CT-DECT Systems

Technical Specifications

Know-how & Experience

CeoTronics – More than just headsets

CeoTronics has established itself as a leading systems provider for mobile digital short-range radio networks and terminal equipment, as well as high-quality professional communications headsets and systems.

Performance leader in the premium segment
Ever since its formation in 1985, CeoTronics has been leading the industry in quality and performance. First-class consultancy and customer services, superb product quality in terms of features and workmanship, the use of cutting-edge technology and a flexible approach to developing custom systems have all played their part.

Pioneering technology and innovations
Our ability to handle the highly diverse technical requirements specified by our customers stems from our continuous investment in our in-house R&D work. Our customers also value the easy access to our engineering know-how, especially where custom orders are involved. This know-how draws on the technical expertise of our 17 in-house design engineers, several of whom possess doctoral degrees.

Expert partnerships
The best-known premium manufacturers of protective headgear, radios, specialized vehicles and aircraft rely on the high-end products from CeoTronics and CT-Video GmbH. All individual products and systems complement one another perfectly, thus fulfilling the most stringent customer demands for all-in-one solutions.

System compatibility
CeoTronics communications accessories are available for digital terminals supporting the TETRA and TETRAPOL protocols, and for all standard analog radios. Where required, even the mobile CeoTronics digital radio networks and terminals for local operations (CT-DECT) can be integrated as extensions to the above-mentioned wide-area radio networks.

Superlative quality management
The economic viability of an investment is derived from its usage and the costs associated with a product over its entire useful life. Product costs stem not only from the purchase price itself, but are crucially influenced by product quality. No customer can afford long-term or frequent product failures or costs for repeated repairs, to say nothing of accidents caused by malfunctioning communications systems. Demanding customers value the functional stability, durability and superior economic viability of CeoTronics products: never cheap, but always representing excellent value.

Certified and guaranteed
Achievements in quality management meant that CeoTronics was the first communications business of its peers to acquire ISO 9001:2000 (incl. KBA – the German Federal Motor Transport Authority) and ATEX Directive 94/9 certification. CeoTronics AG is a „registered NATO supplier“ and thus an official component supplier to NATO.

The results from customer satisfaction surveys conducted regularly over the years are also very clear: the recommendation rate for CeoTronics products has been over 95% for many years now, in 2011 even 100%.

Innovation and permanent improvements to quality lie at the heart of our corporate philosophy. CeoTronics uses components only of the highest quality and inspects each product individually before dispatch. We work to our own stringent manufacturing and quality assurance standards, carry out development work and production in Germany and guarantee excellent performance for the price. As a result, we can offer up to 3-year warranties on all CeoTronics products.

CT-DECT – Digital, mobile duplex radio system

In the field of professional operations, there are many situations where duplex-mode communication brings significant advantages. The CT-DECT system makes such operations possible, letting companies explore a range of truly novel strategies. The fact that personnel can now speak and listen simultaneously means that both hands are left free to concentrate on the actual assignment: working procedures thus become both safer and more efficient. This can be a decisive fact in critical situations. While work safety is crucial, proof against tapping is another important aspect to consider. CeoTronics guarantees the highest levels of security for its system: two levels of authentication plus 64-bit encryption render eavesdropping effectively impossible. The CT-DECT system requires no licensing, registration or payment of any fees. Even in the standard configuration, it can support a work team of up to five persons. Integrating an additional radio terminal will allow a team leader to keep in contact with other teams or a central control / coordination center, for example. CT-DECT systems are also available for more than five participants and with GSM/radio interfaces. Such systems can integrate with, extend or even replace the intercom systems as found in vehicles, shipping or smaller vessels.

CT-DECT Headset Ex

CT-DECT Headset in ATEX

Many working environments not only involve high levels of noise, but also additional dangers. Explosion hazard areas in particular constitute a particularly challenging scenario for personnel and communications systems. The CT-DECT Headset Ex is the world's first headset with an embedded digital radio that is appropriately certified and approved for use in explosion hazard areas.

Enabling flawless communication with unlimited freedom of movement, it increases working safety – especially in high-noise environments – and is rated at the high „II 2G Ex ib IIB T4" protection class.

Depending on the environmental conditions, participants can speak and listen „hands-free" at a range of up to 200 meters without needing to press any additional keys. As with the CT-DECT Headset, the ATEX model also enables duplex communication for up to 5 participants, without requiring any additional fixed components.

Possible alternative: by installing a CT-DECT Conference unit outside the Ex area – but inside the radius of the sender – the number of participants can be increased to as many as eight.

CT-DECT Headset Ex

The CT-DECT Headset Ex is characterized by highly streamlined usability, offering just a few, clearly distinguishable control elements. In operative use, it configures itself almost automatically, since the device selects the channel, the range control and range warning settings itself. Even if the connection is lost, the unit will attempt to rejoin the CT-DECT network automatically.

Power is supplied via a modern lithium-polymer rechargeable battery, which is integrated into the right-hand ear muff. Power-on time – assuming the unit is permanently in use (uninterrupted send / receive) – is approx. 10 hours. The rechargeable ear muff has a plug-in system that ensures quick changeover (outside the ATEX zone) and thus minimizes downtime when used over multiple shifts. Nor is transmission power a concern, with average values in the region of just 10 mW.

An additional cost advantage: unlike traditional radio, the DECT standard requires no registration or payment of fees in many countries.

CT-DECT Headset

CT-DECT Headset

CT-DECT systems offer their users a wealth of communications options over short distances. All participants communicate wirelessly and in duplex, i.e. simultaneous talk and listen is possible at any time. In the standard configuration, up to 5 persons can communicate with one another in this way. An optionally-available CT-DECT Case or CT-DECT Conference unit can also extend the network up to a total of 8 users.

The CT-DECT Headset operates wirelessly, while voice is picked up by a noise-cancelling microphone and transmitted via radio. Optionally, each headset can also be equipped with CT-ASR (Ambient Sound Reception).

This additional technical feature adds another layer of work safety, since it enables the user to pick up warning signals or sounds from the environment. To avoid damage to hearing, environmental noise is also reduced down to a level of 85 dB(A) automatically.

In all cases, headsets are supplied with the necessary operating voltage by a rechargeable high-performance battery, integrated into the ear protection muffs. The CT-DECT Headset is also available as an ATEX-approved model – see pp. 4-5.

CT-DECT Multi

CT-DECT Multi

CT-DECT Multi is the portable digital radio within the CT-DECT communications systems product range. It provides all users a wireless connection to the non-licensed, free-to-use CT-DECT network – while allowing them the choice of any headset!

The CT-DECT Multi can be worn on a belt, for example, and then connected directly to a CeoTronics communication headset. It handles voice processing and subsequent transmission via the CT-DECT radio network.

The key panel on the front serves to subscribe the CT-DECT Multi when using CT-DECT Conference, and can be programmed to include additional functions as required. The rotary knob on the upper side is also a dual-purpose control, offering the functions of an ON / OFF switch and volume control in one unit.

Practical: power is supplied using standard AA-type (rechargeable) batteries, which are available throughout the world. Should available battery power run low, the user is informed of the battery charge status via an acoustic warning signal and a LED that is placed prominently on the unit.

CT-DECT Conference

CT-DECT Conference

CT-DECT Conference is a stationary component of the CT-DECT radio system and was developed for permanent installation in factory buildings, industrial plant, vehicles, shipping and aviation equipment.

The communication system has a permanent external power supply and is deployed in situations where more than five persons need to communicate among themselves. On the press of a button, this enables secure and comprehensive duplex-mode communications for up to eight mobile participants. In situations where wired intercom systems or in-house phone networks are already available, users once again have the option of integrating CT-DECT Conference via an external audio interface.

Additional communications systems can also be integrated into the CT-DECT network using the audio interface supplied.

All components of the CT-DECT communication system are IP54-rated and especially resistant to water and dust: made to survive the toughest of operational conditions.

CT-DECT Case

CT-DECT Case

All too often, professional operations take place at a number of locations under extremely adverse conditions. For such scenarios, the CT-DECT communication system has been built into a mobile, exceptionally robust and weatherproof casing. To ensure optimum usability, all of the critical controls such as the ON / OFF switch (with display), battery status display, subscription button and plug have been placed on the exterior surface. This means it takes only seconds to set up a digital communications network for up to eight participants – even under the harshest conditions. All at the touch of a button!

The case is certified for military use and equipped with the CT-DECT module, a compartment for AA-type batteries and all of the software options required for flawless voice transmission.

This includes such features as CT-DNR (Digital Noise Reduction), automatic gain control (AGC) and echo cancelling. All of these features are controlled via a digital signal processor.

As with CT-DECT Conference, additional communications systems can also be easily integrated into the CT-DECT network if required, using the audio interface supplied.

Technical Specifications

CT-DECT Headset Ex

Physical	
Weight:	approx. 530 g
Electronics	
Transmitting frequency:	1880 MHz - 1900 MHz
Access mode:	duplex (semi-duplex possible)
Channels:	120 – system selects channels automatically
Frequency selection:	system adjust frequency automatically
Voice modulation:	32 kbps ADPCM
Data transfer rate:	1152 kB / s
Power supply:	lithium polymer 3,7 V / 1250 mAh
Power-on time:	approx. 10 hours – depending on ambient temperature and battery capacity
Battery charge time:	approx. 2 - 3 hours
RF modulation method:	GFSK
Receiver sensitivity:	- 86 dBm
Transmitting power:	10 mW (average), 240 mW (while working), < 500 mW (peak)
Range:	approx. 300 m for line-of-sight (los), approx. 30-50 m in buildings, approx. 70-100 m in built-up areas and wooded areas
Microphone	
Microphone type:	noise-compensating electret microphone
Sensitivity:	- 40 dB (± 3 dB) re 1 V / Pa at 1 kHz
Loudspeaker	
Impedance:	50 Ω (100 Ω parallel)
Rated output:	0.3 W
Distortion:	less than 5 % at 1 kHz 0.3 W

Technical Specifications

Surroundings	
Operating temperature:	-20 °C to +40 °C
Storage temperature:	-20 °C (min. storage temperature), +60 °C (max. storage temperature)
EC Directive:	94/9/EC
IP rating:	≥ IP40
EN standards:	EN 60079-0
	EN 60079-11
	EN 301 406 – DECT radio
	EN 301 489-1 – EMC
	EN 301 489-6 – EMC
	EN 301 489-9 – EMC
Certification:	TÜV 07 ATEX 552822 X
Protection level:	II 2 G Ex ib IIB T4

Technical Specifications

CT-DECT Headset

Physical	
Weight:	approx. 530 g
Electronics	
Transmitting frequency:	1.880 MHz - 1.900 MHz
Access mode:	TDMA 24 time slices/channel, duplex (semi-duplex possible)
Channel spacing:	1.728 MHz
Channel selection:	automatic, 10 channels
Transmitting power (average):	10 mW
Transmitting power:	10 mW (average), 240 mW (peak)
Voice modulation:	32 kbps ADPCM
Data transfer rate:	1.152 kB/s
RF modulation method:	GFSK
Receiver sensitivity:	-86 dBm
Power supply:	NiMH 3.7 V/2300mAh
Power-on time:	approx. 20 hours – depending on ambient temperature and battery capacity
Battery charge time:	approx. 2 - 3 hours
Range:	approx. 300 m for line-of-sight (los), approx. 30-50 m in buildings, approx. 70-100 m in built-up areas and wooded areas
Microphone	
Microphone type:	noise-compensating electret microphone
Sensitivity:	-40 dB (± 3dB) re 1V/Pa at 1 kHz
Loudspeaker	
Impedance:	16 Ω (32 Ω parallel)
Rated output:	0.3 W
Distortion:	less than 5 % at 1 kHz 0.3 W
Surroundings	
Operating temperature:	approx. -20 °C to +40 °C
Storage temperature:	approx. -20 °C (min. storage temperature), +60 °C (max. storage temperature)
EN standards:	EN 301 406 – DECT radio
	EN 301 489-1 V1.4.1 – EMC
	EN 301 489-6 V1.2.1 – EMC
	EN 301 489-9 V1.3.1 – EMC
	EN 50360 – Specific Absorption Rate (SAR)
	EN 50361 – Specific Absorption Rate (SAR)
	EN 50371 – Specific Absorption Rate (SAR)

Technical Specifications

CT-DECT Multi

Physical	
Weight:	approx. 245 g / 300 g (without / with batteries)
Dimensions (L / W / H):	approx. 115 x 80 x 50 mm
Electronics	
Transmitting frequency:	1.880 MHz - 1.900 MHz
Access mode:	TDMA 24 time slices/channel, duplex (semi-duplex possible)
Channel spacing:	1.728 MHz
Channel selection:	automatic, 10 channels
Transmitting power (average):	10 mW
Transmitting power:	10 mW (average), 240 mW (peak)
Voice modulation:	32 kbps ADPCM
Data transfer rate:	1.152 kB/s
RF modulation method:	RF modulation method:
Receiver sensitivity:	-86 dBm
Power supply:	3 x AAA (rechargeable) batteries
Power-on time:	approx. 20 hours – depending on ambient temperature and battery capacity
DSP Features:	DNR
Range:	approx. 300 m in open spaces, approx. 30-50 m in buildings, approx. 70-100 m in built-up areas and wooded areas
Power consumption:	approx. 100 mA
Surroundings	
Operating temperature:	approx. -20 °C to +55 °C
Min. storage temperature:	approx. -40 °C
Max. storage temperature:	approx. +80 °C
Air humidity:	95 % / 60 °C 8 hours; 95 % / 30 °C 20 hours
Vibration, shock, temperature, humidity:	CT-DECT Multi conforms to MIL-STD-810-F
IP rating:	IP54
EN standards:	EN 301 406 – DECT
	EN 301 489-1 V1.4.1 – Electromagnetic Compatibility (EMC)
	EN 301 489-6 V1.2.1 – Electromagnetic Compatibility (EMC)
	EN 301 489-9 V1.3.1 – Electromagnetic Compatibility (EMC)
	EN 60950 (2003-03) – Electrical Safety
	EN 50360 (2001-07) – Specific Absorption Rate (SAR)
	EN 50361 (2001-07) – Specific Absorption Rate (SAR)
	EN 50371 (2001-07) – Specific Absorption Rate (SAR)

Technical Specifications

CT-DECT Conference

Physical	
Weight:	approx. 430 g
Dimensions (L/W/H):	approx. 200 x 110 x 74 mm
Electronics	
Transmitting frequency:	1.880 MHz - 1.900 MHz
Access mode:	TDMA 24 time slices/channel, duplex (semi-duplex possible)
Channel spacing:	1.728 MHz
Channel selection:	automatic, 10 channels
Transmitting power (average):	10 mW
Transmitting power:	10 mW (average), 240 mW (peak)
Voice modulation:	32 kbps ADPCM
Data transfer rate:	1.152 kB/s
RF modulation method:	GFSK
Receiver sensitivity:	-86 dBm
Range:	approx. 300 m for line-of-sight (los), approx. 30-50 m in buildings, approx. 70-100 m in built-up areas and wooded areas
Connectivity to other radio equipment:	possible
Surroundings	
Operating temperature:	approx. -20 °C to +55 °C
Min. storage temperature:	approx. -40 °C
Max. storage temperature:	approx. +80 °C
EN standards:	EN 301 406 – DECT radio
	EN 301 489-1 V1.4.1 – EMC
	EN 301 489-6 V1.2.1 – EMC
	EN 301 489-9 V1.3.1 – EMC

Technical Specifications

CT-DECT Case

Physical	
Weight:	approx. 1,300 g
Dimensions (L/W/H):	approx. 206 x 167 x 90 mm
Electronics	
Frequency:	1.880 MHz - 1.900 MHz
Access mode:	TDMA 24 time slices/channel, duplex (semi-duplex possible)
Channel spacing:	1.728 MHz
Channel selection:	automatic, 10 channels
Transmitting power (average):	10 mW
Transmitting power:	10 mW (average), 240 mW (peak)
Voice modulation:	32 kbps ADPCM
Data transfer rate:	1152 kB/s
RF modulation method:	GFSK
Receiver sensitivity:	-86 dBm
DSP Features:	DNR, AGC, echo cancelling
Range:	approx. 300 m for line-of-sight (los), approx. 30-50 m in buildings, approx. 70-100 m in built-up areas and wooded areas
Power supply:	3 x AAA (rechargeable) batteries
Power-on time:	approx. 8 hours – depending on ambient temperature and battery capacity
Power consumption, 4-user case:	approx. 150 mA
Power consumption, 8-user case:	approx. 250 mA
Surroundings	
Operating temperature:	approx. -20 °C to +55 °C
Min. storage temperature:	approx. -40 °C
Max. storage temperature:	approx. +80 °C
Air humidity:	95 % / 60 °C 8 hours; 95 % / 30 °C 20 hours
Vibration, shock, temperature, humidity:	CT-DECT Case conforms to MIL-STD-810-F
IP rating:	IP54
EN standards:	EN 301 406 – DECT
	EN 301 489-1 V1.4.1 – Electromagnetic Compatibility (EMC)
	EN 301 489-6 V1.2.1 – Electromagnetic Compatibility (EMC)
	EN 301 489-9 V1.3.1 – Electromagnetic Compatibility (EMC)
	EN 60950 (2003-03) – Electrical Safety

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