

elmeg ICT

Operating instructions elmeg ICT_DECT 400
English

Declaration of conformity and CE mark



This device meets the requirements of the following EC directive R&TTE 6/1999/EG:

»Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity«.

You can also request this EC declaration of conformity at the following Internet URL: <http://www.bintec-elmeg.com>.



The waste container symbol with the “X” through it on the device indicates that the device must be disposed of separately from normal domestic waste at an appropriate waste disposal facility at the end of its useful service life.

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DECT System

You must establish the best location within your area of operation for each separate base station, for the elmeg DECT rfp units and for the repeaters to ensure optimal coverage when using the elmeg DECT300 / 400 systems.

Measurement (site survey) is performed using standard components of the DECT300 / 400 systems.

System elmeg DECT300: elmeg DECT300 base as well as 2 elmeg DECT handsets

System elmeg DECT400: Modul elmeg DECT multicell as well as at least 1 elmeg DECT rfp and 2 elmeg DECT handsets

Using these components you can determine the DECT ranges. This is particularly important, as the capabilities of DECT technology must always be viewed in correlation with the structural and spatial surroundings. Where possible, the results of these site surveys should be entered in the building layout diagram. This allows you to establish the locations for the base station, the rfps and the repeaters prior to actual installation. By doing this you can avoid holes or bottlenecks before actual installation.

The building layout diagram (with the measurement results) should be a component of the handover documentation and can later serve as verification for any changes affecting the radio properties/performance.

From here on, no distinction will be made between the DECT300 / 400 systems; the general terms base stations (elmeg DECT base) rfp (elmeg DECT rfp) or repeaters (elmeg DECT repeater) will be used.

Instructions for selecting locations for base stations, rfps and repeaters

The following locations should not be selected for rfps and repeaters, due to possible interference caused by the propagation of DECT signals. Adverse locations can be:

- In the vicinity of PCs, monitors, etc.
- In the vicinity of metal lines, such as electricity cables, water or heating pipes, HVAC ducts
- Metal cable platforms
- In the vicinity of elevator shafts
- Walls or supports made of steel, or steel-reinforced concrete
- Installation directly below or above metal lamellar ceilings
- Installation directly below or above trapezoidal corrugated sheet ceilings
- Mounting cabinets or intermediate ceilings

Important information about the traffic capabilities of DECT300 components

Up to 6 ongoing calls can be conducted, or 6 calls signaled simultaneously for DECT terminal devices within the radio range of the elmeg DECT base. In team configurations (with parallel call settings) that allow simultaneous calling of handsets, ensure that parallel calls can not be signaled at the same time at the handsets being called. The maximum number of team members must be limited to 6, as only 6 voice channels can be activated.

Important information about the traffic capabilities of DECT400 components

Up to 4 ongoing calls can be conducted, or 4 calls signaled simultaneously for DECT terminal devices within the radio range of the elmeg DECT rfp. As up to 4 elmeg DECT rfps can be connected to the elmeg DECT multicell module, this provides you with a total of 16 channels for internal or external calls. In team configurations (with parallel call settings) that allow simultaneous calling of handsets, ensure that parallel calls can not be signaled at the same time at the handsets being called. As only 16 voice channels can be activated, ensure that only a total of 16 team members can be connected for one module for all teams.

Information about the traffic capabilities of repeater I / II with elmeg DECT300 / 400 systems

Up to 2 ongoing calls, or 2 calls for DECT terminal devices can be signaled simultaneously by a repeater. It must be ensured here however that a handset within the range of the repeater occupies a corresponding channel at the base station and the rfp at the same time.

Repeaters expand your range! A repeater actually does not provide an additional voice channel, but, rather, occupies (borrows) channels from the base station or the rfp.

You can increase traffic capacity in an area by installing a second repeater / rfp behind a repeater / rfp that is already installed.

Be sure to keep a minimum distance of 25 m between the repeaters!

This is a method to double the radio range, with a total of 4 channels which are, in turn, occupied in both the base station and the rfp.

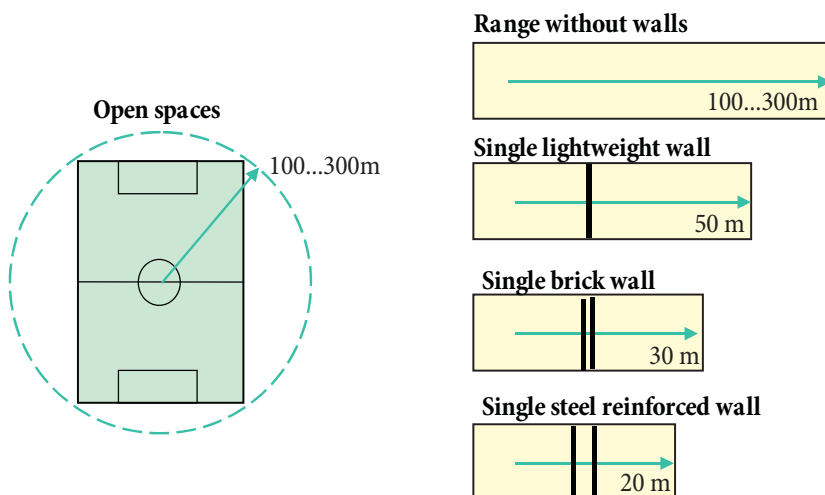
Information about positioning of the rfps and repeaters

Distribution of the rfps and repeaters is very dependent on the local conditions. You must first determine on how many floors and in how many rooms the DECT terminal devices are to be used. Of particular significance is the geometry and material make-up of the walls and ceilings on each floor in the building in which the devices are to be used. This section contains a summary of important information that you can refer back to for project planning / installation.

The examples listed here serve as points of reference. Only in exceptional cases should you omit the measurements described in these instructions.

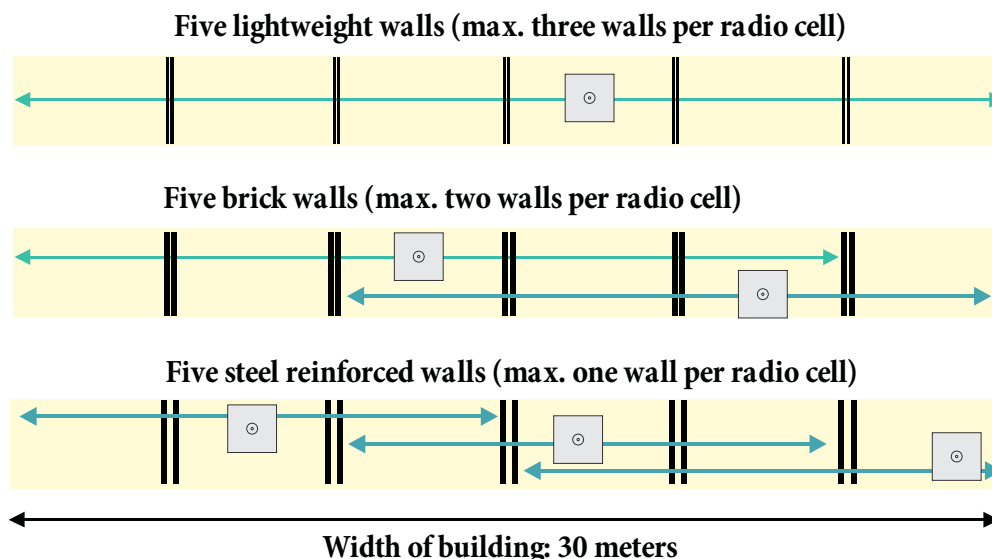
Maximum ranges on one level

Refer to the individual graphics for the ranges that are yielded in open areas, or in single-storey buildings



Maximum ranges through several walls

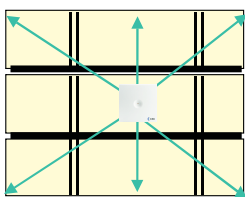
The following maximum ranges are yielded for coverage in buildings with one single floor and several rooms located one behind the other, with dividing walls of one identical type. Our example given here is based on a uniform distance of 5 meters from wall to wall.



Maximum ranges over several storeys (levels)

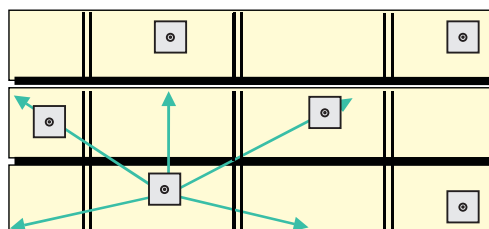
The following maximum ranges are yielded for coverage in multi-storeyed buildings and several adjacent rooms, with walls of identical type. The two examples given here are based on a steel-reinforced concrete ceiling and a uniform distance of 5 meters from wall to wall.

Maximum: One ceiling made of steel reinforced concrete and a further lightweight wall.



Up to 20 meters, and only with lightweight walls.

Optimal: Base station and repeaters installed offset with one another.



More than 20 meters

Measurement of the radio range for the elmeg DECT system

Activating the measurement mode

The »elmeg DECT handset« must have been logged-on (see Operating instructions for »elmeg DECT handsets«). You can switch to the measuring (test) mode using one of the following procedures.

99989

Enter the code number and press OK to confirm.

or

99981

Enter the code number and press OK to confirm.

- The DECT handset is now in the measuring mode, but provides inaccurate values.
- Switch on the handset (lift headset). The following code is then shown in the display:

Display after measurement mode *99989*

	1	RPN: Number of the other »elmeg DECT rfp« (HEX)
	2	RSSI: Field strength for the »elmeg DECT rfp« shown above
	3	Active »elmeg DECT rfp« with measurement values
N:04 11 02 → ①	4	Number of the »elmeg DECT rfp« (HEX) (00 in this example)
R:91 85 79 → ②	5	Q52-value (64 in this example)
A 64 48 6 9 C → ③	6	RSSI field strength
↓ ↓ ↓ ↓ ↓ ↓	7	Frequency 0 ... 9
④ ⑤ ⑥ ⑦ ⑧ ⑨	8	Time slot 0 ... B
	9	Type of handover B: Bearer (field strength too low) C: Connection (Connection) D: Idle (opposite terminal busy)

Display after measurement mode *6*

N:04 11 02 → ①	1	RPN: Number of the »elmeg DECT rfp« (HEX)
R:91 85 79 → ②	2	Q52-value of the active »elmeg DECT rfp«
A 64 48 6 9 C → ③	3	RSSI field strength
↓ ↓ ↓ ↓ ↓ ↓		
④ ⑤ ⑥ ⑦ ⑧ ⑨		

- You can carry out a »handover« between the »elmeg DECT rfp« units in the measuring mode *99989* using the key combination Menu and the »#«.
- Measurement is canceled when you switch off the handset, or by holding down the »C« key for a few seconds.

Q52-value

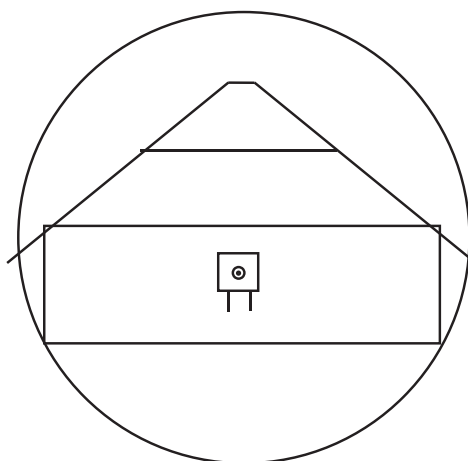
The Q52 value is used to check the voice quality for communication between the »elmeg DECT rfp« and the handset. If this attains <52 the handset will automatically search for a different, assigned »elmeg DECT rfp«.

RSSI

The RSSI value is a quantity used to express the field strength of the base station. The RSSI value is used to select the proper rfp or repeater. The handset selects the rfp or the repeater with the highest RSSI value.

Positioning of the base station or the rfp

The base station, or the rfp, must be positioned in the main area of use so as to provide optimal coverage. This would be the ground floor in a "normal" single-family house. Repeaters or rfps could then be added for providing coverage in the basement, or on the top floor.



Performing measurements (site survey) to determine the best location

Perform the measurement as follows:

Set the handset to the test mode and closely monitor the Q value while moving away from the rfp. When the Q value reaches a level of 52, or starts to become unstable, the limit for DECT coverage has been reached. During this measurement it is very important that the adverse effects caused by the human body be simulated. This is done on the one hand by covering the antenna region with your hand, or by turning your body so as to position it between the radio path from the base station / rfp and the handset to bring about the most adverse situation for the radio path.

The Q value must be stable and may not fluctuate.

Only the Q value is significant for measurement, and not the RSSI value! You can determine the ultimate location for the rfp by simply shifting its position. Now, install and perform measurements for the repeaters (one after the other).

Subjective evaluation of measurement

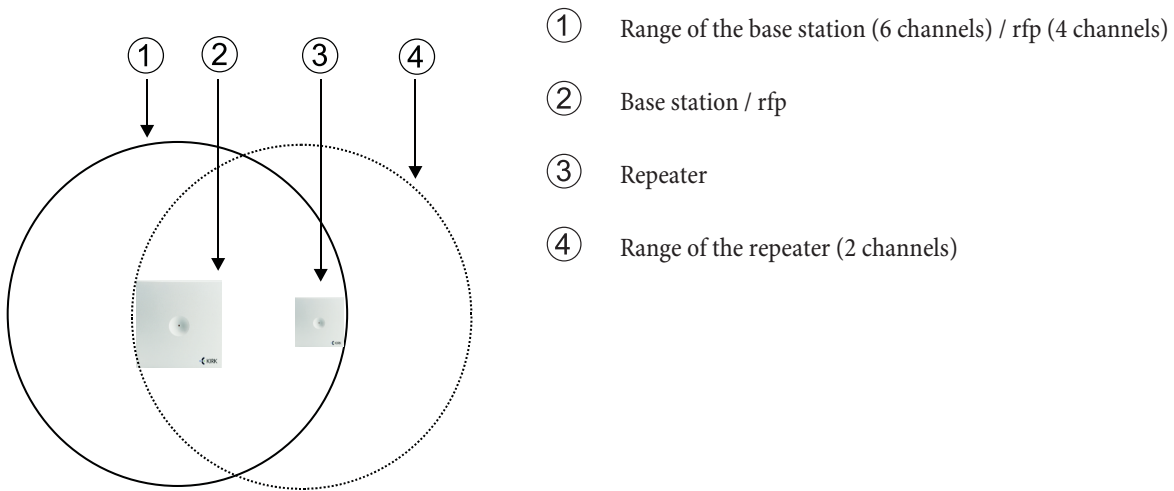
Set up an internal connection between the handsets to make a subjective evaluation (voice quality) of the radio range.

You can establish an internal connection after setting up the test mode to compare the acoustic evaluation with the measured data.

Key (handset 1)	Key (handset 2)	function
On/Off		Establishing a radio link
Number:		handset 2 is called
	On/Off	Call connection

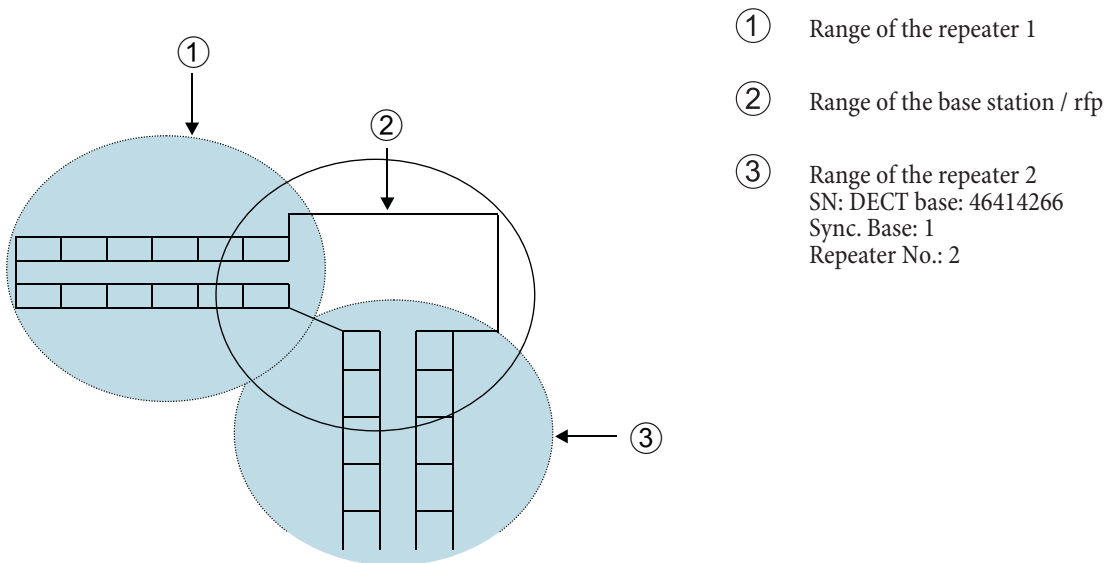
Determining the locations for the repeaters

Attention: You must ensure that there is a 50% overlapping of the radio ranges!

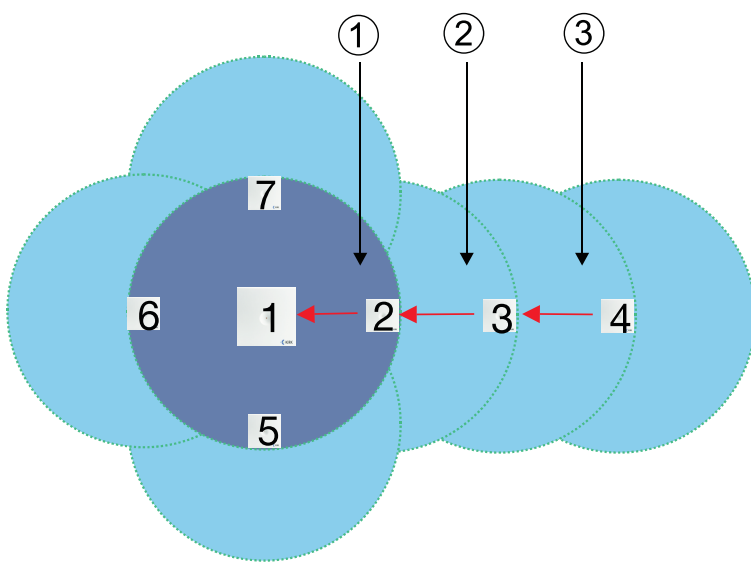


Repeaters can expand the radio range of the rfps and base station by up to around 50%!

Practical examples: Hotel installation



Repeaters in series



- ① repeater 2: connected to base station/rfp
SN: DECT base: 46414266
Sync. Base: 1
Repeater No.: 2
- ② repeater 3: connected to repeater 2
SN: DECT base: 46414266
Sync. Base: 2
Repeater No.: 3
- ③ Repeater 4: connected to repeater 3
SN: DECT base: 46414266
Sync. Base: 3
Repeater No.: 4

bintec elmeg GmbH
Südwestpark 94
D-90449 Nürnberg

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Subject to modifications
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