



## The Modular Communication Platform for Professionals.

**ISDN and xDSL as the basic technology  
for digital communication.**

**elmeg ICT:  
The modular extendable ITC system family**

# Funkwerk: The Perfect Fit.

V O I C E , D A T A , S E C U R I T Y .

Communications solutions which adapt themselves to your company instead of the other way round: With Funkwerk systems, you can work more efficiently and securely.

Our product portfolio allows companies of any size to connect different company sites securely with each other using VPN, to protect their networks reliably against spamming and viruses, to connect mobile employees with the company headquarters, and to set up and operate flexible, reliable, high-speed telecommunications or wireless LAN infrastructures boasting a wide range of features.

Hardware with long life cycles, efficient commissioning, reliable operation, and competent partners: Funkwerk will provide you with a tailor-made solution!

## elmeg ICT: Your ITC systems family for today and tomorrow.

### Digital communication: Worlds are merging.

As digital communication continues to evolve, information technology and telecommunications are merging and the demands for flexibility and system integration are increasing. Digital and call services are becoming increasingly important for companies, along with the seamless integration of home office workplaces into corporate communication systems.

In today's environment, success or failure can depend on consistent integration of communication platforms.

ISDN and xDSL solutions have become established as the underlying basis for communication. Faster connection setup, higher data throughput and simple expansion of network infrastructure have made ISDN and xDSL so successful. And today they are essential for all industries.

### Business telephony: More comfort for more efficiency.

ISDN telecommunications systems offer a diverse range of easy to use features, for example team functions or system telephony, and allow the use of all existing terminal devices. The performance of an ITC system is important for protecting investment—the extension options, interfaces, connection technology, future-proof quality (e.g. for PRI primary multiplex connection) and transparency—and makes growth predictable.



You can find more information on compact ISDN/xDSL systems for system telephony and VoIP in the "funkwerk Txxx/bintec TR series" product folder.



Professional requirements for a modern ITC system include the option of direct integration into existing network infrastructure, its use as a rack system with a standard patch field in 19" cabinets, integration of router functions for network-wide high speed Internet access via xDSL or ISDN and administration via LAN with remote CAPI. An ITC system must fit seamlessly into existing IT architecture and be capable of expanding with the IT environment.

### Voice over IP (VoIP) and VPN: The future of networked working.

Sophisticated IP solutions are possible today thanks to increasingly powerful worldwide connectivity, such as Internet telephony (VoIP) and Virtual Private Networks (VPN). Enormous telephony cost reductions can be achieved with a convergent ITC solution, especially in larger systems, with highly flexible connection of remote branch offices and mobile staff who can quickly and securely connect with head office from any point in the world for telephony and data exchange.

## elmeg ICT: The heart of your corporate communication.

All Funkwerk Enterprise Communications products are designed to focus on the user to provide the ideal communication solution for your company. The interaction of all IT/telecommunications components in the corporate environment is of the utmost importance: Whether a firm of accountants or lawyers, a management or EDP consultant, advertising agency, insurance agent, engineer, hotel or guest house, medical practice, manual trade firm or also medium-scale company—a telecommunications system has to have the flexibility to adapt to diverse and changeable requirements, integrate into operative processes and also be in a position to keep abreast of corporate growth.



*Teamwork is of growing importance. Your location is not. Digital communication technology makes you independent.*

Due to their modular architecture, the elmeg ICT series of IT telecommunications systems will fulfil even the most demanding requirements, now and in the future. Features such as alternation between lines, 3-party conferences, call forwarding, call pick-up, complex team solutions, central alpha-numeric phone book, hotel check-in/check-out, and many others ensure that the communication in your company is transparent and efficient.

Integrated voice applications offer additional professional features, such as announcement before answering, wake up calls, message texts and much more.

The elmeg system terminal devices optimally matched to the ITC system offer state-of-the-art functionality. The digital systems telephones, whether with an ISDN, U<sub>p0</sub> or Ethernet interface, or the wireless DECT system, provide you with important information instantly on the plain text display, such as the caller's name, menu settings or performance features.

Top quality hands-free calling, boss/secretary or announcement functions make your communication child's play. Freely programmable function keys in the telephone adapt to suit the way you want to do business.

The modular extension options of the elmeg ITC offer long-term investment protection. Expand your ITC system quickly, simply and economically up to 118 ports.

### 19" variant for professional cabinets

For larger companies, the elmeg ICT880-rack variant, your ITC system can be seamlessly integrated into existing IT environments (CAT cabling). The optional VoIP-VPN Gateway module provides Internet connection for all LAN clients. All connections can set up and configured quickly and flexibly via the patch connection field.

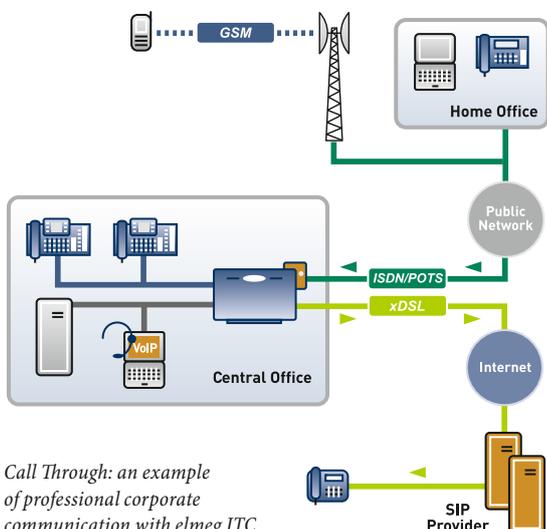


## Voice applications: Professional convenience.

The elmeq ICT series PBX systems can be remotely configured allowing special settings to be undertaken and new firmware loaded directly from your vendor's workshop. This leads to a faster and more flexible service, as well minimising the level of support required. The new PIN concept, which is implemented in several steps, makes it possible to assign individual configuration authorisation sets.



The elmeq ICT series PBX systems with integrated security provide small and medium-sized offices with functions that have previously only been available for large telecommunications systems. An open system, based on standardised interfaces is what systematic communication is all about!



*Call Through: an example of professional corporate communication with elmeq ITC*

The integrated voice applications included in the elmeq ICT series PBX systems provide professional features ex factory. Users have confirmed over and over again that the flexibility and practical use provided by ICT systems is unique and this high technical sophistication is reflected by the impressive range of applications:

### Music on Hold (MoH)

The elmeq ICT systems offer music on hold that can be customised for each connected terminal device. In addition to the two hold melodies available, any desired WAV format sound files can be imported.

### Announcement before answering

The elmeq ICT88 and elmeq ICT880 have an integrated hold queue with “announcement before answering” and “announcement on busy”. Up to ten callers can be held in the queue at the same time, with different announcements depending on the direct number called. Automatic redirection then takes place if the call is not taken after a definable time, to a central telephone, for example.

### Wake up call

Especially for hotels: individually time-controlled calls can be programmed for each PBX with different wake up calls, for example in different languages, either centrally or from the relevant terminal device.

### Info texts

For offices and companies with a high volume of service calls, special announcements can be activated at specified times, which are played to all callers, for example with information on business hours.

### Event-controlled message texts

Water in the basement? Heating system malfunctioning? Your elmeq PBX system will automatically inform you with a voice message sent to the maintenance man's cell phone, for example. The message arriving at the PBX (analog ports or via the switch contact module) can be connected to a wide range of technical systems with ease.

### Continued dialing after announcement

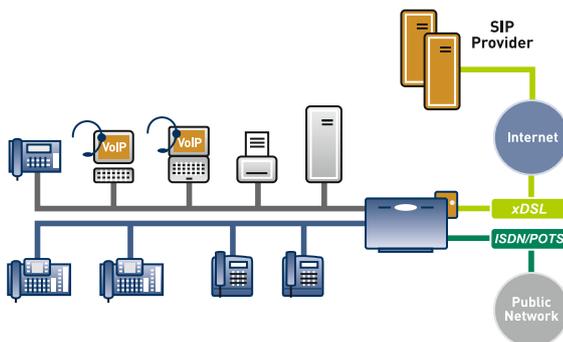
Professional convenience for large call centres: Callers to a special direct number hear a welcome message with various options: e.g. “Press 5 to contact our sales department.” If the caller does not make a selection, he or she is connected to a special direct number or the central office.

## The elmeg ICT with VoIP-VPN Gateway module: Voice over IP—and much more.

The optional VoIP-VPN Gateway module for all of the elmeg ICT systems is the ideal for convergent digital communication. The Gateway module combines a powerful central interface for Internet telephony (VoIP), with secure data transmission via VPN.



The Gateway module has two slots for DSP expansion modules that expand the gateway to include digital voice channels for Voice over IP. So an elmeg ICT system with VoIP-VPN Gateway becomes a real hub for the entire digital voice communication and allows a seamless transition from traditional voice networks to IP voice data. Every conventional terminal device can use IP voice telephony and ISDN telephony—and conversely each local IP telephone can also be used for ISDN telephony.

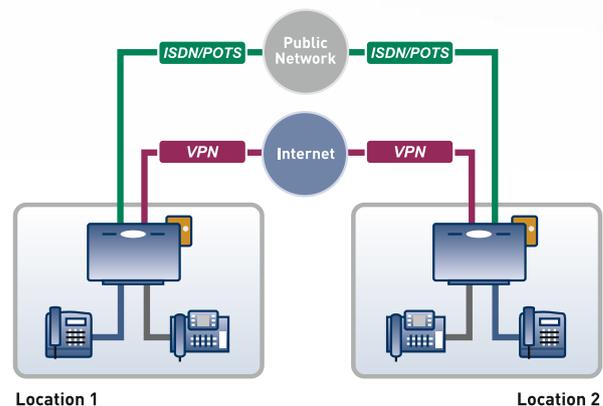


Parallel use of existing ISDN and additional VoIP infrastructure: Smooth migration to VoIP.

The M 4 DSP and M 8 DSP modules allow you to define the individual extension level of the VoIP-VPN Gateway yourself. Up to 16 connections can be set up simultaneously between the various technologies using two 8 DSP modules.

The VoIP-VPN Gateway module supports the widespread SIP VoIP protocol and allows encrypted voice communication over IP. To allow optimum voice quality while using minimum bandwidth, the standard voice codecs G.711, G.723.1, G.726, and G.729a/b are supported.

The ITC system also provides Internet access and a DHCP server centrally.



Connection of remote PBXs via VPN: Innovative concepts that become reality with the VoIP-VPN Gateway.

Funkwerk placed a great deal of importance on security in the development of the gateway. A Stateful Inspection Firewall blocks all unauthorised access from outside and only admits connections which have explicitly been admitted by the administrator. These connections are identified by means of user-defined filters. Pre-configured filters for diverse client and server applications simplify the set up.

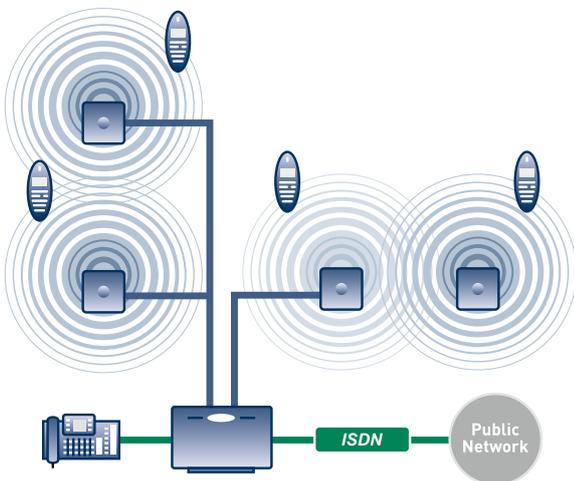
## The elmeg ICT with DECT400: A new freedom.

The wireless DECT system adds an easily configurable DECT component to elmeg ITC systems. Up to 40 mobile handsets can be supplied with the elmeg DECT400 subsystem and up to 16 calls made in parallel. The range can be expanded and cascaded using elmeg DECT repeaters.



*It can be integrated into your ITC system, yet individually extended: The elmeg DECT400 wireless DECT subsystem.*

The base modules are integrated into the elmeg ICT systems as DECT controllers and offer the option of connecting two or four elmeg DECT rfp radio bases. Each elmeg rfp base provides up to four voice channels simultaneously.



The elegant and ergonomic elmeg DECT handsets 400-20 and 400-40 offer optimum operability and functional overview. CLIP (Calling Line Identification Presentation) for incoming calls, menu navigation in clear text, and automatic call acceptance make phoning a pleasure.

The handset's internal memory stores up to 65 phone book entries and allows redialling of the last 10 numbers. With the 3-line graphics display, signalling LED, and muting option, these mobile handsets are convenient to use. As the high-end version, the elmeg DECT handset 400-40 additionally offers vibration alarm, headset connection, open listening and protection against dust and water spray according to IP 54.



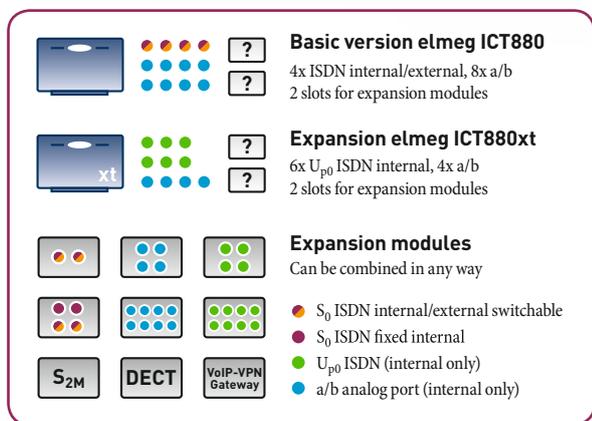
Both models can be adapted for use with the elmeg DECT400 system. Automatic handover is a fixed part of the systems and ensures permanent availability and maximum freedom for the caller. A comprehensive accessories set with leather case, belt clip, etc. is available on request.

You can find more information on comprehensive and ergonomic terminal devices for system and VoIP telephony in the "funkwerk telephones" product folder.

## Modular setup: Flexible like your business.

The modular extension of the elmeg ICT46 and elmeg ICT88 IT telecommunications systems allows companies to upgrade in steps up to 20 ISDN connections (BRI/U<sub>p0</sub>, for elmeg ICT88) or 24 analog end devices (elmeg ICT88). Further modules can also be connected. This ensures that your IT telecommunications system is not only integrated into the communications structure of your company but it is able to grow with it. Instead of having to change over to a new system, your elmeg ITC system expands with you in a simple and cost-effective manner.

With a bandwidth of ten ports for smaller offices (basic version elmeg ICT46) up to 78 ports for hotels and medium-scale companies (elmeg ICT88 for using a PRI module for 30 telephone lines), all customer requirements can be covered. The elmeg ICT 46 and elmeg ICT 88 systems offer a high-performance and future-safe communication platform with a performance that could previously only be achieved with far larger systems.



The top model elmeg ICT880 takes another step towards voice-data convergence. The systems concept of the unit permits flexible extension up to

- ▶ 16 digital trunks
- ▶ 76 digital Internet channels
- ▶ 44 analog terminal devices
- ▶ 4x Door Intercom Module
- ▶ 88/118 ports (max. extension ICT880 with ICT880xt and PRI)
- ▶ PRI primary multiplex access (30 trunks)



By connecting the elmeg ICT880xt extension frame, this system provides up to 88/118 ports. All elmeg modules and end devices are compatible, as will all future models.

The elmeg ICT880xt extension frame is equipped with six U<sub>p0</sub> ISDN interfaces, four analog ports, and each with two further module slots for hands-free entrance telephones and analog/ISDN extension modules.

The elmeg ICT series allows perfect integration of telecommunications technology into professional network topologies. With the 19" variant elmeg ICT880-rack, the elmeg series allows the setup of flexible, routeable workplace connections in central cabinets, which are state-of-the-art in the LAN sector.



Thanks to its design, this model can be seamlessly integrated into existing network structures and is mounted in a standard 19" cabinet, together with further network components, such as file servers, switches, hubs, or a CTI server.

## Currently available expansion modules:

### ICT router module

Integration of xDSL/ISDN data communication into your PSTN communication. Fast and secure connections to the Internet and connections for data transfer are provided via the ITC router module for your complete corporate network.

### VoIP-VPN Gateway module

Integration of xDSL/ISDN data communication into your local network. Additionally provides functions for Voice over IP and Virtual Private Networks (VPN).

### M 4 DSP / M 8 DSP

The M 4 DSP and M 8 DSP extension modules expand the VoIP-VPN Gateway module into a complete switched network-to-IP gateway. Up to two DSP modules can be integrated in the VoIP-VPN Gateway module and thereby provide 4, 8, 12 or 16 simultaneous VoIP voice channels.

### DECT multicell 2 / DECT multicell 4 modules

Central DECT controller for the elmeg DECT400 solution. They offer the option of connecting two or four elmeg DECT rfp's. Each rfp provides up to four voice channels simultaneously.

### 2 POTS / 4 POTS modules

The POTS modules serve to integrate existing analog telephone lines into the elmeg ICT series telecommunications system. A typical field of application is the integration of an existing trunk for a fax machine, which cannot be used at the ISDN trunk.

### PRI module

This module allows connection to a primary multiplex access, which provides 30 digital trunks via a 4-wire cable. This solution also satisfies the demands of companies with very high external communication load.

The PRI module is suitable for elmeg ICT88 and ICT880.

### 4 U<sub>p0</sub> / 8 U<sub>p0</sub> modules

U<sub>p0</sub> is a relatively new interface with ISDN features. It offers up to 1000 meters range via a 2-wire cable connection and therefore enhances legacy installations, for example. Connection to ISDN end devices is achieved via an U<sub>p0</sub>/BRI converter (already integrated into the elmeg CS290-U and elmeg CS410-U).

### 2 BRI / 4 BRI modules

For two or four additional ISDN BRI interfaces each for the connection of ISDN telephones or ISDN PC cards. For each module, one BRI can be configured as external trunk (PtP/PtMP). All BRIs can be used to connect elmeg systems telephones.

### 4 a/b / 8 a/b modules

For four or eight further analog extensions, such as (cell) phones, fax group 3 devices, answering machines, external voice mail systems, or modems. All a/b ports with CLIP support and call charge pulse.

### FSM module

The FSM fine protection module protects the various PBX connections against overvoltage. The overvoltage due to lightning is grounded, protecting against the damage that would otherwise occur.

### NSP module

For the emergency power supply for an ISDN-capable systems telephone, e.g. elmeg CS400xt, at an internal BRI bus (the external BRI is passed though). This option serves to ensure your availability even in the case of a power failure.

### Contact module

Six sensor inputs and three switch contacts connect even the most diverse technical devices (e.g. heating, alarm system, proximity switch, or short circuit contact in the case of water inleakage) with automatic initiation of calls, signal transmission, etc.

## PERFORMANCE FEATURES ITC SYSTEMS ELMEG ICT

|   | elmeg ICT46                | elmeg ICT88                | elmeg ICT880               | elmeg ICT880<br>with xt    |
|---|----------------------------|----------------------------|----------------------------|----------------------------|
| ISDN S <sub>0</sub> ports, total  | 2                          | 4                          | 4                          | 4                          |
| ISDN S <sub>0</sub> ports, permanent external   | 1                          | –                          | –                          | –                          |
| ISDN S <sub>0</sub> bus internal/external, configurable                                 | 1                          | 4                          | 4                          | 4                          |
| ISDN S <sub>0</sub> ports, permanent internal   | –                          | –                          | –                          | –                          |
| Analog internal ports (symmetr.)  | 6                          | 8                          | 8                          | 12                         |
| Modular expansion   | •                          | •                          | •                          | •                          |
| Compatible with elmeg DECT400 controller mode   | •                          | •                          | •                          | •                          |
| Compatible with router functions  | •                          | •                          | •                          | •                          |
| Max. SIP channels   | 16                         | 16                         | 16                         | 16                         |
| Max. SIP providers  | 25                         | 25                         | 25                         | 25                         |
| Compatible with elmeg system telephones S <sub>0</sub> / U <sub>p0</sub> / IP           | •/•/•                      | •/•/•                      | •/•/•                      | •/•/•                      |
| Max. number of supported IP telephones (IP-S or SIP)                                    | 30                         | 30                         | 30                         | 30                         |
| VPN with IPsec (Module VoIP-VPN Gateway required)                                       | 10 at max.                 | 11 at max.                 | 12 at max.                 | 13 at max.                 |
| RS232 port for PC or serial printer   | •                          | •                          | •                          | •                          |
| USB port  | •                          | •                          | •                          | •                          |
| Door intercom units can be connected  | 1                          | 2                          | 2                          | 4                          |
| Comprehensive elmeg WIN-Tools included with system                                      | •                          | •                          | •                          | •                          |
| LCR Professional (Automatic Route Selection)  | •                          | •                          | •                          | •                          |
| CTI with support for Microsoft TAPI   | •                          | •                          | •                          | •                          |
| CAPi support, internal via USB  | –                          | –                          | –                          | –                          |
| WIN-Tools via V.24 / int. S <sub>0</sub> / USB  | •/•/•/•                    | •/•/•/•                    | •/•/•/•                    | •/•/•/•                    |
| Remote configuration possible   | •                          | •                          | •                          | •                          |
| Download / Remote loading of firmware   | •/•                        | •/•                        | •/•                        | •/•                        |
| <b>Performance Features (typical)</b>   |                            |                            |                            |                            |
| PtM or PtP connection   | •                          | •                          | •                          | •                          |
| Combined PtM and PtP connection possible  | •                          | •                          | •                          | •                          |
| Flexible number allocation  | •                          | •                          | •                          | •                          |
| Maximum number of MSNs  | 10 per S <sub>0</sub> ext. | 11 per S <sub>0</sub> ext. | 12 per S <sub>0</sub> ext. | 13 per S <sub>0</sub> ext. |
| Freely assignable internal numbers  | •                          | •                          | •                          | •                          |
| Number and name transfer to all analogue ports (CLIP, CNIP)                             | •                          | •                          | •                          | •                          |
| 16 kHz charge rate pulse at analog ports  | •                          | •                          | •                          | •                          |
| Inquiry call / Broker's call / Call waiting   | •/•/•                      | •/•/•                      | •/•/•                      | •/•/•                      |
| Three-party conference call   | •                          | •                          | •                          | •                          |
| Comprehensive team functions  | •                          | •                          | •                          | •                          |
| Call forwarding immediately / delayed / on busy for int./ext. calls                     | •                          | •                          | •                          | •                          |
| SMS in fixed lines network  | •                          | •                          | •                          | •                          |
| Automatic call-back (internal/external)   | •/•                        | •/•                        | •/•                        | •/•                        |
| Room monitoring (internal/external)   | •/•                        | •/•                        | •/•                        | •/•                        |
| Don't disturb / Direct call   | •/•                        | •/•                        | •/•                        | •/•                        |
| Pick-up   | •                          | •                          | •                          | •                          |
| Call Through  | •                          | •                          | •                          | •                          |
| automatic line access   | •                          | •                          | •                          | •                          |
| Emergency call phone / number memory / Emergency call priority                          | •/•                        | •/•                        | •/•                        | •/•                        |
| Day/Night Mode / with time control  | •/•                        | •/•                        | •/•                        | •/•                        |
| Configuration of 6 exchange line authorization levels                                   | •                          | •                          | •                          | •                          |
| Specific restricted and unrestricted numbers  | •                          | •                          | •                          | •                          |
| Recording of charge data, with date, time, duration, connection, external caller, units | •                          | •                          | •                          | •                          |
| Charge rate data records in memory  | 1000                       | 1900                       | 1900                       | 1900                       |
| project numbers can be assigned to charge rate data records                             | •                          | •                          | •                          | •                          |
| Entries in PABX-specific telephone directory  | 1000                       | 1000                       | 1000                       | 1000                       |
| Remote control for switching contacts   | •                          | •                          | •                          | •                          |
| Internal / External music on hold   | •/•                        | •/•                        | •/•                        | •/•                        |
| Support for all common ISDN performance features*                                       | •                          | •                          | •                          | •                          |
| Easy-to-assemble design, simple installation  | •                          | •                          | •                          | •                          |
| Plug & Play factory configuration   | •                          | •                          | •                          | •                          |
| <b>Technical Data</b>   |                            |                            |                            |                            |
| Enclosure dimensions W x H x D  | 360 x 275 x 90 mm          | 360 x 275 x 90 mm          | 360 x 275 x 90 mm          | 820 x 275 x 90 mm          |
| Weight  | ca. 2,8 kg                 | ca. 2,8 kg                 | ca. 2,8 kg                 | ca. 5,6 kg                 |
| Ambient temperature   | 5–40 °C                    | 5–40 °C                    | 5–40 °C                    | 5–40 °C                    |
| Power supply  | 230 V (± 10%)              |
| Length of 230V cable  | 2 m                        | 2 m                        | 2 m                        | 2 m                        |
| Length of ISDN exchange cable   | 2 m                        | 2 m                        | 2 m                        | 2 m                        |

\*) Please contact us for further information

\*\*) With S<sub>2M</sub> module (optional)

**PERFORMANCE FEATURES ELMEG DECT400**

|   | elmeg DECT<br>handset 400-20 | elmeg DECT<br>handset 400-40 |
|---|------------------------------|------------------------------|
| <b>System features with menu navigation:</b>          |                              |                              |
| Automatic Follow-me from system telephone:            |                              |                              |
| · activation by removal out of the charger            | •                            | •                            |
| · deactivation by insertion into the charger          | •                            | •                            |
| name display in silent mode (autom. Out of ICT)       | •                            | •                            |
| Access to the central telephone book of the PBX       | •                            | •                            |
| Access to the elmeg-Menu                              | •                            | •                            |
| <b>Features with elmeg-PBXs:</b>                      |                              |                              |
| Call waiting / Call waiting protection                | •                            | •                            |
| Day- / night switching                                | •                            | •                            |
| Follow Me   | •                            | •                            |
| Automatic line access                                 | •                            | •                            |
| CLIP  | •                            | •                            |
| Intercom  | •                            | •                            |
| (Hotline) Direct call                                 | •                            | •                            |
| 3-party conference                                    | •                            | •                            |
| Call Pick up  | •                            | •                            |
| Brokers call  | •                            | •                            |
| Alarm call on/off switchable                          | •                            | •                            |
| Project numbers                                       | •                            | •                            |
| Room monitoring                                       | •                            | •                            |
| Call forwarding                                       | •                            | •                            |
| Inquiry call  | •                            | •                            |
| Completion of call                                    | •                            | •                            |
| Switching contact                                     | •                            | •                            |
| Call internal / external                              | •                            | •                            |
| Team  | •                            | •                            |
| Door intercom   | •                            | •                            |
| 2-way intercom  | •                            | •                            |
| Dial procedure (Tone / Pulse)                         | •                            | •                            |
| Call transfer   | •                            | •                            |
| Central telephone book                                | •                            | •                            |
| <b>Features DECT handset</b>                          |                              |                              |
| Alphanumeric keypad                                   | •                            | •                            |
| CLIP  | •                            | •                            |
| Automatic seamless handover                           | •                            | •                            |
| Automatic call accepting                              | •                            | •                            |
| Illuminated display (disengageable)                   | •                            | •                            |
| Weight  | 130 g                        | 130 g                        |
| Graphic display, 3 lines plus symbols                 | •                            | •                            |
| Headset-jack  | –                            | •                            |
| Variable handset volume                               | •                            | •                            |
| Open listening  | –                            | •                            |
| Optical call signaling (LED)                          | •                            | •                            |
| R-key   | •                            | •                            |
| Variable ringing melody and volume                    | 9                            | 9                            |
| IP 54 protection (dust and splashed water protection) | –                            | •                            |
| Silent Mode (no tones)                                | •                            | •                            |
| Max. talk time  | 16 Hours                     | 16 Hours                     |
| Max. stand-by time                                    | 150 Hours                    | 150 Hours                    |
| Microphone mute                                       | •                            | •                            |
| Key lock (also automatic)                             | •                            | •                            |
| Telephone directory with name                         | 65                           | 65                           |
| Vibration alarm                                       | –                            | •                            |
| Redialing   | 10                           | 10                           |

# Funkwerk: The Perfect Fit.

V O I C E , D A T A , S E C U R I T Y .

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