera with flashlight
Communication	<ul style="list-style-type: none"> ■ WWAN LTE + GPS Combo (optional) ■ Intel Wireless AC9260 802.11 a/b/g/n/ac ■ Bluetooth® 5.0
Data collection	Optional 1-D / 2-D barcode scanner
VO ports	<ul style="list-style-type: none"> ■ Two USB 3.0 ■ One headphone out / mic-in jack ■ One docking connector ■ One expansion connector for expansion modules ■ Two RF pass-through connectors for WWAN and GPS
Expansion slots	<ul style="list-style-type: none"> ■ One microSD card slot support SDHC and SDXC ■ One SIM card slot for WWAN data communication
Button	<ul style="list-style-type: none"> ■ Power ■ Volume ■ Windows touch button ■ Barcode / camera touch button ■ Programmable touch button
Battery	<ul style="list-style-type: none"> ■ One 3,950 mAh Li-Polymer battery pack: 7hrs ■ Optional (spare part) 7,800 mAh Li-Polymer battery pack: 14hrs
AC adapter	19 V / 3.42 A / 65 W
Dimension	298 mm x 192 mm x 20 mm
Weight	1.2 kg

Peripherals for Use in Hazardous Areas



Remote
Speakermic
RSM-Ex 01



Ex-Camera
CUBE 800



Smartwatch
Smart-Ex® Watch 01



Scanner
Ident-Ex® 01



BLE Beacon
Loc-Ex® 01

CUBE 800: Intrinsically Safe Wearable Camera for Zone 1/21 and Div. 1



Tailored for Hazardous Areas

Designed for safe operation in Ex-certified and rugged environments, the CUBE 800 brings hands-free collaboration to the world's toughest locations.

Dual cameras allow users to choose between optical and thermal camera modes. The integrated thermal imaging camera provides infrastructure health analysis and trending information, while the optical camera provides HD video and images. An integrated light ring ensure high-quality visuals even in low light conditions and with the laser pointer the user knows exactly where the camera is aligned.

The magnetic auto-latch mount provides an easy and secure way to attach the CUBE 800 to hard hat and headband accessories. Its multipurpose design allows for hands-free, handheld, and monopod use for capturing visuals in hard-to-reach places.

Optimized for Remote Collaboration

The CUBE 800 can be used to share live videos and images via the Onsite platform or store them locally. Simply pair the CUBE 800 to an Onsite-Connect-enabled mobile device such as the Smart-Ex® 02.

During a live Onsite session, remote participants can control camera settings including zoom and camera modes. Remote control allows for a completely hands-free experience for workers.

The new body-heat mode will enable the CUBE 800 to be used for temperature screenings and noncontact temperature measurements by groups and individuals.

Now it is possible to also check people for increased body temperature.

Using the body-heat mode, relative temperature differences within $\pm 0.625^{\circ}\text{C}$, or $\pm 1.125^{\circ}\text{F}$, can be made visible.

Thermal imaging camera

- Longwave infrared, 8 ... 14 μm
- < 50 mK thermal sensitivity
- Auto flat field correction (FFC)
- Typical measurement accuracy: *
Greater of +/- 5 °C or 5% where scene temperature = -10 °C ... +120 °C
Greater of +/- 10 °C or 10% where scene temperature = +120 °C ... +450 °C

Storage

- 48 GB onboard storage

Communication

- Configuration and live collaboration using Onsite Connect software iOS 11 for Android™ 5.0 (Lollipop) or higher
- Integrated IEEE 802.11 a/b/g/n
- Dual-band WiFi (2.4 GHz and 5 GHz)
- Bluetooth® 4.1 (LE) for pairing to host device
- Direct Wifi connection to the host phone

Power

- Rechargeable 2200 mAh Li-Ion battery
- 5 V DC, 1.8 A AC adapter
- Charging from any standard USB port
- Magnetic charging connector
- Up to 4 hours of runtime, depending on media and illumination settings



Optical performance

- 13 MP camera (3 x digital zoom)
- Focus range (10 cm to infinity)
- Automatic focus and white balance
- Integrated LED light field
- Class 1 laser pointer

Highlights



Certifications for ATEX / IECEx Zone 1/21 and Div. 1



Dual camera system with HD optics and thermal imaging technology



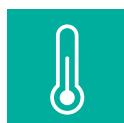
Compatible with mobile devices such as the Smart-Ex® 02



Allows remote working with experts via Onsite Connect



Flexible design for mounting on a helmet, handheld, or monopod for hands-free work



Storage greater than 3 months maximum +45°C

Technical Data	
Optical performance	<ul style="list-style-type: none"> 13 MP camera (3 x digital zoom) 10 cm to infinity focus range Automatic focus and white balance Integrated LED light field Class 1 laser pointer
Thermal imaging camera	<ul style="list-style-type: none"> Longwave infrared, 8 ... 14 μm < 50 mK thermal sensitivity Auto flat field correction (FFC) Typical measurement accuracy: * <ul style="list-style-type: none"> Greater of +/- 5 °C or 5% where scene temperature = -10 °C ... +120 °C Greater of +/- 10 °C or 10% where scene temperature = +120 °C ... +450 °C
Audio	<ul style="list-style-type: none"> Built-in omni-directional microphone for ambient sound Built-in speaker for CUBE status alerts
Video standard	<ul style="list-style-type: none"> H.264 / AVC HD capture and stream up to 1080 pixel resolution Frame rates up to 30fps
Communication	<ul style="list-style-type: none"> Configuration and live collaboration using Onsite Connect software iOS 11 for Android™ 5.0 (Lollipop) or higher Integrated IEEE 802.11 a/b/g/n Dual-band WiFi (2.4 GHz and 5 GHz) Bluetooth® 4.1 (LE) for pairing to host device Direct Wifi connection to the host phone
Media capture and storage	<ul style="list-style-type: none"> 48 GB onboard storage USB cable for file transfer
Security	<ul style="list-style-type: none"> WLAN network authentication: WPA, WPA2, WPA-PSK, WPA2-PSK, open WLAN data encryption: AES, WEP, TKIP, or disabled 802.1 x authentication: PEAP AES-256 media encryption for file storage
Rugged features	<ul style="list-style-type: none"> 6-foot drop to concrete at 20 °C 75 mm (W) x 64 mm (H) x 50 mm (D) IP64 Weight: 257 g
Operating ambient temperature	<ul style="list-style-type: none"> Optical camera: -20 °C ... +55 °C Thermal imaging: -10 °C ... +55 °C
Storage temperature	-30 °C ... +60 °C* (greater than 3 months max. +45°C).
Humidity (non-condensing)	<ul style="list-style-type: none"> Short-term storage (up to 3 months) minimum 5 %, max. 85 % Operating minimum 5 %, maximum 95 % RH
Altitude	<ul style="list-style-type: none"> Storage (12 °C) minimum 0 ft, maximum 15,000 ft Operating (27 °C) minimum 0 ft, maximum 10,000 ft
Power	<ul style="list-style-type: none"> Rechargeable 2200 mAh Li-Ion battery 5 V DC, 1.8 A AC adapter Charging from any standard USB port Magnetic charging connector Up to 4 hours of runtime, depending on media and illumination settings

*Depends on usage and environmental condition

Smart-Ex® Watch 01: Safe and Fast Communication Right from Your Wrist



Connected Everywhere

Hands-free navigation via advanced voice control and wrist gestures simplifies operation. A rotating bezel allows for intuitive, quick, and easy scrolling through apps and instructions, even with gloves. The powerful battery can run for up to five days, and the GPS can be used for up to 28.5 hours.

The rugged Smart-Ex® Watch offers an extended temperature range of -15 °C to +50 °C, and its durable design withstands impact and mechanical vibration.

ecom's Smart-Ex® Watch 01, based on the Samsung Galaxy Watch, is the first smartwatch for Zone 2 / 22 and Division 2. The watch can be synced with ecom devices like the Smart-Ex® 02 smartphone. It offers a new form of hands-free communication.

Processor

- Exynos 9110 1.0 GHz CA53 Dual, T720 GPU, 10nm / 8X9.5 FOPLP

Operating system

- Tizen-based wearables OS 4.0

Sensors

- Accelerometer, Gyro sensor, Barometer, HRM, Ambient light

Connectivity

- Wi-Fi 802.11 b/g/n 2.4 GHz
- Bluetooth® A2DP, AVRCP
- GPS, Glonass
- NFC

Power

- Li-Ion battery 472 mAh
- Up to five days battery life

Memory

- 1.5 GB (LTE) / 768 MB (BT) + 4 GB

**Highlights**

First intrinsically safe smartwatch for Zone 2/22 and Div. 2



Durable design withstands impact and mechanical vibration



A rotating bezel allows for intuitive, quick, and easy scrolling, even with gloves



Powerful battery runs for up to five days



GPS can be used for up to 28.5 hours



Extended temperature range from -15 °C to +50 °C

Technical Data	
Operating system	Tizen-based wearables OS 4.0 Unless otherwise specified, the product is shipped with the latest firmware release.
Processor	Dual-Core 1,15 GHz
Memory	WiFi: 768 MB RAM / 4 GB internal memory LTE: 1,5 GB RAM / 4 GB internal memory
Display	<ul style="list-style-type: none"> ■ Touch function Setting selectable with rotating bezel ■ Touchscreen technology Capacitive multitouch ■ Gorilla® Glass SR + Display size: 33 mm (1.3") , 360 x 360 Full Color AOD Display resolution: 216 x 432, 310.7 ppi
Sensors	Accelerometer, Gyro sensor, Barometer, HRM, Ambient light
GPS, NFC	Yes
Dimension and weight	<ul style="list-style-type: none"> ■ 46 mm x 49 mm x 13 mm ■ Wristband: 155 mm / 22 mm ■ 63 g
Ambient temperature	-15 °C ... +50 °C
Connectivity	<ul style="list-style-type: none"> ■ Wi-Fi 802.11 b/g/n 2.4 GHz ■ Bluetooth® 4.2: A2DP, AVRCP, HFP, HSP ■ GPS, Glonass
Power	Li-Ion battery 3.85 V / 472 mAh / 1.81 Wh, battery life up to five days

Ident-Ex® 01: Intrinsically Safe Barcode Scanner and RFID Reader



Modular Head Design

Using a unique modular design, Ident-Ex® 01 can be specifically configured to the customer's requirements by selecting different head modules. When requirements change, the head module on the unit can be replaced by one of the ecom-approved service centers. For an overview of all currently available head modules, please have a look in the Ident-Ex® 01 configurator on <https://www.ecom-ex.com>.

The device can be connected via Bluetooth® to one of our base products, including Smart-Ex®, Ex-Handy, Tab-Ex® series, and Pad-Ex®, or with any generic device.

Scan performance

- RFID ¹ = up to 1.5 m
- Barcode = 15 cm to 15 m

Bluetooth®

- Class II, up to approx. 10 meters

Internal storage

- Offline batch mode
2 MBytes, 2-D QR barcodes = 500+
RFID tags (ID only) = 500+

Power

- Li-Ion rechargeable; 12+ hours;
- 10,000+ scans with one battery charge



Highlights



Global certifications for Zone 1/21 and Div. 1



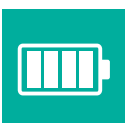
Rugged design and easy to use



Can be connected via Bluetooth® to any device



Flexible on- and offline scanning and changeable head modules



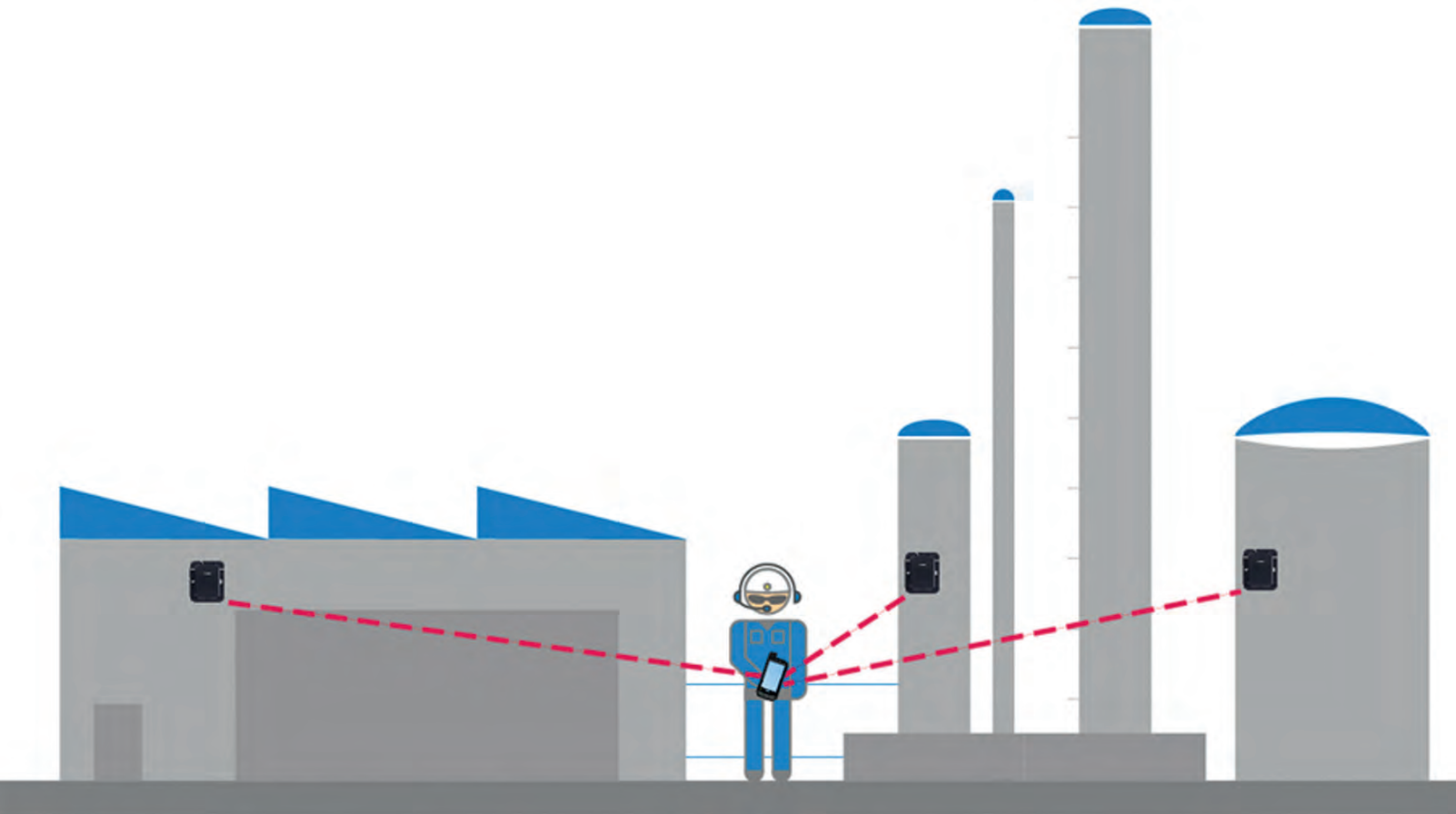
Powerful battery for 12-hour shifts

Technical Data	
Dimensions	<ul style="list-style-type: none"> 235 x 84 x 58 mm (with Ex-25 head module) 221 x 84 x 58 mm (remaining head modules)
Weight	425 g to 560 g (depends on head module)
Battery	<ul style="list-style-type: none"> Li-Ion rechargeable; 12+ hours; 10,000+ scans with one battery charge
Ambient temperature	-20 °C ... +50 °C
Internal storage	<ul style="list-style-type: none"> Offline batch mode 2 MBytes, 2-D QR barcodes = 500+ RFID tags (ID only) = 500+
Bluetooth®	Class II, up to approx. 10 meters
Scan performance	<ul style="list-style-type: none"> RFID ¹ = up to 1.5 m Barcode = 15 cm to 15 m

¹ Tag and environment dependent

Headmodule	
EN-EX25-A	2D Barcode Imager
NL-TLB30-B	125/134 kHz LF RFID, Air Coil
NF-TLB30-B	125/134 kHz LF RFID, Ferrite Antenna
NH-UNI13-B	13.56 MHz HF RFID
NE-UNI900-A	868 MHz UHF RFID
NU-UNI900-A	915 MHz UHF RFID
NT-LID-B	TROVAN LF RFID R/W Module
ZN-SE965-A	1D Laser Barcode Scanner
ZL-SE965-TLB30-A	Kombi Module 1D Barcode + LF RFID, Air Coil
ZF-SE965-TLB30-A	Kombi Module 1D Barcode + LF RFID, Ferrite Antenna
ZH-SE965-UNI13-A	Kombi Module 1D Barcode + HF RFID
ZT-SE965-LID-A	Kombi Module 1D Barcode + Trovan

Loc-Ex® 01: Intrinsically Safe Bluetooth® Beacon



Description

BLE beacons are small radio beacons that emit a signal at periodic intervals. The Bluetooth® 4.0 standard makes the beacons compatible with most smartphones and tablets, and they can be recognized at distances up to 200 m (geolocation).

Mobile devices can evaluate beacon signals and interact with the user or other programs by using special applications. They can be mounted directly onto a suitable surface or with the optional mounting base.

For Use Inside and Outside of Hazardous Areas

The beacons are available for ATEX / IECEx Zone 1/21 and Div. 1 (Loc-Ex® 01). Their UV-resistant housing makes it possible for them to be used indoors and outdoors.

Benefits

- Indoor localization
- Lone worker protection
- Physical access control
- Guard control system
- Guiding visitors
- BLE beacon as replacement for NFC beacon

Operating time

- approx. 4 years (factory settings)

Power

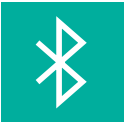
- 2 x LS14500



Highlights



Certifications for ATEX / IECEx
Zone 1/21 and Div. 1



Compatible with Bluetooth® Low
Energy from version 4.0



Operating parameters can be
programmed remotely



Up to 30 m range inside and up to
200 m outside buildings



Rugged, UV-resistant enclosure
with IP64 rating



Open firmware for individual BLE
profile development

Technical Data	
Ambient temperature Ta	-20 °C ... +55 °C
Storage temperature	-30 °C ... +30 °C
Power supply	■ 2 x LS14500
Operating time	■ approx. 4 years
Transmission power	max. 8 dBm
Dimensions	48 x 111 x 102 mm (H x L x W)
Weight	approx. 180 g (with batteries)

RSM-Ex 01: Remote Speaker Microphone for Use in Hazardous Areas



Effective Communication in Harsh Environments

The RSM-Ex 01 comes with an IP65/67 rating and a built-in noise reduction function. It is able to produce clear, high volume audio (up to 103 dB). The RSM is intuitive and easy to use, even when wearing gloves.

The new 3.5 mm plug is intended for industrial applications and offers a rugged design, a safety screw for attaching the plug to a smartphone, and compatibility with current and future ecom products.

Additional headsets can be connected using the standard 3.5 mm plug.



Power

- Li-Ion 2200 mAh

Buttons

- PTT button operable with thick gloves
- Front-facing multi-function button
- Volume up / down
- Red button (optional)

Loudspeaker performance

- Up to 103 dB

Highlights



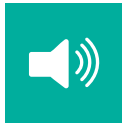
Global certifications for Zone 1/21 and Div. 1



Rugged design and easy to use



Wired connection or wireless (Bluetooth® version planned)



Outstanding volume and sound performance—up to 103 dB



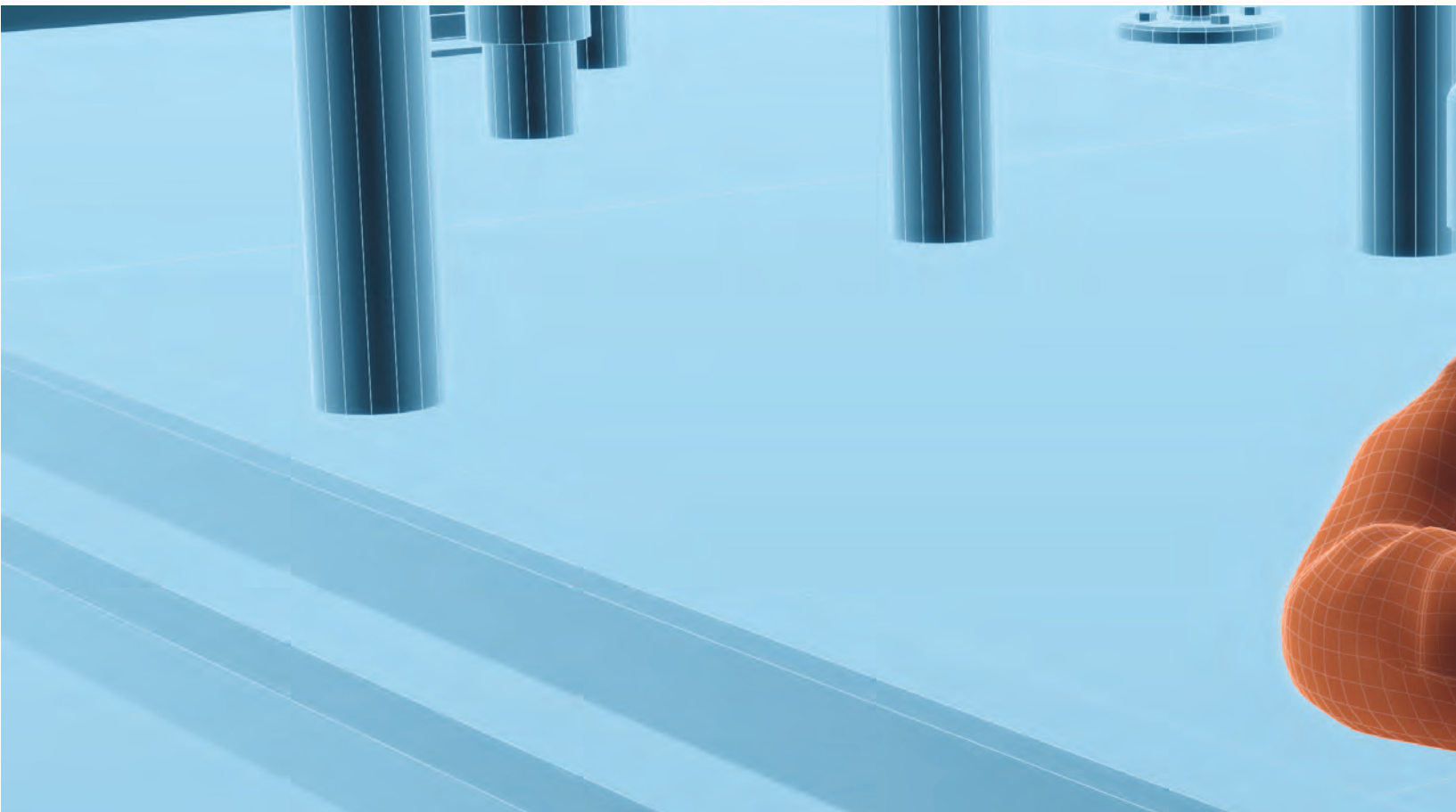
Extremely long operating times with high voice volume—up to 78 hours



Good operability, even with gloves

Technical Data				
Loudspeaker performance	Up to 103 dB			
Power supply	Li-Ion 2200 mAh			
Charging	<ul style="list-style-type: none"> Charging cable and docking station with magnetic charging plug: similar concept to Smart-Ex® 02 or Ident-Ex® 01. A docking station without any electronics and a mounting option for the charging plug. Optical charging level indication (multiple LEDs) 			
Plug	<ul style="list-style-type: none"> 3.5 mm 4-pin headset jack with locking mechanism for Smart-Ex® 01 /201 and Ex-Handy 09 / 209 versions 3.5 mm 4-pin headset jack with locking mechanism for ecom Next Generation Phones (Ex-Handy 10; Smart-Ex® 02) 3.5 mm 4-pin headset jack for Standard Android and Windows devices 			
Buttons	<ul style="list-style-type: none"> PTT button operable with thick gloves Front-facing multi-function button Volume up / down Red button (optional) 			
Features	<ul style="list-style-type: none"> Lone worker ready (optional SOS button) IOT ready (4 standard Google intents usable and/or optional 4 additional Android intent) Build in NFC Technology 			
Run times	Use time in % with typical user profiles	Noisy areas with sound level above 100 dB	Noisy areas with sound level between 84 and 100 dB	Noisy areas with sound level up to 84 dB
	5 / 5 / 90	-> 47 h	-> 60 h	-> 78 h
	25 / 25 / 50	-> 16 h	-> 27 h	-> 45 h
	50 / 50 / 0	-> 9 h	-> 16 h	-> 30 h
		Highest noise level (8/8)*	Very high noise (4/8)*	High noise level (2/8)*
	<p>*There are 8 different volume levels possible.</p> <p>**determined runtimes on the Smart-Ex® 01 based on RSM-Ex 01 software version V 16</p>			
Standby time	Approx. 80 hours after commissioning via the 3.5 mm jack of an Android or Windows device			
Temperature range	-20 ... +55°C			
IP rating	IP 64 following EN/IEC 60079-0 (ATEX/ IECEx) IP 65 / 67 following EN/IEC 60529 (industrial standard)			

Digitalizing hazardous areas. Enabling connectivity. Enhancing mobility.



The Pepperl+Fuchs brand ecom is a leading manufacturer of comprehensive solutions for intrinsically safe mobile computing and industrial communication in hazardous areas.

Since 1986, ecom has played a key role in pioneering explosion protection for mobile devices. The company has demonstrated its technological expertise with a number of innovations and tried-and-tested mobile solutions—from intrinsically safe smartphones, cell phones, and tablets to accessories like wireless headsets and barcode scanners. ecom's new Digital Products and Services platform completes the portfolio, offering automated staging during device production, mobile device management, and device analytics; the platform can also be used as a full-fledged enterprise mobility management system.

Each of ecom's solutions combines uncompromised security with the highest level of functionality, and includes all necessary approvals and certificates for global use. A global sales and support network with service centers in Germany, the US, Singapore, and the United Arab Emirates completes the range of products.



Customers around the world know the Pepperl+Fuchs Group as a pioneer and innovator in electrical explosion protection and sensor technology. Building on decades of experience and technical leadership, the company develops components and solutions tailored to the needs of its customers. Solutions for mobile safety and communication from the Pepperl+Fuchs brand ecom enable customer applications to be digitalized quickly and easily. This opens up completely new possibilities and increases the safety, efficiency, and transparency of operations in both conventional and Industry 4.0 applications.

For more information about ecom, visit:
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- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
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