ClearCalm User's Manual

Draft Version

Caution

Read this manual carefully. The ClearCalm communications system from Grayling will perform as designed only if used and serviced according to these instructions. If this is not done, this product could fail to perform as designed and persons who rely on this product could sustain personal injury or death.

Limited Warranty

Grayling Inc. Manufactured parts and components, with the exceptions noted below, are warranted to the original purchaser against defects in workmanship and materials for two (2) years from the date of the original purchase of the new product.

Grayling will, at its option, repair or replace the product. Damage resulting from misuse and / or abuse is not covered.

This limited warranty does not apply to failures caused by alteration or repair not performed by Grayling Wireless Inc. or it's Authorized Repair Centers. Warranties made by Grayling with respect to this product are voided if the product is not used according to the instructions in this manual

Batteries are not covered under this warranty

Grayling Wireless Inc. makes no other warranty, expressed or implied for its products.

We encourage our customers to request a demonstration of this equipment prior to use, or for any additional information relative to use or repairs.

Warnings and Cautions

Caution

Do not disassemble or alter this unit in any way. This will void the intrinsic safety rating and may affect the intrinsic safety of the device.

Always inspect ClearCalm for damage before use. If damage is found, immediately remove the device from service. Never use a damaged or non functioning communications system.

Ensure the radio you are using with ClearCalm in rated intrinsically safe before entering a hazardous atmosphere.

Failure to follow the above warnings can result in personal injury or death.

Caution

Evaluate this unit and any radio transceiver with which it may be used. Be certain the unit is not affected adversely by radio frequency energy.

The performance of the ClearCalm systems radio interface feature will only function as well as the handheld portable radio performs.

ClearCalm must be tested before entering a hazardous atmosphere. If the system fails to operate as designed, disconnect at the radio and use the radio independently from the communications system.

Do not attempt any repairs beyond those specified in this manual; otherwise, serious injury or death could result. Only trained and certified personnel, authorized by Grayling, are permitted to maintain this ClearCalm system.

Warning

TO PREVENT IGNITION OF A HAZARDOUS ATMOSPHERE, BATTERIES MUST BE CHANGED IN AN AREA KNOWN TO BE NONHAZARDOUS.

Warning

Do not attempt to charge Alkaline Batteries.

PREPARATION FOR USE

Prior to use, please ensure you have read and understand the **"Warnings and Cautions"** section of this manual.

The items listed below are included with your ClearCalm system. If these components are missing or damaged, please contact the place of purchase immediately.

- Batteries, 3 AAA size Alkaline (Receiver), and 1 AAA size Alkaline (Transmitter)
- Transmitter module
- Receiver Module
- Interface cable (If ordered)

SYSTEM DESCRIPTION & PRODUCT INFORMATION

WARNING – To ensure your personal safety, read the "Warnings and Cautions" section before use of this ClearCalm communications system.

The ClearCalm SCBA communications system allows a user to communicate clearly and easily while wearing a Self Contained Breathing Apparatus, (SCBA). It is designed to allow for hands free voice amplification, hands free person-to-person team communications, as well as hand held portable radio communications to take place simultaneously.

Contacting Grayling Inc.

To contact Grayling call:

1-403-250-8965 (USA & Canada)

Address correspondence to :

Grayling Wireless Inc.
4321 23B ST NE
Calgary, Alberta, Canada
T2E 7V9

Or visit us at:

www.gryw.com

REGULATORY INFORMATION

EMC

The CC product complies with IC and FCC to the following regulatory requirements:

Canada: ICES-003, RSS210, Category 1 Equipment
IC ID Number: 5388A-0001

US: FCC Part 15, Subpart B & C, Class A Digital Device
FCC ID Number: TOC-0001 (Transmitter Module)
TOC-0002 (Receiver Module)

For Canada:

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This device has been designed to operate with an antenna having a maximum of 0 dB. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

For United States:

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.

The product is CSA certified and UL listed to the following Intrinsically Safe standards:

Canada: CAN/CSA C22.2 No.157-92; Intrinsically Safe and Non-incendive Equipment for Use in Hazardous Locations.

United States: UL 913; Intrinsically Safe Apparatus and Associated Apparatus for Use In Class I, II, and III, Division 1, Hazardous (Classified Locations.

Product Specification and Safety Information

The product is CSA certified to the following Intrinsically Safe standards:

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United States: UL 913; Intrinsically Safe Apparatus and Associated Apparatus for Use In Class I, II, and III, Division 1, Hazardous (Classified Locations.

- ClearCalm has been tested and certified to CSA to be intrinsically safe for Class 1, Division 1, Groups A,B,C,D
- **"Exia"** on the product label indicates that the product have been tested and certified by CSA to be Intrinsically Safe for: Class I, Division 1, Groups A, B, C and D.

Temperature Class (T-Code) and Approved Batteries List

The Transmitter and Receiver units with the specific battery have been approved intrinsically safe and incapable of causing ignition by thermal effects at its rated Temperature Class.

Table 1 below list the approved battery types for the Transmitter and Receiver units and their associated Temperature Class (T-Code).

Table 1. Approved Batteries and Temperature Class

ClearCalm Product	Battery Type	Manufacturer & Models	Temperature Class (At 59°C Ambient)
Transmitter Model: CCT01A	Alkaline – AAA Cell	Energizer:E92, EN92	T3C
		Duracell: PC2400, MN2400	T4
		Xellex: LR03	T4
Receiver Model: CCR01A	Alkaline – AAA Cell	Energizer: E92, EN92	T3C
		Duracell: PC2400, MN2400	T4
		Xellex: LR03	T4

Transmitter Module (Model CCT01A)

Power Requirements	1.5 VDC, one AAA size alkaline battery
Frequency Band	902 – 928 MHz (900MHz ISM Band)
Total Channel Capacity	5
Operating Temperature	-31 °C to 49°C
Storage Temperature	-33 °C to 71°C
Relative Humidity	95 %
Operating Altitude	To 4,572 m (15,000 ft)

Receiver Module (Model CCR01A)

Power Requirements	4.5 VDC (total voltage), three AAA alkaline batteries
Frequency Band	902 – 928 MHz (900MHz ISM Band)
Total Channel Capacity	5
Operating Temperature	-31 °C to 49°C
Storage Temperature	-33 °C to 71°C
Relative Humidity	95 %
Operating Altitude	To 4,572 m (15,000 ft)

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Receiver Model: CCR01A	Alkaline – AAA Cell	Energizer: E92, EN92	T3C
		Duracell: PC2400, MN2400	T4
		Xellex: LR03	T4

Installation & System Operation

TRANSMITTER INSTALLATION & OPERATION (TX)

The ClearCalm transmitter is designed to operate inside a Scott Av 2000 or AV 3000 SCBA facepiece.

To begin transmitter operation install the supplied N-Cell Alkaline battery as shown in Figure ??????. Please observe battery polarity, failure to do so will result in a non-functioning Transmitter.

When the battery is inserted you will observe a light sequence on the bottom on the TX, this indicates the transmitter has powered up correctly. **(EXPLAIN FAULT CONDITIONS)**

To install the ClearCalm transmitter in an SCBA facepiece pull the back the seal located in the chin area of the mask and expose the empty "void" under the nose cup. Ensure that the battery compartment and antenna are oriented towards the top of the mask and insert the transmitter with the microphone pointing towards the front of the mask. (see figure ????)

Once the battery is inserted and the power up sequence is complete the transmitter will shut down awaiting use. Turning the Transmitter on is performed by breathing as it occurs through the SCBA, don the SCBA facepiece, take a breath and begin speaking, the Transmitter will power up and begin transmitting to the receiver.

If the user is required to remove their SCBA regulator and / or SCBA facepiece, they may do so as normal. The Transmitter will shutdown within 2.5 seconds if breathing is not detected from the user.

Note: There is no on / off button for the Transmitter. The on / off function works through breathing detect and a time out function.

RECEIVER OPERATION (RX)

The ClearCalm Receiver is designed to be user in conjunction with the users existing radio system by replacing the lapel Microphone.

Begin by installing the supplied AA alkaline batteries as shown in figure ??????. Please observe battery polarity, failure to do so will result in non functioning receiver.

To install the receiver, remove the existing lapel microphone from the radio. Attach the ClearCalm Receiver to the radio using the interface connection. (see figure ????)

To begin receiver operation, turn the on / off / volume knob clockwise, (figure ????). You will hear a low / high tone and observe an led sequence (**EXPLAIN SEQUENCE**) indicating that the receiver is on.

To set receiver volume, continue to turn the on / off / volume knob clockwise until desired volume is reached.

The channel changing knob is located adjacent to the on / off / volume knob on the receiver. To operate the channel changing knob, rotate clockwise or counterclockwise

until the desired channel is reached. A detailed explanation of the channel function is explained in the “System Operation” section of this manual.

INTERFACE CABLE CONNECTION

ClearCalm, in certain variants, is available with a detachable radio interface cable. To attach the cable, line up the red indexing dots on male and female ends of the connection. Push the cable together firmly until they “click” together.

To disengage the connector, grab the knurled portion of the fitting and pull straight down. The connector will disengage from the receiver body.

SYSTEM OPERATION & TX / RX ASSOCIATION

To begin using ClearCalm as a system, please ensure you have read sections 5.0 and 6.0 in this manual and performed all steps.

To begin use of the ClearCalm system, the Transmitter and Receiver must be associated to ensure proper radio operation. To perform the association, follow the following steps;

1. Turn on the receiver unit.

2. Hold the Transmitter and receiver unit together. (figure ????)

3. Simultaneously depress the association buttons on the Transmitter and Receiver, you will hear four beeps indicating a successful association. (figure ????)

Note: to ensure proper operation, once a TX and RX have been associated they should remain together as a pair for the intended duration of use. If a new TX is selected which is different from the previously associated TX, a new association MUST occur to ensure proper radio operation.

Radio Communication, (Lapel Microphone without TX)

Once the receiver and radio are connected, they may be worn on a typical location on the body. The receiver can be used separate from the transmitter as a lapel microphone to facilitate radio communications.

To use the receiver as a lapel microphone, press the PTT button located on the side of the receiver to send messages. Release the PTT button to receive messages

Note: To use the receiver as a lapel microphone, batteries must be installed and the receiver must be turned on and connected to a radio. The volume control on the receiver operates independently from the volume control on the radio

Short Range Communication

To begin using the short range feature, ensure that the batteries are installed and installation into the facepiece has occurred, (section 5.0). Also ensure that the TX / RX association has occurred, (section 8.0). To begin short range operation the user must first don their SCBA facepiece and attach the regulator. As explained in section 5.0, the first breath activation feature of the SCBA will turn on the TX. Once the user begins speaking, voice is transmitted through the receiver, (simple voice amplifier). The users voice is also transmitted to any additional receivers within the systems range, allowing hands free “team” communications to occur.

Note: Only one user at a time may occupy the short range channel. Other users who are using the same sub-channel, (explained “Sub-Channel Operation”) must wait until the channel is clear to begin speaking.

Radio Communication, (with TX)

While using the short range feature, the user may at any time perform radio communications by pressing the PTT button located on the receiver. At this point the system will transmit the message across the users radio. To receive radio messages, release the PTT button on the receiver.

Note: For radio communication to occur, the TX MUST be associated with the RX it will be used with.

Note: All incoming radio messages will interrupt short range communication. This is a safety feature designed to ensure that any emergency incoming messages are received by the user.

Cleaning

• The ClearCalm Transmitter and Receiver can be cleaned by wiping with a simple soap and water solution. Do not immerse the components in water or liquid.

• To disinfect the Transmitter, apply the disinfectant solution to the transmitter and wipe off. Do not immerse the components in water or liquid.

Storage

• To store the Receiver and Transmitter for extended periods. Remove the batteries from both and store in a dry location. To resume use after storage, please ensure to follow the instructions located in the "Installation and System Operation" section of this manual.

Maintenance / Troubleshooting

ASSEMBLIES / REPLACEMENT PARTS

Table 1. Equipment List – ClearCalm Product

Description	Part Number	Comments
Transmitter		
Transmitter Battery		
Receiver		
Receiver Battery		
Radio Interface Cable		
User Manual		
Fit Kit	**AV3000**	**Use with Scott AV3000**