CeoTronics
Audio · Video · Data Communication

CT-DECT Multi

Operating Instructions

Contents

1. Technical safety instructions, environment protection, safety at work

Important Information for Users of the CT-DECT transceivers

The CT-DECT transceiver modul has been tested for electromagnetic compatibility and is compliant with the european DECT-Standard.

CT-DECT transceivers that are not intrinsically safe (explosion-protected) and therefore do not have any special hazardous duty marking must never be used in potentially explosive atmospheres. Unprotected CT-DECT transceivers can trigger explosions unintentionally in these areas.

CeoTronics does not assume any liability for damage to property and personal injuries of any kind that can arise through the above mentioned or any other incorrect use of the CT-DECT transceivers.

Important safety instructions

For the use of the device notice the national safety and accident prevention regulations and the following safety instructions shown in italics in this instruction manual.

- *Before using CeoTronics products read completely the appropriate operating instructions. If in doubt, ask our technical staff.*
- *If repair work of any kind needs to be done to CeoTronics products, arrange for it to be performed only by the company CeoTronics or by a specialized workshop that is authorized by CeoTronics. In all other cases our warranty and liability for the product shall lapse.*
- *Do not immerse the radio equipment into water.*
- *When using CeoTronics products that are equipped with connection leads ensure that the latter do not get caught up in operational machinery or wheels!*
- ***Radio equipment that are not intrinsically safe (explosion-proof) and therefore have no special explosion-proof designation must never be operated in potentially explosive environments (e.g. when refuelling cars, aircraft etc.). Devices that are not explosion-proof can unintentionally trigger off explosions in such areas!***
- *Connect CeoTronics accessories to a device or disconnect them from a device only when the device is switched off.*

- ***If you are a cardiac pacemaker carrier, before operating a transmitter/receiver ask the manufacturer of your cardiac pacemaker for information about any impairment that might be caused due to high frequencies.***

- With radio equipment, volumes of more than 85 dB(A) could be received, however, volume can be adjusted by the user. After switching on the communication system, adjust the receiving volume at about 1/2 level of the maximum possible and check the volume received in your earpiece. Do not set to higher levels than necessary. Very high volumes could damage your sense of hearing, particularly under continuous operation. If volumes or sound levels are high, the use of additional ear plugs is recommended. In case of any doubt, contact your specialist for occupational health and safety or the company physician.

- *Before starting to operate the device in sensitive areas like e.g. aboard airplanes or in hospitals etc., please check first if it is permitted to use it in these environments.*

  For use aboard an airplane a Type Certificate (TC) or a Certificate of Nonobjection (CO) must be available. Should the communication equipment not be homologated, its use aboard an airplane is strictly prohibited as it could jeopardize the safety of the airplane. Never put electronic devices into operation aboard an airplane without obtaining prior approval from the cabin crew.

- *Do not leave the radio equipment products lying around loose in cars, e.g. on the parcel shelf. Stow these products in a suitable, safe place in the car so that they do not present a danger to you or to other occupants of the car, if emergency braking is effected.*

- *When driving a car, do not use the radio because it may distract you from the other traffic.*

- *Charge rechargeable batteries only with the appropriate suitable charger. Observe the voltage and currency specifications. Never use the charger to recharge non-rechargeable batteries.*

- *When handling rechargeable batteries comply with environmental protection regulations !*

Never attempt to open a rechargeable battery and never throw a rechargeable battery into fire. Expended (defective) rechargeable batteries are subject to compulsory regulated waste disposal. Do not put them in the household waste!

- *Ensure that a short-circuit (risk of fire or injury) is not created across rechargeable battery terminals or charging sockets by a short-out (bent-open paper clip, bunch of keys etc.). In such an event the warranty shall lapse. Transport any spare rechargeable batteries in an electrically non-conducting package in order to avoid short-circuiting the rechargeable batteries.*

- *Keep the radio equipment and rechargeable batteries out of the reach of children and any other persons who are not familiar with the handling and operation thereof.*

- *Safe operation requires clean devices. Ensure that the devices (microphones, connectors etc.) are clean and in good condition at all times.*

- *The radio equipment may only be used for the specific application envisaged.*

- *Should equipment, supplied by CeoTronics, be definitely put out of service you may return it to CeoTronics. We ensure recycling and/or disposal of outdated equipment in compliance with the applicable environment protection law.*

- *Keep these operating instructions for later use.*

Important Notes for operation of the CT-DECT System in the USA

Please note that any changes or modifications not expressly approved by the party responsible for compliance will void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment
generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

. Reorient or relocate the receiving antenna.
. Increase the separation between the equipment and receiver.
. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
. Consult the dealer or an experienced radio/TV technician for help.

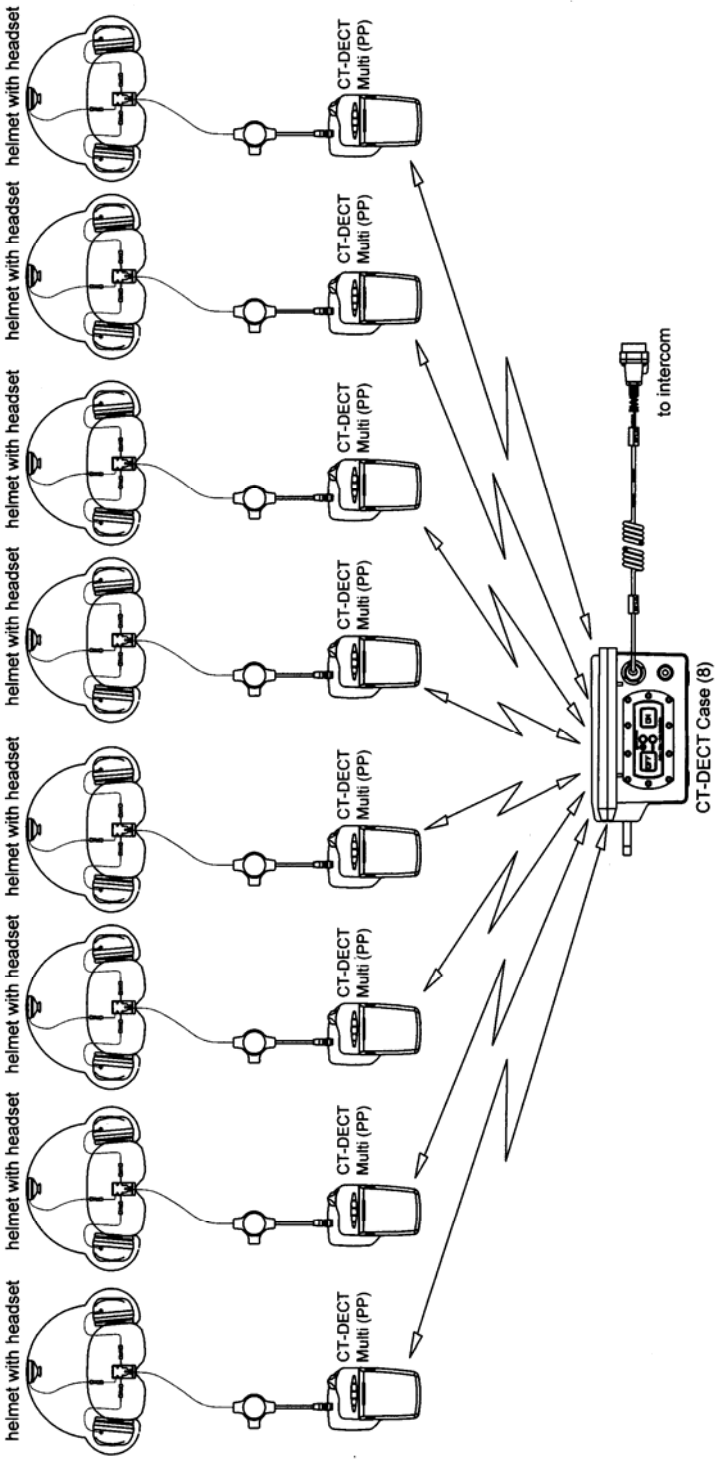
This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

Body-worn operation has been tested and meets the FCC RF exposure guidelines when used with the Applicants accessories supplied or designated for this product as listed in the filing. Use of other accessories may not ensure compliance with FCC RF exposure guidelines. The highest reported SAR values for the single configuration under this FCC ID are….. W/kg for the Part 15D/ 1.9 GHz-band.

2. Description

The CT-DECT Multi (PP) is a two-way radio for wireless communication over short distances and is used in conjunction with a headset and the CT-DECT Case (8) (FP). The working range between the CT-DECT Multi (PP) and the CT-DECT Case (8) depends on the local conditions.
The "CT-DECT Multi (PP)" is used normally with his associated CT-DECT Case (8) (FP) and must be subscribed to it. The use of a CT-DECT Multi (PP) with another CT-DECT Case (8) (FP) is only possible, if the CT-DECT Multi (PP) subscribed to it.
Combined with a CT-DECT Case (FP), mobile users are able to communicate for instance with the crew aboard an aircraft. A high degree of tapping and interference protection is assured.

Figure 1 System overview / example



2.1 Technical data

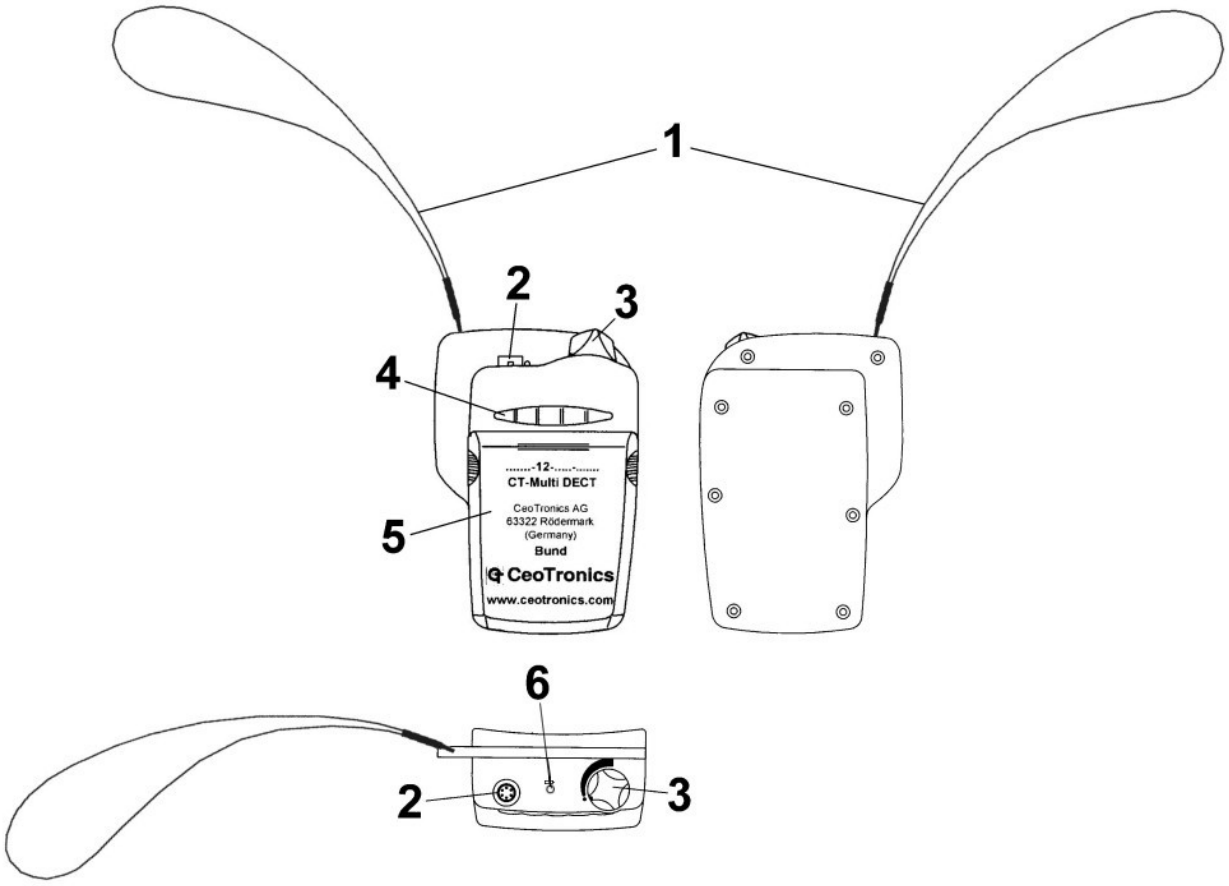
Unit is equipped with
- Battery compartment for 3 AA-batteries
- Acoustic multilevel warning „Low-Battery“ in the connected headset
- Optical warning „Low-Battery“
- Volume switch with ON/OFF-function
- 6-pole socket for headsets
- Fall protection cord

Technical Data

	USA
Frequency band	1920 – 1930 MHz
Mode of Transmission	TDMA 24 Slots per frame
Channel spacing	1,728 MHz
Automatic channel selection	5 channels
Transmission range	≥200m (obstacle-free area) ≥75m (dependent on the local conditions)
Power supply	rechargeable batteries NiMH or AA-batteries
Operating time	approx. 20 hours (by 23°C) on use of the provided rechargeable batteries

2.2 Technical description

Figure 2 radio CT-DECT Multi (PP)



1	Fall protection cord
2	6-pole jack for a CT communication set
3	On/off switch and volume control (rotary knob). The unit is switched off if the rotary knob is set fully counter-clockwise (position » ● «). The volume control is used to adjust the volume for the communication set.
4	Bank of 5 pushbuttons. - Three center buttons »COM ON/OFF«: shortly pressing any of these three buttons activates the aircraft intercom connection with the crew aboard (you hear a high double beep in your CT headset) if previously it was switched-off or deactivates it (you hear a low double beep in your CT headset) if previously it was switched-on. Only the user establishing the intercom connection is connected through to the aircraft. - All five pushbuttons can be used for subscription of the CT-DECT Multi (PP) to the base device (FP) for example a CT-DECT Case
5	Removable cover for the battery compartment
6	Control lamp, batteries green illuminates constant — UB > 3,55V green flashes — 3,4V < UB ≤ 3,55V red flashes — UB ≤ 3,4V, approx. 30 minutes operating time LED OFF — UB ≤ 2,8V, no function

2.2.1 Power supply

Power for the CT-DECT Multi is supplied either by three rechargeable batteries or by 3 alkaline batteries in the battery compartment.

2.2.2 Audio signals used

Two different audible tones are used for signaling the operating status via the communication set connected to the device. The tone for the indication of positive operating status has a higher frequency than the tone for the indication of negative operating status. Signaling of the various operating status is effected by a varying number of consecutive high tones or low tones.

Positive acknowledgement tone

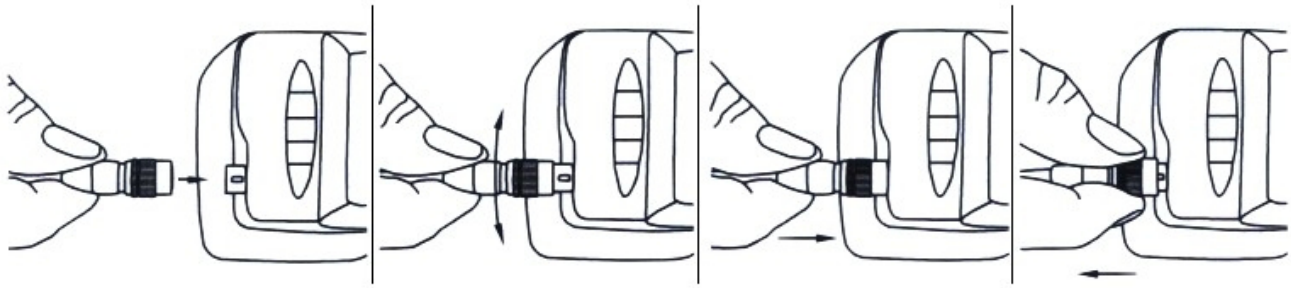
All positive operating status are indicated by a high tone.

Negative acknowledgement tone and error tone

All negative operating status and error status are indicated by a low tone.

2.2.3 Plug-in connections

Figure 3: Connecting and disconnecting plug-in connections



Hold the connector behind the grooved sliding sleeve and put it onto the jack.	Turn the connector carefully on the jack until it starts sliding into it.	Push the connector into the jack until the sliding sleeve engages in direction of the arrow, locking the connector.	To unlock the plug-in connection, simply hold the connector at the grooved sliding sleeve and pull it out off the jack.

⚠ CAUTION!

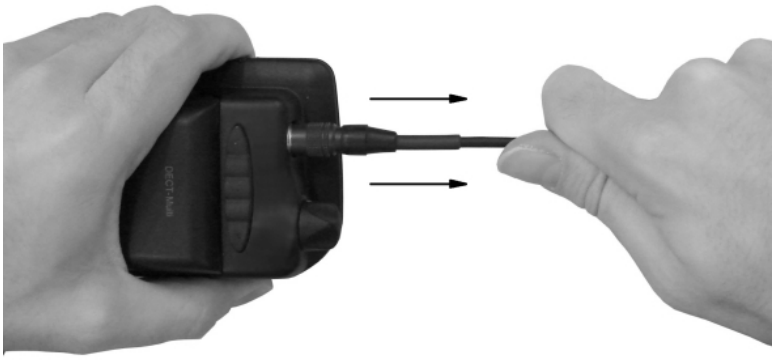
The locked plug-in connection may neither be twisted (figure 4) nor bent (figure 5). Improper handling could damage the plug-in connection.

Figure 4

Figure 5

Never pull the cable of the plug-in connection. Pulling the cable may damage the plug-in connection (figure 6).

Figure 6



3. Operation

3.1 First commissioning

⚠ PLEASE NOTE:

Before inserting rechargeable batteries, please read the safety instruction.

At the beginning new NiMH rechargeable batteries do not deliver maximum power. Maximum power is achieved only after a few recharging cycles.
Before charging rechargeable NiMH batteries, they must be completely discharged about once a month. If this procedure is not followed, rechargeable batteries will not deliver anymore full power after only a short time. Each communication device uses 3 rechargeable batteries. If one or more rechargeable batteries are not fully charged, this will affect the reliability of the entire system. As it is not possible to determine which one of the rechargeable batteries is in poor condition, the complete set must be replaced. Proper care and handling helps controlling the number of rechargeable batteries in use.
The life of rechargeable batteries may vary as a result of daily recharging, natural ageing, and varying operating conditions.

3.1.1 Recharging the NiMH rechargeable batteries

3.1.1.1 General

The rechargeable NiMH batteries in the device should only be charged with the charger supplied with the system. Otherwise the rechargeable batteries may be damaged. The charger is neither watertight nor dust-proof. Protect it against water, rain and dirt. The charger may only be used in rooms with normal relative air humidity and temperature. Do not cover up the charger.

⚠ Warning

- ***Never use battery chargers to charge non-rechargeable batteries.***
  Never open rechargeable batteries or throw them into fire. Do not open charger.
  The repair is permitted only by the manufacturer.
- ***Never charge a rechargeable battery in areas with an explosion risk – an explosion may result. Charge rechargeable batteries only within a building or similar environment that does not contain dangerous concentrations of volatile vapors.***

The three NiMH batteries are in the battery compartment of the CT-DECT Multi. For charging they have to be removed from the battery compartment.

a. Switch off the CT-DECT Multi.
b. Press on the two ribbed spots on the cover of the battery compartment, as shown in Fig. 5, and remove the cover from the battery compartment (Fig. 6).

c. Take the three NiMH batteries out the battery compartment. Charge the rechargeable batteries with the charger.

d. After charging: When inserting recharged NiMH batteries, attend to the polarity. Fit the two hooks of the battery compartment cover into the two openings at the compartment's bottom (Fig. 8) and press the cover against the compartment until it is engaged.

Example Figure 7	Example Figure 8
	

3.1.2 On-air subscription of the CT-DECT Multi (PP) to the CT-DECT Case (8) (FP)

➔ NOTES

- ***The on-air subscription is not part of the normal commissioning and operating procedure for the system. It must be performed again only in the case a CT-DECT Multi (PP) that isn't subscribed to the CT-DECT Case (8) has to be used in conjunction with the CT-DECT Case (8).***
- ***A CT-DECT Multi (PP) can be subscribed to only one CT-DECT Case (8), never to two or more CT-DECT Case (8) units simultaneously.***

➔ NOTES

- ***Two ore more CT-DECT Multi (PP) can never be simultaneously subscribed to the CT-DECT Case (8), they must always be subscribed one after the other.***

  With two ore more CT-DECT Multi (PP) it is recommendable to subscribe <u>all</u> devices one after the other to the CT-DECT Case (8), because a device can be deleted (see 3.1.2.1 »Principle of subscription«).
- ***Comply with the instruction step sequence.***
- ***After subscription <u>all</u> new subscribed devices have to be switched off again.***

The on-air subscription procedure is performed on the CT-DECT Multi (PP) and the CT-DECT Case (8) manually by means of operating elements. The CT-DECT Case (8) is the unit to which the maximum eight (8) CT-DECT devices (PP) of a system need to be subscribed to.

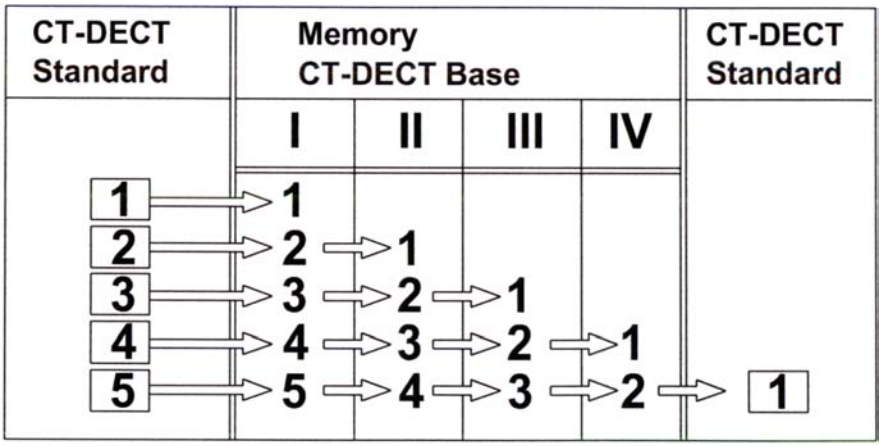
3.1.2.1 Principle of subscription

Four CT-DECT Multi (PP) can be assigned to each transceiver module in the CT-DECT Case (8). The four CT-DECT Multi (PP) assigned to a transceiver module should always be subscribed in groups, but of course individually one by one.

Should a <u>fifth</u> CT-DECT Multi (PP) be subscribed to one and the same transceiver module, then the CT-DECT Multi (PP) subscribed first would be deleted from the transceiver module's memory (see example in figure 9).

A CT-DECT Multi (PP) which has been deleted from the CT-DECT Case (8) memory cannot communicate anymore with the DECT system and needs to be re-subscribed to the base unit following the subscription instructions.

Fig. 5 Principle of subscription (example)



Time Out

If a subscription is not successfully completed within maximum 2 minutes since starting the process, a »timeout« occurs. The timeout is signalized by a sequence of 4 short low tones in the headset of the CT-DECT Multi (PP), repeating in 4-second intervals.

After a timeout all CT-DECT Multi (PP) subscribed to a transceiver module need to be subscribed anew to the CT-DECT Case (8). In the event of only one CT-DECT unit (PP) the subscription of this single CT-DECT unit (PP) has to be repeated.

3.1.2.2 Example of subscribing a CT-DECT Multi (PP) to a CT-DECT Case (8) (FP)

The following describes the subscription procedure of a CT-DECT Multi (PP) to a CT-DECT Case (8) (FP). The subscription of other CT-DECT Multi (PP) units is done likewise.

> ➔ **PLEASE NOTE:**
>
> ***After successful subscription, all CT-DECT Multi (PP) units and the CT-DECT Case (8) (FP) must be switched off again before putting the DECT system into operation.***

a. Make sure all CT-DECT units are switched off.

b. Plug the CT headset into the 6-pole jack of the CT-DECT Multi (PP) and put the headset on, but leave it in switched-off condition.

c. Press the subscription button on the CT-DECT Case (8) (FP) and keep it depressed. Switch on the CT-DECT Case (8) (FP) while the subscription button is depressed and keep it depressed for at least another 5 seconds after switch-on. Then release the subscription button and continue directly with step »d« in order to avoid a »timeout«.

d. Press on the CT-DECT Multi (PP) at least one of the five buttons of the push-button bank and keep it depressed. Switch the CT-DECT Multi (PP) on while depressing the button and keep it depressed for at least another 5 seconds since switch-on until you hear a descending 5-tone sequence in your headset. Then release the button.

   The subscription process has been initiated and you hear about every 2 seconds an intermittent short high beep in the headset of the CT-DECT Multi (PP). An ascending 5-tone sequence, repeating in 4-second intervals, finally informs you that the subscription process has been completed successfully.

   If, after maximum 2 minutes, the subscription process was not successful, this is signalized by a sequence of 4 short low tones, repeating in 4-second intervals.

   In that case, switch off again the CT-DECT Case (8) (FP) and the CT-DECT Multi (PP) and repeat the entire subscription process.

f. **After successful completion of the subscription process, switch off again the CT-DECT Multi (PP) and the CT-DECT Case (8) (FP) before commissioning the units (chapter 3.2).**

3.2 Commissioning

3.2.1 Fasten the CT-DECT Multi (PP) on your clothing

Fasten the CT-DECT Multi at a suitable place on your clothing. Take care that your mobility is not impaired and the CT-DECT Multi (PP) can be operated without any problem.

3.2.2 Connect the headset to the CT-DECT Multi (PP)

Put the headset on. Fasten the PTT button of the headset with the clip on its back side at a suitable place on your clothing. Connect the PTT button with the 6-pin connector through the connecting cable to the 6-pole jack of the CT-DECT Multi (PP).

3.2.3 Switch on CT-DECT Multi (PP) and CT-DECT Case (8) (FP)

Switch-on, establishing connection, adjusting the volume

➔ **PLEASE NOTE:**

Applies to CT-DECT Multi (PP) units subscribed to a CT-DECT Case (8) (FP).

a. First switch on the CT-DECT Case (8) (FP). The CT-DECT Case (8) (FP) starts now an initialization process during which it may not be switched off. After initialization the pilot lamp lights up.
b. Switch on the CT-DECT Multi (PP) units you want to communicate with, using the ON/OFF switch / volume control. After switch-on you will hear a high beep in the headsets. After this, synchronization, i.e. the search process, starts between the CT-DECT Case (8) (FP) and the CT-DECT Multi (PP) units, the duration of which may vary. While this process is under way, a high-low tone sequence will be heard every second in the CT headsets, indicating, that the CT-DECT Multi (PP) units are seeking their CT-DECT Case (8) (FP).

After successful synchronization - i.e. a CT-DECT Multi (PP) found its CT-DECT Case (8) (FP) - the high-low tone sequence falls silent and a high double beep is heard in the headset. CT-DECT Case (8) (FP) and CT-DECT Multi (PP) units establish now automatically the connection between one another. As soon as the connection is established a final high beep will be heard in the CT headset. This indicates that the units are now ready for duplex communication within the working range between CT-DECT Multi (PP) and base unit.

3.3 Controls

Duplex communication between »mobile« users

After switch-on of the CT-DECT Case (8) and the CT-DECT devices (PP) and successfully completed automatic establishment of connection (see chapter 3.2.3) the units are ready for duplex communication within the working range between CT-DECT devices (PP) and CT-DECT Case (8). Microphones and headsets are permanently switched on. Each user can speak in its headset microphone and hear in the earpiece of his headset the conversation of the other users. Adjust the communication volume with the volume control for your headset earpieces. Never adjust the volume higher than necessary for clear and proper communication.

Communication between »mobile« users and the aircraft intercom system

With the help of the PTT button on the headset, communication between »mobile« users and the crew of the aircraft is possible, while the PTT button is pressed.
Pressing the »COM ON/OFF« buttons on the CT-DECT devices (PP) once establishes communication between »mobile« users and the crew aboard the aircraft; pressing a second time cuts the communication off.
If the communication between »mobile« users and the aircraft crew is OFF, a high double beep sounds in the headset after pressing the buttons. Now, communication is switched on.
If the communication between »mobile« users and the aircraft crew is ON, a low double beep sounds in the headset after pressing the buttons. Now communication is cut off.
Only the »mobile« user establishing the intercom connection is connected with the crew of the aircraft and only he can terminate the connection.

3.4 Operating under special climatic conditions

The system is tested and approved for use within a working temperature range from -30°C up to +55°C. Exceptions apply to batteries and charging devices.

Rechargeable batteries

Very low or very high temperatures affect the life of rechargeable batteries.
Rechargeable batteries may only be used in the temperature range from 0°C to +50°C. At temperatures below 0°C we recommend the use of alkaline batteries.
As CT-DECT devices (PP) are used close to the body, temperatures below 0°C are rarely seen.

4. Maintenance and proper care

4.1 Visual inspection

Inspect the system and particularly cables and connector assemblies regularly for signs of cracks, fissures, and deterioration.

4.2 Cleaning

After every use the entire system should be cleaned.

⚠ ATTENTION!

Pay attention that no humidity could penetrate into the device during cleaning.
Do not use solvents (e.g. benzene, alcohol, etc.) for cleaning!

Remove loose dust with a soft brush. Clean the outside of components, if necessary, with an appropriate clean cloth, only lightly moistened with clear water, and then rub it down thoroughly. If heavily soiled, a few drops of rinsing agent may be added. Clean the connector pins with a commercial cleaning agent.

4.3 Faults, causes, corrective actions

Fault	Cause	Corrective action
CT-DECT Multi (PP), after switch-on, no tone sounds in the headset	Rechargeable batteries are completely run down or defective	Recharge or replace rechargeable batteries
CT-DECT Multi (PP), life of rechargeable batteries is too short	Rechargeable batteries are defective	Replace rechargeable batteries
After switching the system on, automatic establishment of connection is not completed successfully	CT-DECT Multi (PP) is not subscribed to the CT-DECT Case (8) (FP)	Perform subscription procedure

4.4 Storage

The equipment can be stored at temperatures from -40°C up to +80°C. Exceptions apply to rechargeable batteries.

Rechargeable batteries

Store rechargeable batteries at: -20°C...50°C for 30 days maximum
-20°C...40°C for 3 months maximum
-20°C...30°C for 1 year maximum

4.5 Transport and shipping

Use only the original packing for any transport purposes.

Transport only clean and dry systems. Prior to any transport remove **all** rechargeable batteries from **all** units.

5. Replacements to be made by the user

5.1 Replacing components

5.1.1 Remarks regarding maintenance work/repairs on the CT-DECT Multi

After repairing the portable radio in factory, the repaired CT-DECT Multi must be subscribed once again to the CT-DECT Case (8). For details, refer to chapter 2.2.2.

5.1.2 Replacing rechargeable batteries

a. Switch the CT-DECT Multi (PP) off.
b. Press the two ribbed spots on the cover of the battery compartment, as shown in figure 7, and take the cover off (figure 8).
c. Remove the rechargeable batteries from the compartment.
d. Replace the rechargeable batteries. Use only rechargeable batteries supplied together with the system.

⚠ **PLEASE NOTE:**

Rechargeable batteries must be disposed off environmentally safe! Do not throw into domestic waste!

e. When inserting rechargeable batteries, attend to the polarity. Fit the two hooks of the battery compartment cover into the openings at the compartment's bottom (figure 8) and press the cover against the compartment until it is engaged.

5.1.3 Replacing the cover of the battery compartment

a. Remove the cover of the battery compartment: switch off the CT-DECT Multi (PP). Press the two ribbed spots on the cover (figure 7), take the cover off the compartment (figure 8) and replace it.

b. Mounting the cover: insert the two hooks of the battery compartment cover into the openings at the compartment's bottom (figure 8). Fold the cover upwards and press it against the battery compartment until it is engaged.

5.1.4 Replacing the potentiometer knob

a. Rotate the potentiometer knob anticlockwise into OFF position (figure 10).

b. Unscrew the stud screw (M3) with the help of a hexagon socket head wrench SW 1.5 (figure 11).

c. Pull the potentiometer knob off the shaft and replace it. When slipping the new potentiometer knob onto the shaft, please make sure both white dots, marked on the potentiometer knob and the CT-DECT Multi, are aligned (figure 10).

Figure 10 Potentiometer head in OFF position

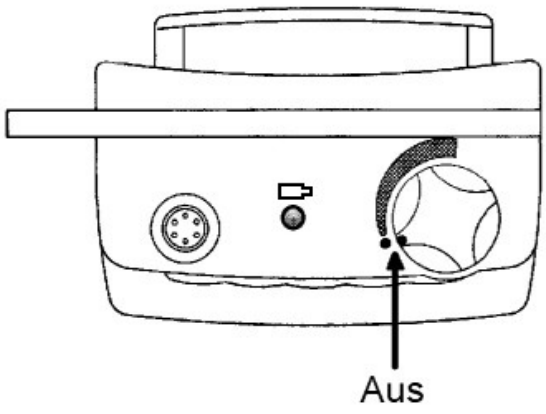


Figure 11

Notes

Notes

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