



f.airnet 
DECT over IP System

DECT multi-cell radio system

**The modular IP-based communication system—
expandable to a professional
personal emergency signal system
with messaging and localisation**

Communication and Security

With its head office in Salzgitter, Funkwerk Security Communications GmbH is a leading manufacturer of professional security and communication solutions based on DECT, GSM and TETRA for industry, public utilities and authorities.

We are specialists in personal emergency signal systems with mature know-how in developing and producing intrinsically safe devices that also satisfy the directives of the Employer's Liability Insurance Association (of Germany).

As one of the largest manufacturers of handsets for professional and industrial applications, our facility in Salzgitter develops and produces mobile terminals and certified personal emergency signal systems based on DECT and TETRA.

f.airnet DECT over IP System: The new benchmark for IP-based communication and information

A single solution for all application scenarios:



Old-age and nursing homes



Medical practices, hospitals and psychiatric units



Industry and occupational safety



Industrial environments with a risk of explosions



Law-enforcement agencies, authorities and public institutions

The IP-based f.airnet DECT over IP system of Funkwerk Security Communications is the ideal platform for the implementation of a reliable, professional communication infrastructure, which can also be integrated with existing systems.

- ▶ IP telephone exchanges
- ▶ Cordless DECT mobility
- ▶ Corded IP telephony
- ▶ Messaging functionality
- ▶ Personal Emergency Signal functionality

f.airnet DECT over IP is efficient:

The system offers high quality transmission of speech and data on an IP network. Existing IP infrastructures can be used for implementation and enhancement.

f.airnet DECT over IP is flexible:

As and when required, the system can be expanded to 500 DECT base stations with up to 1,000 handsets with minimal outlay. Larger networks can be created by means of clustering. If required, the entire office or organisational premises can be covered via the DECT wireless network—even outlying sites can be included in the infrastructure.

f.airnet DECT over IP is modular:

The system can be enhanced at any time, as required, in order to add messaging, security or localisation solutions. A proven system with control points and mobile personal emergency signal devices thus become available for the greatest variety of applications. Professional mobile communication, personal security and telephony are combined in a single system—standards-compliant and certified.

f.airnet DECT over IP System: greatest flexibility for optimum communication

A state-of-the-art multicellular DECT radio network serves as the foundation of the system, which flexibly combines speech and data communication (messaging, localisation, etc.). In addition to DECT wireless connectivity, the components communicate via standard IP links in a LAN—thus allowing the system to be integrated in existing infrastructures or to be expanded flexibly and cost-effectively using off-the-shelf components.

This optimal scalability allows radio coverage to be adapted to the broadest possible range of situations, by using an extensive variety of system components and antennas. Thus, reliable wireless coverage is made available in difficult-to-reach locations, such as:

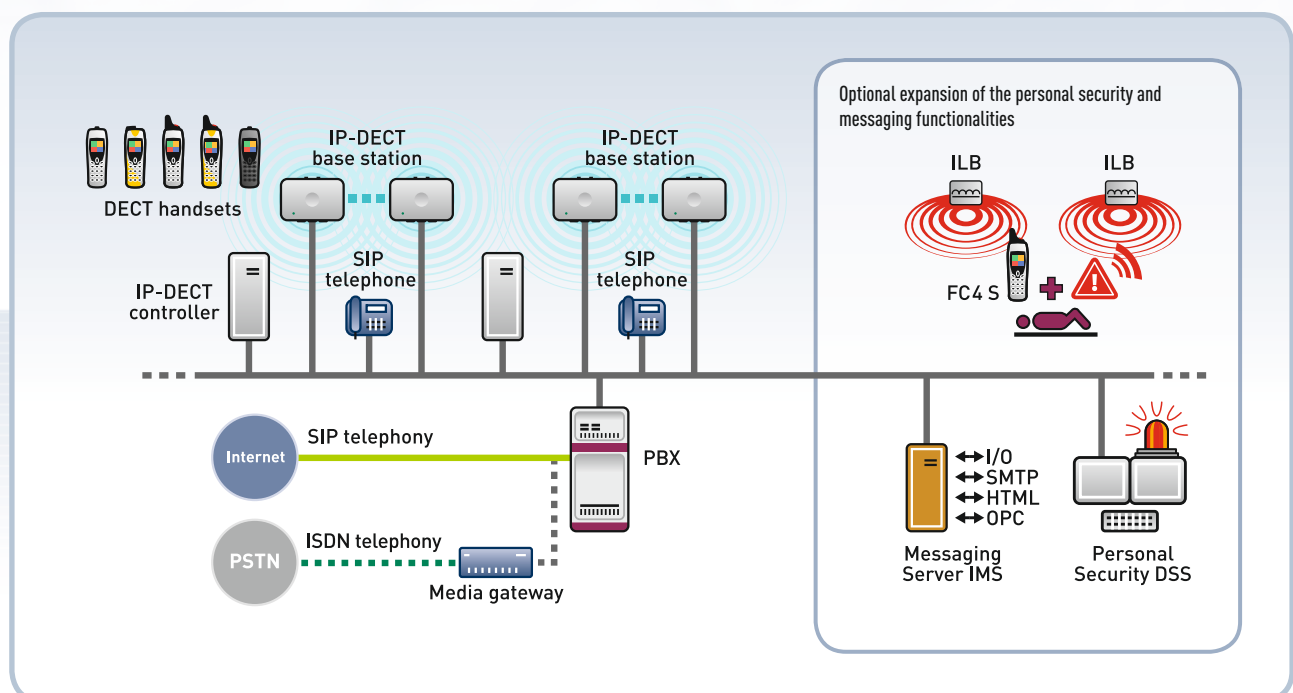
- ▶ internal areas in buildings
- ▶ inside complex industrial plants
- ▶ in halls and tunnels
- ▶ in basements and engine rooms
- ▶ in areas with a risk of explosion
- ▶ and even in extensive outdoor locations.

External communication takes place either directly via an Internet connection with an SIP provider or via a media gateway on an existing infrastructure (PSTN, ISDN or PBX).

It is immaterial whether you choose to continue using an existing telephone exchange or to switch over to Internet-telephony: f.airnet DECT over IP easily adapts to individual requirements.

In addition to speech communication as well as the transmission of text messages and alarm signalling to mobile devices, the system can be enhanced with additional features and Security functionality (funkwerk DSS). Alarm monitoring can be displayed on site plans at the control point, as well as being supported by video.

The funkwerk DSS Security application enables comprehensive, central alarm management on a client/server basis. In addition to the automatic and precise logging of all events, signals and alarms, the funkwerk DSS offers an optimal overview of the message sequences, floor and room-specific localisation of persons and the management of assistance, informational messages and evacuation.



Personal security with funkwerk DSS

Protecting life and limb

Alarm recognition, signalling, relaying and assistance

With its funkwerk DSS system, Funkwerk offers optimal personal security by means of special functions as well as sensors integrated in the mobile devices for automatic and manual alarm triggering. By adding inductive localisation beacons as well as the funkwerk Secure application to an extensive DECT communication system, the area and floor-specific localisation of persons in need of assistance is made possible.

Eavesdropping and speech links can be established with the persons affected by the alarm and can even be remotely controlled—all from the control point. In addition, speech communications can also be established at any time with other Security and telephone subscribers.

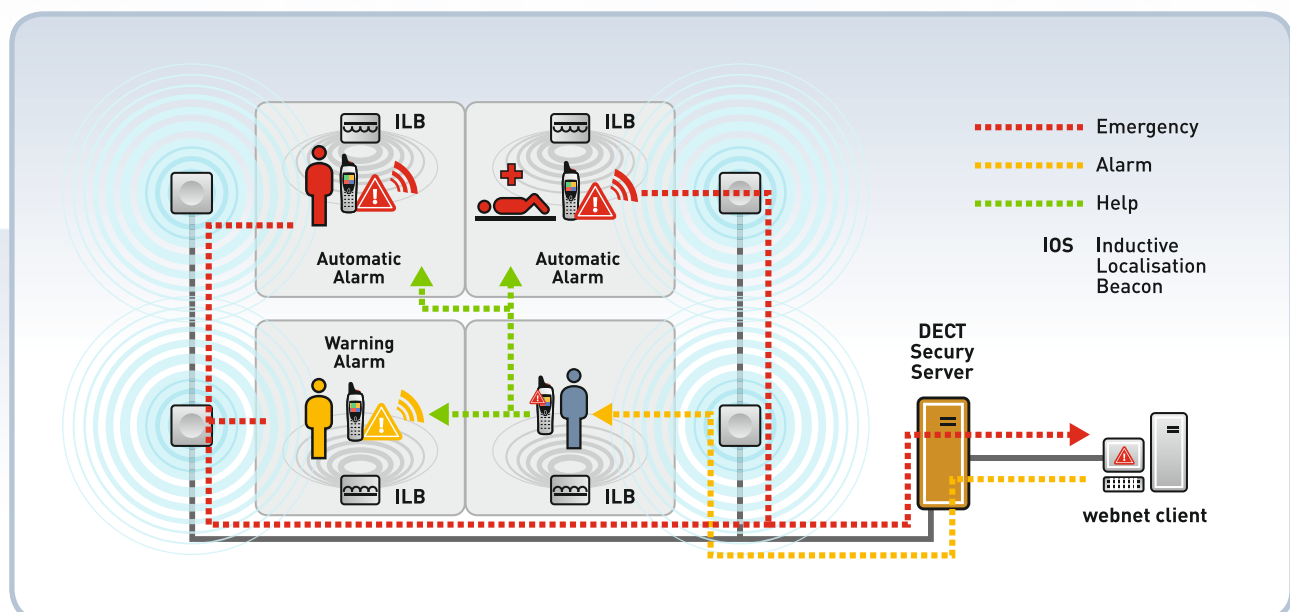
The system can be adapted to specific client requirements as desired. In addition to speech communication, text messages and alarm signalling to mobile devices, the system can be enhanced with further features and Secure functionality, such as:

- ▶ Floor and room-specific localisation
- ▶ Connection to video systems
- ▶ Coupling with machines and switching contacts for automatic or manual triggering of alarm and status reports

With integrated special functions, the mobile terminals of the funkwerk FC4 S series are ready to deal with any emergency:

- ▶ Integrated sensors for localisation and alarms
- ▶ Automatic alarm modes (no user input required): Position, no-movement ("man-down") and time-out alarms
- ▶ Automatic assault detection and signalling by means of a loss alarm (tear-away switch), e.g. in the event of the mobile device being forcibly removed
- ▶ Manual (user-initiated) alarms via separate and easily accessible emergency and warning keys
- ▶ Area and room-specific localisation once the alarm has been initiated
- ▶ Immediate relaying of an alarm to the control point
- ▶ Relay of an alarm to other mobile devices (e.g. fellow employees in the vicinity)

Each alarm report, together with localisation information, is transmitted to the central server and/or the control point and can be displayed on a stored site plan. This guarantees the immediate rendering of assistance and the execution of procedures. The complete alarm events are seamlessly documented for later evaluation.



funkwerk DSS system overview

- ▶ Operates as an autonomous system or as part of a hazard management system
- ▶ Communication with other alarm systems via standard interfaces
- ▶ Alarm control point with one or more alarm operator stations (webnet client)
- ▶ Processing of alarms at the alarm control point with site plan display and control of telephony and messaging functions
- ▶ Permanently available room-/area-/floor-specific alarm displays on site plans
- ▶ Insertion of video from monitoring cameras possible at the push of a button
- ▶ Remote-controlled public address/eavesdropping function for the fastest possible evaluation of a dangerous situation without any input being required of the person initiating the alarm.
- ▶ Automatic and immediate alarm relay to other mobile devices for rapid assistance
- ▶ Automatic triggering of machine and switching contacts
- ▶ E-mail dispatch and alarm relay in the event of a hazardous situation being escalated
- ▶ Manual triggering of contacts by the control point for the control of external signalling systems (sirens, warning beacons, door locking mechanisms, etc.)
- ▶ Monitoring of assistance, logging and documenting
- ▶ Self-monitoring of system functions
- ▶ Automatic log-on and log-off procedure of funkwerk FC4 S mobile devices with technical testing of the alarm sensors built into the device
- ▶ Speech communication among the mobile devices
- ▶ Speech communication with devices and the public telephone network
- ▶ High subscriber capacity and expansion increments with hand-over across the network
- ▶ BG certification BGR139 / DIN V VDE V 0825-1



High End: the messaging functions

- ▶ Integrated messaging functionality with 200 alphanumeric characters per message
- ▶ Delay-free transmission within the DECT network
- ▶ Priority can be set in 10 stages
- ▶ Individual settings for each priority level
- ▶ User-set handset display background colour and flashing function
- ▶ Vibration function for messages
- ▶ Various tones and sound volumes
- ▶ "Muting over-ride" function
- ▶ "Cancel emergency call" feature can be set for each priority level
- ▶ Ring duration can be set individually (1 ... 240 seconds or until cancelled manually)
- ▶ Additional dynamic broadcast messaging with individual text messages to cordless subscribers as well as groups
- ▶ Complies completely with BGR (DIN V VDE V 0825-1)

Hardware components for your specific requirements

f.airnet DECT over IP presents an optimised communication system, which in its full configuration with control point and mobile personal emergency signal devices, offers BG*-compliant personal security for various areas of application. Existing infrastructure is taken into account when the required components are selected—the flexibility of the system allows it to grow with your requirements. A very flexible individual configuration is made possible by the 19" rack system and stand-alone hardware.

The funkwerk FB 4 DECT base station has a classic design and supports the connection of up to two external antennas. A version with fibre-optic connectivity enables it to be connected to outlying sites (such as branches, warehouses, etc.) in the communication system.

*] Berufsgenossenschaften = Employer's Liability Insurance Association (of Germany)



Components for flexible expansion – “grow as required”

Digital telephone exchanges

DP50	for up to 15 subscribers
DP100	for up to 70 subscribers
DP200	for up to 240 subscribers
DP600	for up to 1 000 subscribers

IP-DECT Controllers

DC50	up to 20 handsets
DC100	up to 250 handsets
DC200	up to 1 000 handsets

IP-DECT Base stations

- FB4 IPTP LAN connection
- FB4 IPFX Fibre-optic connection
- Indoor, outdoor and ATEX versions
- Power over Ethernet (PoE) or wall-plug power supply

DECT Handsets

- funkwerk FC4 Series
- funkwerk FC4 Medical
- funkwerk D4 Office

Further terminals:

- corded IP telephones



Localisation and Alarms

Using inductive localisation beacons (ILBs), the funkwerk DSS system enables the precise localisation of a person who is in need of assistance. This allows the precise location of the alarm to be displayed on a site plan to the client work-stations on the network.

- ▶ Floor and room-specific display of the location on site plans and layouts
- ▶ Networked client work-stations
- ▶ Automatic relaying of alarms to other mobile devices
- ▶ Silent alarms
- ▶ Hostage (shut-down) function
- ▶ Tracing of alarm location
- ▶ Eavesdropping function in the event of an alarm
- ▶ Support of all DECT features for efficient communication

Additional external alarms:



- ▶ Activation of process control systems
- ▶ Activation of video systems
- ▶ Processing of the FB4's switching signals

DECT Secury Server and webnet control point software

DECT Secury Server

The DECT Secury Server is the centre point of the system. A professional PC server runs the Secury application software and is interlocked with the LAN-based webnet management system for operation round the clock.

All alarms are evaluated at the Secury Server and relayed to the webnet client. In parallel, complete emergency signal messages are relayed automatically to other DECT mobile devices in the system, paging receivers, via e-mail and SMS or as contact switching for the control of external alarm signalling units, such as fire alarms or sirens. In addition, video systems can also be integrated into the special Warden's Round Command and Control System software package as an option.

If required, the Secury software can be adapted to the particular application situation, so that even complex alarm situations can be displayed in a clear and user-friendly manner on large networks.

- ▶ Multi-user capacity via the Client-Server concept
- ▶ Automatic function checking of all logged-on mobile devices
- ▶ Alarm process monitoring
- ▶ Execution of webnet messaging
- ▶ Contact reporting and relay control

Cost-effective versions available for small and minimal systems

webnet control point software

The webnet control point software enables highly efficient alarm management with intuitive operator prompting. For seamless alarm processing, the operator at the control point is guided by the system—enabling the ergonomic processing of alarms.

By upgrading to the optional "webnet 2" version, users receive—in addition to enhanced features—standard interfaces for linking to higher-level management systems.

Combination of funkwerk DSS—funkwerk TSS

DECT and TETRA combined! The architecture of the funkwerk TSS and DSS Secury systems allows for a combination of both systems with each other—by using a common alarm user interface.

An existing funkwerk TSS TETRA Secury system thus can be expanded seamlessly with a DSS DECT Secury system—or vice versa. It is also possible to plan and implement a combined DSS-TSS system. In this way all the advantages of the DECT and TETRA communication systems can be combined—while maintaining full Secury functionality and the shared localisation function.

Warden's Round command and control system

The "Warden's Round command and control system" complements the comprehensive control and programming functions of the funkwerk DSS system with an active and automatic command of guard personnel, thus enabling guard service processes to be organised in an entirely new way.

"Humans are creatures of habit"—this truism reflects the vulnerability of so many guard systems: A constantly repeated process can be spied upon and used for criminal purposes. The Warden's Round software module assists with randomly-scheduled beats, specifically in order to break these habits.

Guard beats can be changed conveniently and to suit current requirements (e.g. certain places can be omitted, the order can be changed and guard rounds can be interrupted or stopped). Decentralised time clocks and cards thus become completely superfluous.

Control functions:

- ▶ Stored guard beats can be changed manually or randomly
- ▶ Many guard beats can be managed and monitored simultaneously
- ▶ When passing a checkpoint, a display indicating the next way-point with a time allowance appears on the handset of the guard
- ▶ Actions required are displayed automatically on the guard's handset at the right place and the right time
- ▶ Automatic relaying of location and time details to the control point when a checkpoint is passed
- ▶ Simultaneous alarm displays on the guard control point monitor and at the webnet client
- ▶ Monitoring and programming of localisation and alarms



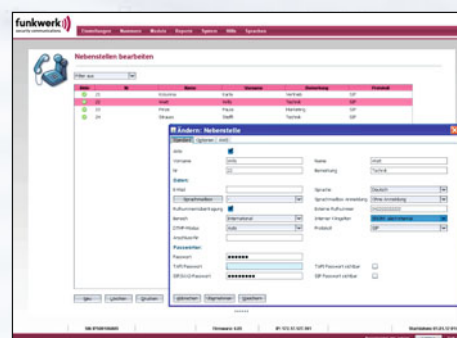
IP-Voice Appliances

funkwerk DP50/DP100/DP200/DP600

The funkwerk DP series of compact VoIP telephone installations offers modern and future-proof communication hubs for flexible digital communication in enterprises of all sizes. A range of practice-orientated incremental levels enables one to select an efficient and cost-effective solution for between 10 and 1,000 (cordless and corded) devices, or using media gateways.

Our system is distinguished by its range of professional functions, the integration of mobile telephones, comprehensive features focused on convenience and intuitive set-up and administration. Flexibility of use is assured by branch networking and the operation of a private cloud.

All appliances operate without any licence-based limitations on the users or terminals that are connected. Features such as hot desking, a centralised contact directory, LiveConference or VPL (a central software-based switchboard) are easily executable. Additional functions can be activated at any stage by software upgrades.



Easy set-up via web browser

funkwerk DP50

- ▶ up to 15 devices (corded and/or cordless)
- ▶ up to 10 simultaneous calls
- ▶ devices do not require licensing
- ▶ integrated terminal management
- ▶ integrated "conference rooms"*
- ▶ branch networking
- ▶ operator console (VPL)*

funkwerk DP100

- ▶ 19" cabinet only 1-U high
- ▶ up to 70 devices
- ▶ up to 30 simultaneous calls
- ▶ devices do not require licensing
- ▶ integrated terminal management*
- ▶ integrated virtual "conference rooms"*
- ▶ operator console (VPL)*
- ▶ smartphone integration (f.airnet Mobile)*
- ▶ holding stacks

*) number dependent on licence

funkwerk DP200

- ▶ 19" cabinet only 1-U high
- ▶ up to 240 devices
- ▶ up to 90 simultaneous calls
- ▶ devices do not require licensing
- ▶ integrated terminal management
- ▶ integrated virtual "conference rooms"*
- ▶ operator consoles (VPL)*
- ▶ smartphone integration (f.airnet Mobile)*
- ▶ holding stacks with dashboard and reporting*
- ▶ hot desking

funkwerk DP600

- ▶ 19" cabinet only 1-U high
- ▶ up to 1,000 devices
- ▶ up to 400 simultaneous calls
- ▶ devices do not require licensing
- ▶ integrated terminal management
- ▶ integrated virtual "conference rooms"*
- ▶ operator consoles (VPL)*
- ▶ smartphone integration (f.airnet Mobile)*
- ▶ holding stacks with dashboard and reporting*
- ▶ hot desking

DECT Controller funkwerk DC50/DC100/DC200

The funkwerk DC50, DC100 and DC200 DECT Controllers are the central management hub of the complex DECT infrastructure. All functions of the DECT system are configured via the DECT Controller by means of a user-friendly web front-end—while also maintaining control of the connected terminals.

The scan function recognises all connected base stations automatically. DECT and DECT over IP encryption, VLANs, SIP functions for Voice over IP telephony and much more are configured via the DECT controller.

Maintenance and monitoring functions are also easy to control via the DECT Controller. Synchronisation of the funkwerk FB4 and setting up the DECT handsets are also supported as well as time-setting via the NTP server and SNMP.

It is therefore simple to prepare the DECT environment for existing SIP and/or Voice over IP telephone exchanges (IP-PBX). When used in conjunction with a Security Server, the funkwerk DECT Controller enables alarm and messaging functionality with most VoIP-PBX systems of other manufacturers.



funkwerk DC50	up to 20 DECT handsets up to 20 IP-base stations up to 10 simultaneous connections
funkwerk DC100	up to 250 DECT handsets up to 100 IP base stations up to 40 simultaneous connections
funkwerk DC200	up to 1,000 DECT handsets up to 250 IP base stations up to 60 simultaneous connections

DECT over IP base station funkwerk FB4

The funkwerk FB4 IP base station enables a high-performance DECT/IP communication network to be implemented in a straightforward, flexible manner—and be adapted to meet individual requirements and circumstances. The DECT Controller makes configuring the DECT network a user-friendly and convenient process.

Thanks to the IP interfaces the DECT base station has the flexibility to be integrated in existing or dedicated IP infrastructures—either via copper or fibre optic cable. This means that planning and execution can be done on site, simply and cost-effectively. ATEX versions are also available as an option.



Integrated contacts enable the greatest possible range of technical installations to be connected to the funkwerk FB4, which can relay the specified events or conditions of each contact, such as temperature measurement devices, filling-level indicators, door contacts, motion sensors, etc. by means of DECT messaging information.

Ergonomic, light, robust: the funkwerk FC4 series of DECT mobile devices

Industrial personal mobile device and telephone in one: A perfect mobile companion for maximum safety and security.

With its FC4 series of mobile DECT devices, Funkwerk has set the benchmark in terms of functionality as well as operating convenience and handling. Optimum ergonomics, comprehensive protection against external influences and extensive DECT features distinguish the FC4 series of devices.

Additionally, the FC4 S and FC4 S Ex mobile terminals offer high-performance sensors for localisation as well as manual and automatic alarms, thus enabling active personal security in hazardous lone worker environments—and fully compliant with the strict directives of BGR139.

The stable, dust-proof and jetted-water resistant IP65-class casings make the funkwerk FC4 a robust and high-quality companion in harsh industrial environments. All settings are stored on an exchangeable MemCard (SM card)—for problem-free swapping of handsets when that require servicing. In addition, the funkwerk FC4 series of mobile devices are equipped with user-friendly features such as hands-free usage, MIDI ring-tones, vibration-signalling and convenient operation via a symbol-based user interface.

Dust and explosion-proof devices, which comply with the European ATEX directives, are available for use in industrial environments where the risk of explosion exists.

Multiple communication possibilities

Within the complete DECT network, speech communication with other mobile terminals, with devices connected to a sub-system or with public telephone network subscribers is conveniently accessible at any time. High availability of communication channels coupled with unlimited freedom of movement in-house ensures acceptance and flexibility—promoting operational efficiency within the organisation.

Messaging

Even under conditions of poor visibility, alarm and text messages shown on the large alpha-numeric display remain clearly legible. Comprehensive messaging functions allow alarm and text messages to be received from other users.

Automatically-generated fault reports, notifications from computer systems or manually-generated messages from LAN-based messaging clients can even be received while a call is in progress.

Own text messages can be conveniently preprogrammed and easily triggerde. All outgoing messages are date-stamped.



funkwerk FC4 S / FC4 S Ex: Alarm functions:

In addition to the standard features, the funkwerk FC4 S / FC4 S Ex is equipped with high-performance integrated sensors and localisation functionality, with cyclic testing of all functions. Various manual alarms (emergency and warning alarms) as well as automatic alarm types (position, loss, "man-down" and time-out alarms) are available—in strict compliance with German BG* norms.

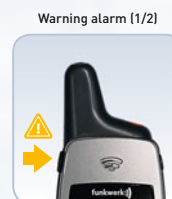
User-dependent (manual) alarms:

- ▶ Push-button alarms (1 + 2), alarm triggering via top-mounted easily accessible alarm keys
- ▶ Warning alarm (1+ 2) via side-mounted keys

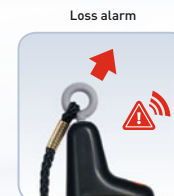
User-independent (automatic) alarms:

- ▶ Position alarm: triggered automatically by the position sensor of the device
- ▶ "Man-down" alarm: triggered automatically when no-movement is detected
- ▶ Time-out alarm: triggered automatically after a pre-determined time has elapsed without a key being touched.
- ▶ Loss alarm: triggered automatically when the Security mobile device is snatched away.

Manual alarm modes:



Automatic alarm modes:



Automatic technical alarms

- ▶ Technical alarms activated when cyclic monitoring of the mobile device fails to respond or in the event of the battery being exhausted
- ▶ Permanent monitoring of (radio) link to the central control point and the DECT Security Server

*] Berufsgenossenschaften = Employer's Liability Insurance Association (of Germany)



funkwerk FC4
DECT mobile device with
telephony and messaging
functions



funkwerk FC4 Ex
DECT mobile device with
explosion-protection
(intrinsic safety)
certification



funkwerk FC4 S
DECT mobile device with
personal emergency signal
and messaging functions



funkwerk FC4 S Ex
DECT mobile device with
personal emergency signal
and messaging functions
and explosion-protection
(intrinsic safety)
certification

funkwerk D4 Office: the business handset

The funkwerk D4 Office is the ideal office handset for discerning users. Because the user settings are stored on a SM card (MemCard), all data can be transferred to the funkwerk D4 Office simply by swapping the card—without intervention by a technician, data conversion or a new configuration being entered manually.

Thanks to the state-of-the-art Lithium-ion battery technology, the D4 Office offers long stand-by and talk times with extended battery life and shorter recharge times.

Speakerphone and hands-free performance of the D4 Office lies at a professional level—either for individual, personal use or to cover an entire room or group (conference scenario).

The casing is light and handy to use and is robustly protected against drop and impact damage. With its high-contrast colour display and non-slip keys, the up-to-date casing design is equipped with many practical details and practically-orientated functions.

The user-prompting of the handset is based on the tried and tested ergonomics of the funkwerk industrial handsets: Intuitive handling, a clear display and logical menu navigation for optimal, fault-free operation.

Highlights:

- ▶ Simplest possible device exchange by swapping the MemCard without technical support: continue using the log-in data and contact list/telephone directory!
- ▶ GAP/CAP compatible: Log-in also possible without MemCard
- ▶ State of the art Li-ion interchangeable battery for extended stand-by times and long battery life
- ▶ High-contrast TFT display with 65 536 colours
- ▶ Optimally operable keys
- ▶ 20 MIDI ring-tones and 10 signal tones; melodies and volume can be set separately for indoors and outdoors
- ▶ Suitable for use in environments with high ambient noise levels
- ▶ All tone signals can be muted (with exception of the alarm-messaging function) to vibration indication; activated by softkey
- ▶ Messaging with manual acknowledgement and priority-driven signalling for unambiguous differentiation between normal and alarm messages
- ▶ Hotkeys for local telephone directory/contact list for direct access to the desired location
- ▶ Incoming and outgoing call logs as well as redial lists, with 20 entries each
- ▶ Loudspeaker for hands-free conversations
- ▶ Manual and automatic keylock
- ▶ SOS function by softkey even when handset is shut down



funkwerk FC4 Medical: the DECT handset for the medical sector

Specially developed for use in medical and nursing environments, the highly successful funkwerk FC4 DECT handset has been equipped with an antimicrobial casing surface. This effectively reduces the formation of germs on the casing, as well as counteracting the spread of harmful germs during the course of daily use.

The casing is handy and comfortable to use and is highly robust in terms of drop and impact damage. IP 65 certification means that the funkwerk FC4 Medical is protected against the ingress of dust and jetted water—making it highly suited for use in wet rooms, etc.

- ▶ Antimicrobial casing surfaces—offering effective reduction of germ formation
- ▶ Individual hospital logo as display background
- ▶ Easy-to-clean surfaces
- ▶ Sturdy clip-fastener, separately screw-fastened



funkwerk IOS 452 Inductive Localisation Beacon

- ▶ low frequency, anechoic and attenuation-free localisation method with purely magnetic coupling between transmitter and receiver coils (induction)
- ▶ Localisation range precisely adjustable from 0,7 ... 6 m
- ▶ Possible to program the range even after installation without opening the casing
- ▶ Supports recognition of the direction of movement by connecting remote antennae
- ▶ For the demarcation of larger localisation fields, external loop antennas can be installed in the ground
- ▶ An additional module enables monitoring of functions with alarm facility
- ▶ Sabotage-proof installation and sabotage alarm are also possible
- ▶ Protection class IP 65 (suitable for outdoor as well as surface-mount applications)
- ▶ ATEX versions are available for installation in areas with an explosion hazard (version IOS451 Ex)



Communication and Security

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