



**HCS** Head Connection Systems Ltd.

Private Address Wireless Network

## Two Way Communications for Extreme Noise Environment

MODEL 460C  
OPERATING MANUAL



**Thank you for buying this HCS transceiver.  
This instruction manual contains important safety and operating instruction.  
Please read it carefully before using the Headset.**

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For Extreme Noise Environment

**1. Model-460C was tested and approved according the FCC part 90 for Programmable UHF commercial licence - FCC ID: M5U-101-460C**

**GENERAL DESCRIPTION**

Two-way Programmable radio headsets ( earmuffs), up to 4 frequencies, UHF (450-470MHz) transceiver, Ni-HM rechargeable battery operated, built into a highly efficient hearing protection for secure voice communications in **noisy environments**. Built in connector for **Sell- phone** / music plug or frequencies program cable.

**FUNCTIONALITY**

Enables wireless communication between all headsets and with an optional base-station on common frequencies. The noise-suppressing microphone efficiently reduces background noise. The headset microphone and speakers are used simultaneously with a connected cellular phone. Transmission can be initiated by manually **push-to-talk** or **hands free** VOX system.

**APPLICATIONS**

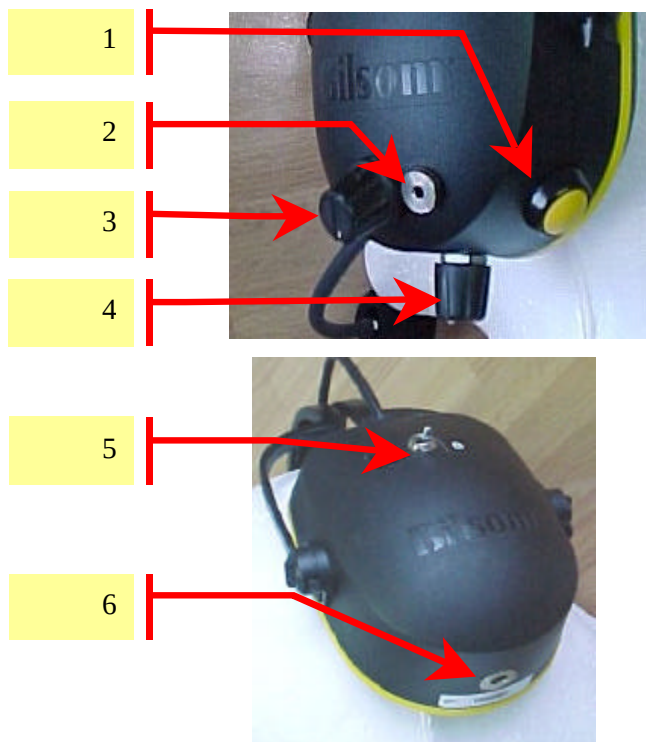
The applications for PAWN are many; Shop floors, Power plants, Forestry, Construction sites, Quarries, Recreational areas and other noisy areas where secure communication over short distances are essential. The plug-in **sell-phone** enables clear communication with the outside world.

**OPERATING INSTRUCTIONS**

Simplified controls make PAWN Headsets easy to use. A four-position switch selects the operating mode, either **VOX /PTT** or **PTT**. Rotary switch controls **On/Off/Volume**.

**2. PRODUCT LAYOUT**

1. **PTT** - "talk" button for manual transmission
2. Program /cell phone Plug-in.
3. **4-way switch**-VOX/PTT setting with three alternatives for adjusting **VOX** circuit's sensitivity, to ensure "Hands-Free" correct microphone activation in relation to external noise levels. The **PTT** position, is activated via the "talk" button.
4. **Volume On/Off** control for adjusting the volume level in the headset.
5. **Frequency setting**, - Two -position pre-set channels.
6. Charging socket.



### 3. Transmitting and receiving:

The headset is in receiving mode, when turned **ON** by the **Volume/ On/Off switch**.

To transmit voice, make sure that the microphone **is very close to your mouth** (about ½ ") and the **white dot** on the microphone is against your mouth.

Push the PTT button or adjust the VOX sensitivity and start talking.

After releasing the PTT or when you stop talking in VOX mode, you and all other recipients will hear a beep tone- to confirm end of transmission.

### 4. Adjustment of the VOX sensitivity:

- A. **Maximum sensitivity** (first VOX level - opposite to the PTT position) is appropriate for communication in low noise levels - up to 92dB(A).
- B. **Medium sensitivity** starts the VOX with this position. Suitable for most noisy area up to 105dB(A).
- C. **Minimum sensitivity** (lowest sensitivity- position close to the PTT position) is appropriate for transmissions in high noise levels (up to 130dB and requires an increased voice signal in order to activate the transmitter).

**Note:** When transmitting, you should hear your own voice through the speakers.

### 5. Suggestions for proper operation:

- A. It is recommended to use the PTT to transmit if you have a free hand..
- B. When using VOX mode, speak continuously and avoid silent periods between words.
- C. When you receive a transmission, the PAWN blocks VOX transmission, PTT is always available.

### 6. Should the transmitter not work properly in VOX mode check the following:

- A. Is the VOX sensitivity position is right for the noise surrounding you?
- B. Is the microphone positioned close enough to your mouth?
- C. Are you speaking loudly enough?
- D. Is the other user transmitting, or is the VOX sensitivity set so high that the transmitter is constantly activated?

### 7. CTCSS tone (PL Decoder/Encoder) considerations:

- A. The default internal dip switch position is OFF.
- B. If you experience interference on the selected channel, it is recommended to change the channel. If you must stay on the first channel, you move the CTCSS dip switch to ON.
- C. Please note:
- D. If you are using the VOX system with PL, expect a longer delay between beginning of speech and transmission than by using PTT. The recessives will have a delay of 1-2 seconds. There for you must extend the first word like - DDDDDDDave, listen.....
- E. Every body must change to CTCSS ON in order for this feature to work because it affects all channels.

## 8. BATTERY MAINTENANCE AND CHARGING PROCEDURE

**Important:** Before first use charge the battery for 15 hours.

Always charge with power turned off.

To save battery power, the unit is programmed to self shut-off within 60 min. if no activity, receiving or transmitting is detected. A chirp tone will be heard 30 second before shutdown.

When the battery is almost empty, A number of alert short tone beep will be heard before shutdown, and the red LED light will blink.

**Important:** For best functionality, remove hair around the ears from under the cushions to improve the acoustical seal against the head. Eyeglass temples should be as thin as possible and conform close to the head. Turn on the headset and adjust the volume for best listening level.

## 10. HEADSET MAINTENANCE AND USER INFORMATION

In order to fully benefit from the superior noise attenuation, wear PAWN 100% of the time you are exposed to noise!

Regularly clean the outside of PAWN using warm water and a mild detergent.

**WARNING:** The unit must not be submerged in water.

Do not store or place PAWN in temperatures exceeding +55 C (130 F). Do not place the unit behind a car windshield or in direct sunlight.

Certain chemicals may negatively effect this product. The manufacturer can provide further information.

PAWN and especially the **cushions** may degrade over time and should be examined regularly to verify that they are not cracked or otherwise damaged. Replacement cushions are available. For cushion replacement just pull off the old ones and snap in the new cushions.

**Important-** If these instructions are not followed properly, the noise attenuation properties and functionality of the unit may be negatively affected.

## 11. TECHNICAL SPECIFICATIONS

**Operating Distance:** Approx. 1800 m (6000 ft) over level terrain.

500 - 1500 m (1500-4500 ft) in dense building district depend on the constructions site and RF electronic noise level.

|                               |                                                                             |
|-------------------------------|-----------------------------------------------------------------------------|
| Frequency Coverage MHz        | 450-470 MHz                                                                 |
| Memory Channels               | Programmable up to 4 Channels:                                              |
| *CTCSS TONE (built in option) | 77 Hz                                                                       |
| Antenna Impedance             | 50 Ohms Unbalance                                                           |
| Frequency Stability           | +/-2.5 ppm                                                                  |
| Signal Type                   | F3E (FM)                                                                    |
| Power Supply Requirements     | 3.6V ~ 4.5V DC rechargeable                                                 |
| Current Consumption@4.5V      | Transmitting: Approx. 500mA (High Power Receiving: Approx. 100mA Squelched) |
| Operating Temperature         | -10 to +60 Degrees Celsius 14 to 140 Degrees Fahrenheit                     |
| Ground                        | Negative                                                                    |
| Weight                        | Approx. 14.5oz. (Batteries Included) 400 gr.                                |
| TRANSMITTER                   |                                                                             |
| Output Power                  | 150mW / ERP                                                                 |
| Emission Mode                 | F3E (FM)                                                                    |
| Modulation System             | Variable Reactance FM                                                       |
| Max. Freq. Deviation          | +/- 2.5KHz                                                                  |
| Spurious Emission             | -60dB Or Under Below Carrier Level                                          |
| Microphone                    | Dynamic differential                                                        |
| Operating Mode                | Simplex / half duplex                                                       |
| RECEIVER                      |                                                                             |
| Receiver System               | Super Heterodyne Dual Conversion                                            |
| Sensitivity                   | 12dB SINAD: Less Than -15dBu                                                |
| Squelch Sensitivity           | Less Than -17dBu                                                            |
| Intermediate Frequency        | 1st IF: 21.7MHz; 2nd IF: 450KHz                                             |
| Selectivity                   | More Than +/- 7.5KHz at -6dB                                                |
| Audio Output                  | No More Than 85 dBA                                                         |
| Speaker Impedance             | 8/32/220 Ohms                                                               |

Specifications are subject to change without notice or obligation.

## 12. ATTENUATION:

``Tested according to ANSI S3.19-1974

| Frequency Hz     | 125 | 250  | 500  | 1000 | 2000 | 3150 | 4000 | 6300 | 8000 | NRR value |
|------------------|-----|------|------|------|------|------|------|------|------|-----------|
| Mean Value dB    | 16  | 17.5 | 26.9 | 34.2 | 34.3 | 36.5 | 36.9 | 35.8 | 36.8 | 26 dB     |
| Std Deviation dB | 2.7 | 2.3  | 22   | 2.9  | 2.5  | 2.1  | 2.5  | 2.6  | 3.0  |           |

### INFORMATION REQUIRED BY E.P.A.

The level of noise entering a person's ear, when hearing protection is worn as directed, is closely approximated by the difference between the A-weighted environmental level and the NRR

Example:

1. The environmental noise level at the ear is 100 dB (A).
2. The NRR is **23** decibels (dB)
3. The level of noise entering the ear is approximately equal to 77 dB (A).

**CAUTION:** For noise environments dominated by frequencies below 500 Hz, the C-weighted environmental noise level should be used. Improper fit of this device will reduce its effectiveness in attenuating noise. Although hearing protectors can be recommended for protection against the harmful effects of impulse noise, the Noise Reduction Rating (NRR) is based on the attenuation of continuous noise and may not be an accurate indicator of the protection attainable against impulse noise such as gunfire.

NOTE: The Noise Reduction Rating is derived from testing procedures at an independent laboratory and in accordance to acceptable ANSI standards. Actual noise reduction can vary from laboratory results as labeled Protection is maximized when proper protector is selected for application.

## 7. SPARE PARTS AND ACCESSORIES

Two easily replaced cushions and damping pads. The replacement cushions are easily installed with a simple press-and-snap function. It is recommended that the hearing protector cushions and damping pads **are replaced with 6-month intervals** Is in order to guarantee continued good noise attenuation, hygiene and comfort.

### Clean disposable headset protective pads – Cool II:

The ultimate and comfortable alternative when using headsets in dirty environments or in extreme heat. Clean is a disposable hygiene pad that is applied directly on the hearing protector cushions. Package consists of 100 pairs of pads.



## LIMITED WARRANTY

This product is warranted against defects for **one year** from date of purchase from Head Connection Company and authorized Head Connection franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply bring YOUR SALES slip as proof of purchase date to any HCS STORES. Warranty does not cover transportation costs. Nor does it cover a PRODUCT SUBJECTED to misuse or accidental damage. EXCEPT AS PROVIDED HEREIN, HCS MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES.

**PAWN-101 460C     FCC ID: M5U-101-460C**

**Manufacturer: HCS Ltd.**

**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 I interference that may cause undesired operation.**

For a Class B digital device the instructions furnished the user shall induce the following or similar statement, placed in a prominent location in the text of the manual:

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 Interferes 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 helps.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance (HCS Ltd.) could void the user's authority to operate the equipment.

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