CT-GateCom II.24

Full duplex communication system for aircraft push-back

Example

Users Manual

Contents

Introduction

**This user manual is an example and describes the CeoTrionics Aircraft Interface
– that contains the Transceiver Module CT-DECT-I24 – in conjunction with 4 CeoTronics
Transmitter/Receiver Units CT-GateComII.24/Multi provided with CT GroundCom
Headsets.**

Important Note

**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 cause undesired operation.**

Declaration concerning RF Radiation Exposure:

**The CT-GateCom II.24 contains the transceiver module CT-DECT-I24. The system is
considered to be a mobile transceiver. The safety distance between the mobile device and any
human person must be 20 centimeters (7.9 in.).**

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1.   Important safety instructions

*When using CeoTronics products do not fail to comply with the following safety
information:*

- 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.
- If products are operated on a mains voltage, always pull the mains plug out of the mains plug socket before opening such products (e.g. for servicing purposes) !
- Do not store CeoTronics products outside or in damp ambient conditions. At all times keep them clean, dry and at normal air humidity. CeoTronics products must not be stored in areas with a temperature of over +80° C (+176° F), e.g. in the summertime on the parcel shelf of a car. If not stated otherwise, the following temperature ranges are allowed for CeoTronics products: -10 to +55° C (+14 to +131° F) for operation, -40 to +80° C (-40 to +176° F) for storage.

- Do not immerse a CeoTronics product into water, if it is not expressly specified for this purpose.
- When using CeoTronics products that are equipped with connection leads ensure that the latter do not get caught up in operational machinery or wheels !
- CeoTronics products 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.
- When on board an airplane always keep a transmitter/receiver switched off. Operation of the transmitter/receiver could affect the safety of the airplane and it is therefore prohibited. Never operate electronic devices on board an airplane without the express approval of an authorized member of the cabin crew.
- Do not leave CeoTronics 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.
- Charge rechargeable batteries only with the appropriate suitable CeoTronics charger. Observe the voltage and currency specifications, including those on the mains face (e.g. 230 V AC or 115 V AC). Never use the charger to recharge non-rechargeable batteries.
- When handling rechargeable batteries comply with environmental protection regulations !
  Rechargeable batteries contain toxic chemicals (e.g. cadmium). 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 CeoTronics products and rechargeable batteries out of the reach of children and any other persons who are not familiar with the handling and operation thereof.
- Packaging materials, e.g. filling materials and plastic bags are not toys and have to be kept out of the reach of children. There is a risk of children ingesting them and choking !
- Safe operation requires clean devices. Ensure that the devices are clean and in good condition at all times.
- CeoTronics products may only be used for the specific application envisaged.
- If the device is to be put out of operation definitively, bring it to a local recycling plant for disposal or send it to CeoTronics.

Fig. 1 System overview (example)

Tug Driver

Marshalling
Agent

Flight
Deck

Aircraft
Interface

Wing Walker
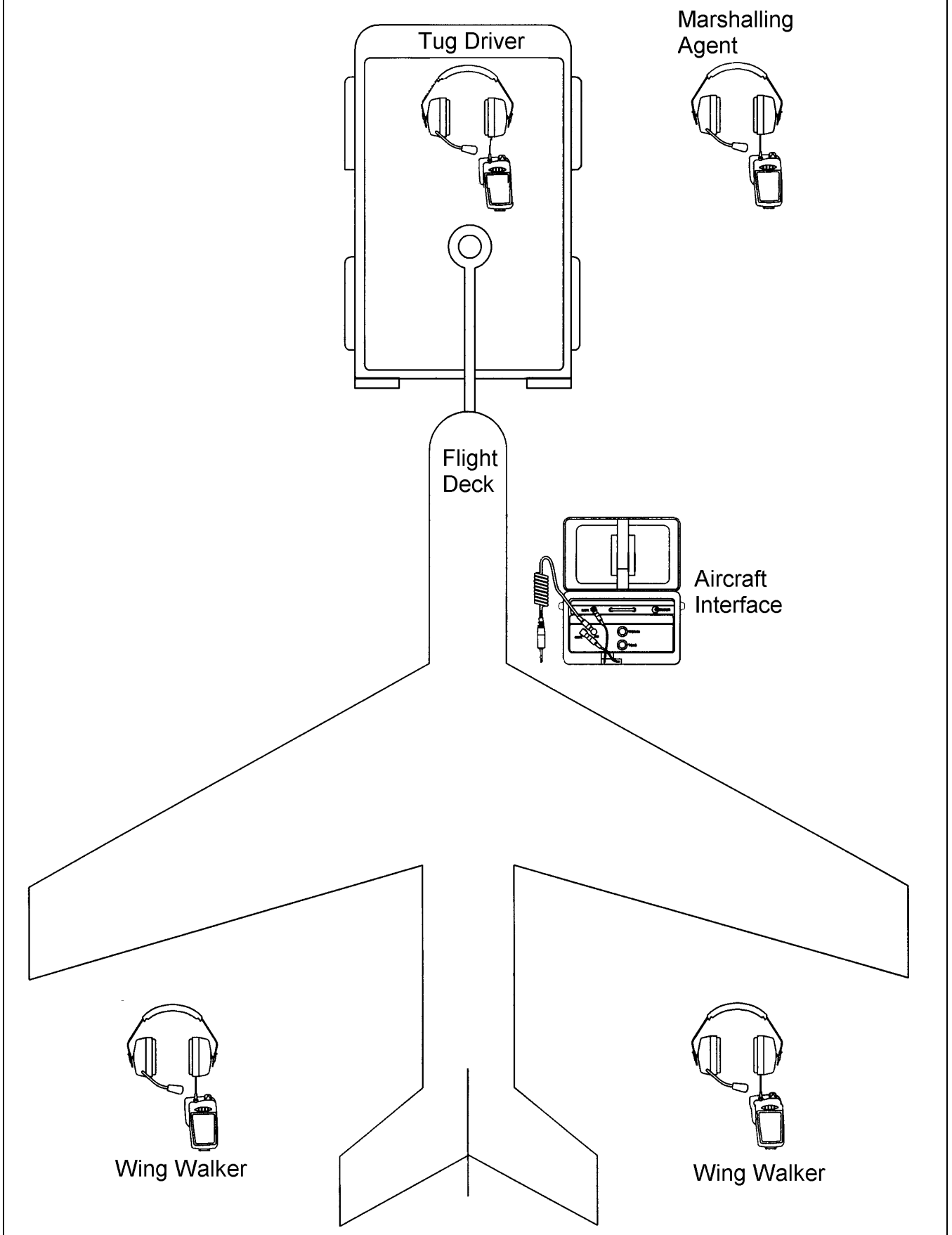
Wing Walker

2.   Description

2.1   General

This duplex communication system (see example Fig. 1) is used for aircraft push-back. The tug driver, two wing walkers and marshalling agent wear headsets in conjunction with Transmitter/Receiver Units »CT-GateCom II.24/Multi«. The four headset wearers outside the aircraft can communicate with one another. The tug driver is able to communicate with the flight deck via the Aircraft Interface that is connected to the aircraft intercom on the outside of the aircraft.

The Aircraft Interface contains the Transceiver Module CT-DECT-I24.

The range depends on the local circumstances. Protection against eavesdropping is ensured by the digital design. Channel selection is effected automatically.

2.2   Communication circuits

Wing walkers
The two wing walkers can communicate with each other, with the marshalling agent, and with the tug driver. The wing walkers are not able to speak to the flight deck. But they are able to hear the communication between the flight deck and the tug driver.

Marshalling agent
The marshalling agent can communicate with the two wing walkers and with the tug driver. He is able to hear the communication between the flight deck and the tug driver. When the tug driver speakes to the flight deck the marshalling agent can also speak to the flight deck as long as the microphone switch at the left headset muff of the tug driver is in position »PTT« or »HOT«.

Tug driver
The tug driver can communicate with the two wing walkers, with the marshalling agent, and with the flight deck. When he communicates with the wing walkers and/or with the marshalling agent the flight deck doesn't hear this communication. When the tug driver communicates with the flight deck the two wing walkers and the marshalling agent will hear this communication also.

The tug driver is the **<u>only</u>** person who is able to control the communication with the flight deck.

Flight deck
The flight deck can only communicate with the tug driver. The two wing walkers and the marshalling agent can hear this communication as well. When the tug driver speakes to the flight deck the marshalling agent can also speak to the flight deck as long as the microphone switch at the left headset muff of the tug driver is in position »PTT« or »HOT«.

2.3   System overview

The system (see example Fig. 1) consists of:
*   one Aircraft Interface CT-GateCom II.24+4 that contains the Transceiver Module CT-DECT-I24
*   one single-unit charger for the Li-Ion rechargeable battery 3.6 V/2300 mAh in the Battery Pack of the Aircraft Interface CT-GateCom II.24+4
*   four Transmitter/Receiver Units CT-GateCom II.24/Multi provided with four GroundCom Headsets

2.4   Aircraft Interface CT-GateCom II.24+4

The Aircraft Interface (Fig. 2) consists of Interface (Fig. 2/j) and Battery Pack (Fig. 2/c) which reside in a carrying bag (Fig. 2/a). The Transceiver Module CT-DECT-I24 is integrated in the Aircraft Interface.

The carrying bag is closed by means of a zip. The unit is connected to the aircraft intercom via connecting cable and male jack-plug (Fig. 2/k).
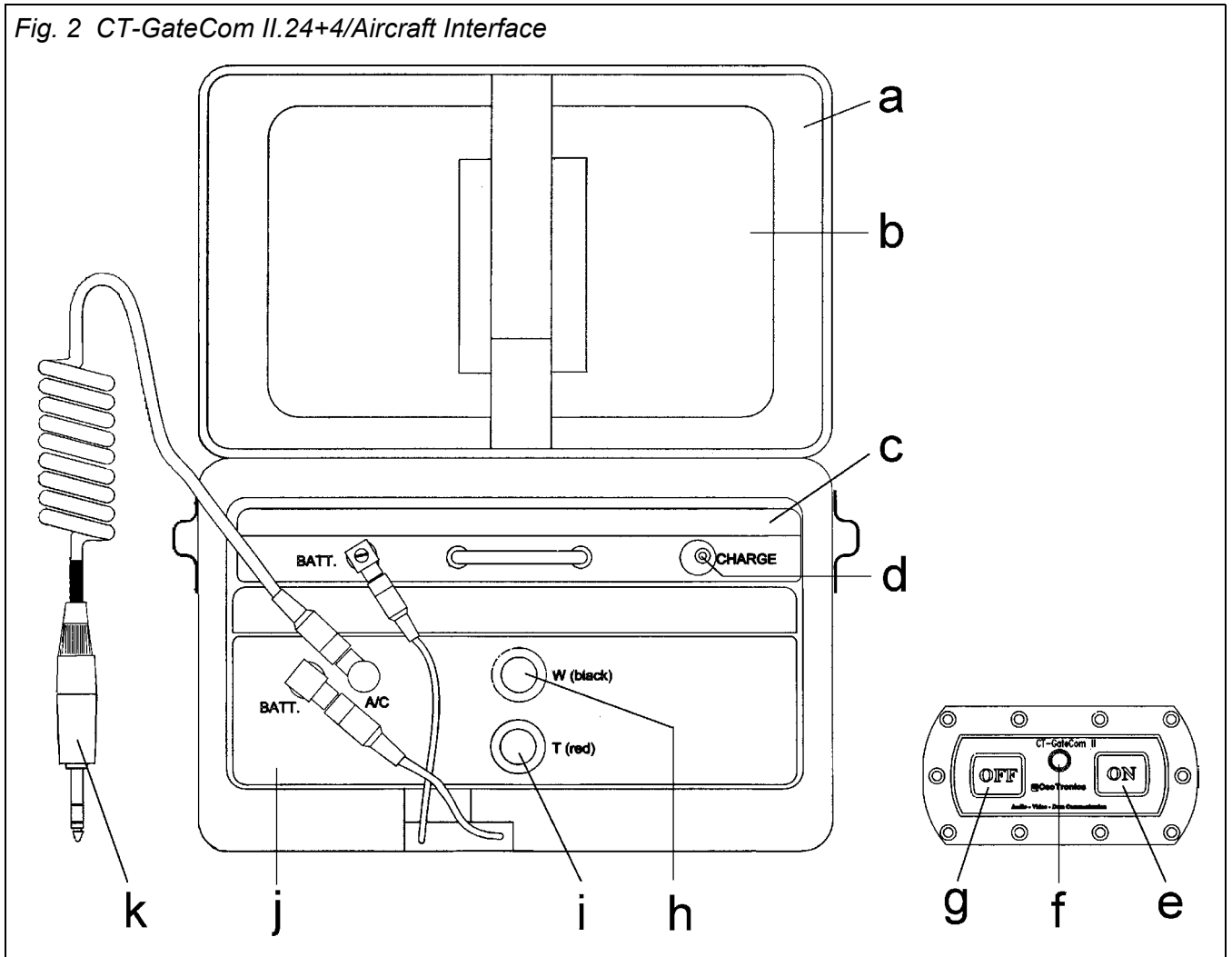
The Battery Pack contains a Li-Ion rechargeable battery 3.6 V/2300 mAh. It supplies the power for the Interface. The Battery Pack can be charged via the charging socket (Fig. 2/d).

The weatherproof carrying bag is used to stow the Interface and the Battery Pack and can be attached to the aircraft, e.g. the access cover for the aircraft intercom, by means of the carrying strap or a hook.

➜ **NOTE**

● *Keep the carrying bag closed when in use.*

Fig. 2 CT-GateCom II.24+4/Aircraft Interface

a Carrying bag for the Interface and the Battery Pack
b Stowage place for the coiled connecting cable (item »k«)
c Battery Pack for the Interface. Equipped with a Li-Ion rechargeable battery 3.6 V/2300 mAh in the unit
d Charging socket »CHARGE« for the Li-Ion rechargeable battery 3.6 V/2300 mAh in the Battery Pack
e Green push-button »ON« to switch on the unit
f Control lamp, lights up if the unit is switched on, flashes if the Battery Pack voltage is too low
g Red push-button »OFF« to switch off the unit
h Black subscription button »W« for the Transmitter/Receiver Units group 2 for wing walkers with black colored push-button bank
i Red subscription button »R« for the Transmitter/Receiver Units group 1 for tug driver and marshalling agent with red colored push-button bank
j Interface
k Coiled connecting cable with male jack-plug for connection to the aircraft intercom

2.8 Battery charger

The rechargeable Li-Ion battery 3.6 V/2300 mAh in the Battery Pack of the Aircraft Interface should only be charged with the charger supplied with the system (see section 2.3). For recharging the battey see section 5 and the special CeoTronics users manual for the charger.

3. Commissioning and operation

➔ **NOTE**

In the following the commissioning and operation of the system is described for the Aircraft Interface and the Transmitter/Receiver Units CT-GateCom II.24/Multi which are used in conjunction with communication headsets. The Aircraft Interface contains the Transceiver Module CT-DECT-I24.

3.1 Aircaft Interface

The rechargeable battery in the Battery Pack must be fully charged.

a. Open the carrying bag for the Aircraft Interface by means of the zip.

b. Take the connecting cable (Fig. 3/a) with male jack-plug (Fig. 3/c) out of the cover of the carrying bag. Lead the connecting cable with male jack-plug through one of the loops (Fig. 3/b) on the carrying bag. Close the carrying bag by means of the zip. This prevents any fluids running along the lead into the carrying bag.

Fig. 3
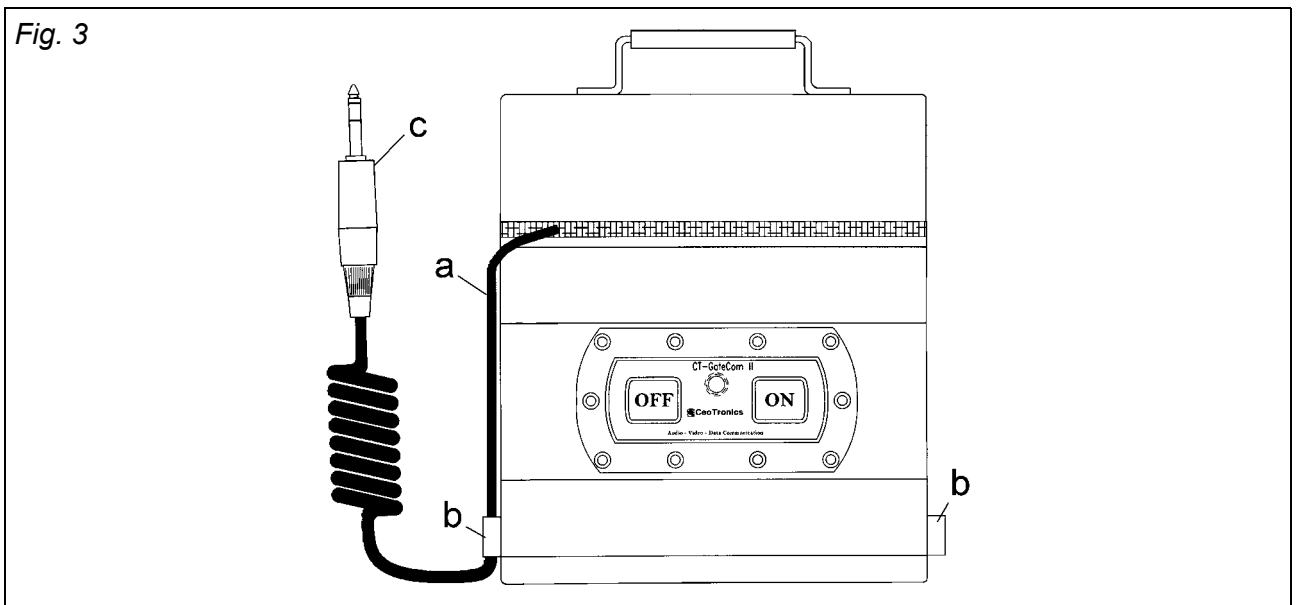
c. At the aircraft locate the aircraft intercom connector. Hang the carrying bag e.g. over the access cover or to a suitable place near the aircraft intercom connector by means of the carrying strap or by means of a hook.

Connect the Aircraft Interface via the connection cable and the male jack-plug to the female jack-plug for the aircraft intercom.

➔ **NOTE**

Keep the carrying bag for the Aircraft Interface closed at all times while in use!

3.2　Headsets and Transmitter/Receiver Units

Connect the headset via the connecting cable and plug to its Transmitter/Receiver Unit. Fasten the Transmitter/Receiver Unit by means of the clip on the rear to a suitable place on your clothing. Put on the headset.

3.3　Switching on, adjusting the speaker volume

➔ NOTES

- *The Aircraft Interface must always be switched on before the Transmitter/Receiver Units.*
- *On the Transmitter/Receiver Units the push-buttons for connection setup and connection release, placed in the middle of the push-button bank, must not be pressed until the Transmitter/Receiver Units are synchronized with the Aircraft Interface.*
- *Always leave the Aircraft Interface and the Transmitter/Receiver Units switched on as long as you work with the communication system so that immediate availability of the system is provided.*

a. First switch on the Aircraft Interface by means of the green push-button ON (Fig. 2/e). The control lamp (Fig. 2/f) illuminates. If the Battery Pack voltage is too low the control lamp flashes and the Battery Pack must be charged.

b. Switch on the Transmitter/Receiver Unit by means of the On/Off switch and volume control (rotary knob).

　After Switching on the connection synchronization between Transmitter/Receiver Unit and Aircraft Interface is effected automatically.

　Synchronization: A click is audible in the headset connected to the Transmitter/Receiver Unit approximately 10 seconds after switching on. The synchronization procedure then begins, i.e. the previously switched on Aircraft Interface seeks its Transmitter/Receiver Unit. This synchronization procedure can last approx. 30 seconds. Upon completion of synchronization – i.e. the Aircraft Interface has found its Transmitter/Receiver Unit – a high double-beep P-tone sounds in the headset, indicating that the Transmitter/Receiver Unit and the Aircraft Interface are ready for operation.

c. At the Transmitter/Receiver Unit set the On/Off switch and volume control (rotary knob) to mid-position. Later, on voice reception, adjust the desired speaker volume for your headset. Do not set the volume any higher than necessary.

d. Connection setup and release by the Transmitter/Receiver Units see sections 3.4...3.4.2.

3.4　Connection setup and release by the Transmitter/Receiver Unit(s)

3.4.1　Prerequisites

- Aircraft Interface and Transmitter/Receiver Unit(s) subscribed (sections 7...7.4)
- Aircraft Interface and Transmitter/Receiver Unit(s) switched on and synchronized (section 3.3)

3.4.2　Connection setup and release

Automatic connection setup after switching on

After the Aircraft Interface and the Transmitter/Receiver Unit(s) are switched on the connection synchronization between the the Aircraft Interface and the Transmitter/Receiver Unit(s) is(are) effected automatically. Subsequently communication is possible.

Connection release

Briefly press one of the push-buttons for connection setup and release in the middle of the push-button bank at the Transmitter/Receiver Unit. The Transmitter/Receiver Unit is disconnected from the Aircraft Interface. This procedure is acknowledged by a high beep P-tone in the headset connected to the Transmitter/Receiver Unit.

Reconnection

Briefly press one of the push-buttons for connection setup and release in the middle of the push-button bank at the Transmitter/Receiver Unit. In the headset connected to the Transmitter/Receiver Unit a high beep P-tone sounds when the connection is set up between the Transmitter/Reciever Unit and the Aircraft Interface.

3.5 End of operation

At the end of the workshift, switch off the Aircraft Interface before any of the Transmitter/Receiver Units. Recharge the rechargeable battery in the Battery Pack.

4. Safekeeping – storage

Store the cleaned devices in a clean, dry place at normal room temperature and in normal relative air humidity.

5. Recharging the Battery Pack

The rechargeable Li-Ion battery 3.6 V/2300 mAh in the Battery Pack of the Aircraft Interface should only be charged with the charger supplied with the system (see section 2.3). Otherwise the battery may be damaged. The charger is neither water-tight nor dust-tight. 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 ventilation slots of the charger.

⚠ CAUTION

Never use battery chargers to charge non-rechargeable batteries. Never open rechargeable batteries or throw them into fire. Used (defective) rechargeable batteries are subject to special waste disposal. Do not put them in the household refuse. Observe your local regulations !

⚠ CAUTION

Never charge a rechargeable battery in areas with an explosion risk – an explosion may result. Charge and change rechargeable batteries only within a building or similar environment that does not contain dangerous concentrations of volatile vapors.

Notice the special CeoTronics users manual for the charger.

To charge the battery pack, switch off the unit by means of the red push-button OFF (Fig. 2/g).

6. Maintenance

6.1 Visual inspections

Regularly examine the device, the cables and plug connectors for signs of fractures, cracks and wear. Send a defective device to CeoTronics for repair.

6.2 Cleaning

⚠ CAUTION

When cleaning ensure that no moisture penetrates inside the devices. Do not use any solvents (e.g. benzine, alcohol, etc.) for cleaning purposes !

Remove any loose dust with a soft brush. Clean, if necessary, the outside of the devices with a suitable clean cloth that has been slightly moistened with clear water, and rub the parts dry afterwards. If heavily soiled, some dishwashing liquid can be used in addition. Clean connectors with a commonly available contact cleaning agent.

7.   On-air subscription

7.1   General

➔ NOTES

- *The on-air subscription is a procedure which has to be performed <u>once</u> only ex-works. It must be performed again only in the case of an error or if another Transmitter/Receiver Unit CT-GateCom II.24 will be used in conjunction with the Aircraft Interface. The Aircraft Interface contains the Transceiver Module CT-DECT-I24.*

- *In the following the on-air subscription is described for the Aircraft Interface in conjunction with Transmitter/Receiver Units CT-GateCom II.24/Multi. The on-air subscription for the Aircraft Interface in conjunction with Transmitter/Receiver Headsets CT-GateCom II.24 is carried out analogous and in the sequence as described in sections 7.2...7.4.*

The subscription procedure is performed on the Aircraft Interface and the Transmitter/Receiver Units manually by means of a procedure carried out by the operator.

The Aircraft Interface is equipped with two radio modules. The four Transmitter/Receiver Units are equipped with one radio module each. Each unit (radio module) has its own identification number.

A max. of four Transmitter/Receiver Units (in two groups) is allocated to the two radio modules in the Aircraft Interface. The Aircraft Interface is the base unit and the Transmitter/Receiver Units are subscribed to the Aircraft Interface. First of all an allocation must always take place between the Aircraft Interface and the Transmitter/Receiver Units.

Ex-works the four Transmitter/Receiver Units are divided in two groups as follows (Fig. 2/i and h):

- **Group 1 – Transmitter/Receiver Units with red colored push-button bank for tug driver and marshalling agent. The subscription is carried out by means of the red subscription button »T« (Fig. 2/i) for group 1 at the Aircraft Interface**

- **Group 2 – Transmitter/Receiver Units with black colored push-button bank for wing walkers. The subscription is carried out by means of the black subscription button »W« (Fig. 2/h) for group 2 at the Aircraft Interface**

Other allocations in pairs can be carried out later by the customer. Please heed that the subscription of the Transmitter/Receiver Units in conjunction with the Aircraft Interface is always carried out in pairs.

If a third Transmitter/Receiver Unit is subscribed to one of the two groups of the the Aircraft Interface, the Transmitter/Receiver Unit that was subscribed first is deleted from the data base of the Aircraft Interface.

Once the subscription procedure has been successfully concluded, the identity of the communication partners is stored in the data base of the Aircraft Interface and of the Transmitter/Receiver Units. A Transmitter/Receiver Unit stores one Aircraft Interface, the Aircraft Interface stores in pairs up to four (2 x 2) Transmitter/Receiver Units.

Time Out

If the Aircraft Interface or a Transmitter/Receiver Unit is set to subscription mode and this is terminated or not completed after 2 minutes without the subscription procedure having been successfully concluded a »Time Out« occurs. The »Time Out« effects that in the Aircraft Interface the available data bases for a max. of two stored Transmitter/Receiver Units of a group and in the case of the Transmitter/Receiver Unit the available data base for the stored Aircraft Interface are deleted. After a »Time Out« the subscription procedure for the Aircraft Interface and for both Transmitter/Receiver Units must be restarted.

7.2   On-air subscription of the first Transmitter/Receiver Unit of group 1

➔ **NOTE**

- *The Transmitter/Receiver Units are subscribed in pairs (group 1 and 2 see section 1), but one after the other, to the Aircraft Interface. First the two Transmitter/Receiver Units of group 1 are subscribed one after the other to the Aircraft Interface and then the two Transmitter/Receiver Units of group 2 are subscribed one after the other to the Aircraft Interface.*

- *Two Transmitter/Receiver Units can <u>never</u> be simultaneously subscribed to the Aircraft Interface. The Transmitter/Receiver Units must always be subscribed one after the other to complete a group.*

- *For subscription the Aircraft Interface must always be switched on before the Transmitter/Receiver Unit.*

a. Connect the first headset of group 1 to the first Transmitter/Receiver Unit of group 1 (identifiable by the red colored push-button bank) via the connecting cable and plug of the headset. Open the carrying bag for the Aircraft Interface by means of the zip.

b. At the Aircraft Interface press the red subscription push-button »T« (Fig. 2/i) for group 1, keep the red push-button »T« pressed and switch on the Aircraft Interface by means of the green push-button ON (Fig. 2/e). The control lamp (Fig. 2/f) illuminates. After switching on keep the red subscription push-button »T« pressed for at least 10 seconds. Than immediately carry out step »c«.

c. At the first Transmitter/Receiver Unit group 1 with red colored push-button bank press the subscription button 1 simultaneous with subscription button 5 located at the begin and end of the push-button bank. Keep the two push-buttons pressed and switch on the Transmitter/Receiver Unit by means of the On/Off switch and volume control (rotary knob). After switching on keep the two push-buttons pressed for at least 10 seconds.

    The subscription procedure on the Transmitter/Receiver Unit has to be started within 2 minutes after the subscription procedure on the Aircraft Interface was started, otherwise a »Time Out« may occur (see section 7.1).

    After approx. 30 seconds a high double-beep tone can be heard in the headset. This indicates that the on-air subscription has been successfully completed. A second high double-beep tone finally reports that the Transmitter/Receiver Unit has synchronized itself with the Aircraft Interface.

7.3   On-air subscription of the second Transmitter/Receiver Unit of group 1

a. Switch off the Aircraft Interface with the red push-button OFF (Fig. 2/g). The control lamp (Fig. 2/f) extinguishes.

b. Connect the second headset of group 1 to the second Transmitter/Receiver Unit of group 1 (identifiable by the red colored push-button bank) by means of the connecting cable and plug of the headset. Ensure that the Transmitter/Receiver Unit is switched off. The on/off switch and volume control (rotary knob) must be set to OFF .

c. Repeat the subscription procedure for the Aircraft Interface and the second Transmitter/Receiver Unit of group 1 as described in section 7.2, steps »b« and »c«, for the Aircraft Interface and for the first Transmitter/Receiver Unit of group 1.

7.4   On-air subscription of the first and second Transmitter/Receiver Unit of group 2

The subscription procedure for the Aircraft Interface and the two Transmitter/receiver Units of group 2 (identifiable by the black colored push-button bank) is carried out as described in sections 7.2 and 7.3 for the two Transmitter/Receiver Units of group 1. At the Aircraft Interface the black subscription push-button »W« (Fig. 2/h) for group 2 is used instead of the red push-button »T« for group 1 (Fig. 2/i).

DIN EN ISO 9001 — Certified in accordance with — CeoTronics AG Germany

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Federal Communications Commission
Authorization and Evaluation Division
Equipment Authorization Branch
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Columbia, MD 21046

January 31, 2002

Applicant's declaration concerning RF Radiation Exposure

We hereby indicate that the product
    CT-DECT-I24
is considered to be a mobile transceiver.

A safety distance of 20 centimeter (7.9 inch) between the Dect-module and human person must be ensured.

The output power is maximum +20.6 dBm.

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

A safety statement will be integrated in the user's manual to provide end-users with transmitter operating instructions for satisfying RF exposure compliance.

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Rödermark, January 31, 2002

Berthold Hemer
Member of board R & D