



# HCS

HEAD CONNECTION SYSTEMS LTD.

**Private Address Wireless Network**  
**Two Way Communication System for**  
**Extreme Noise Environment**

**PAWN 101-MODEL 460**  
**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. PAWN 101-460 (Private Address Wireless Network) was tested and approved according the FCC part 95 for UHF licence free. FCC ID: MSU-101-460**

**DESCRIPTION**

PAWN is a two-way, 8 frequencies\ channels, wireless FM transceiver, rechargeable battery operated, built into a highly efficient hearing protection device, developed by HCS for secure voice communications in noisy environments. The unit provides intelligible speech in noise levels up to 140 dB(A)!.

**FUNCTIONALITY**

PAWN allows wireless communication with an optional base-station on the same frequency. The noise-suppressing microphone efficiently reduces background noise and improves voice intelligibility in noisy environments. Transmission can be initiated by manually operating the **push-to-talk** switch or **hands free** VOX system.

**APPLICATIONS**

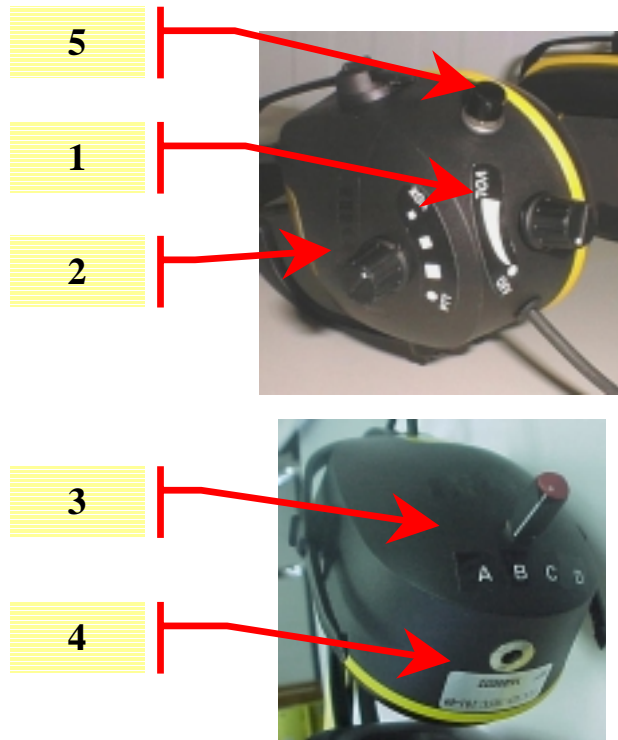
The applications for PAWN are many; Floor shop, Power plants, Forestry, Construction, Quarry, Education and other areas where secure communication over short distances are essential, in noisy areas.

**2. OPERATING INSTRUCTIONS**

Simplified controls make PAWN Headsets easy to use and simple to set-up. A four-position switch selects the operating mode, either **VOX /PTT** or **PTT**. Rotary switch controls **On/Off/Volume**. Four-position rotary switch for easy pre-set frequencies changing.

**PRODUCT LAYOUT**

1. **Volume and On/Off** control for adjusting the volume level in the headset.
2. **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 which is activating via the "talk" button.
3. **Frequency setting**, a four -position pre-set channels.
4. Charging socket.
5. **PTT** - "talk" button for manual transmission.



## **TRANSMITTING AND RECEIVING:**

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

To transmit voice makes 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 mod, you and all other recipients will hear a beep tone.

## **ADJUSTMENT OF THE VOX SENSITIVITY:**

- Maximum sensitivity (first VOX level) is appropriate for communication in low noise levels. A low voice signal will activate the transmission.
- The third VOX level (lowest sensitivity) is appropriate for transmissions in high noise levels and require an increased voice signal in order to activate the transmitter. The optimum choice of sensitivity adjustment is dependent upon the actual noise level.
- When manual operation of the transmitter is desired, the VOX/PTT switch must be in PTT position. Press the PTT switch during transmit, release for receiving.

**NOTE: WHEN TRANSMITTING, YOU SHOULD HEAR YOUR OWN VOICE THROUGH THE SPEAKERS.**

### **Should the transmitter not work properly in VOX mode:**

- Is the VOX sensitivity setting appropriate for the level of your voice?
- Is the microphone positioned in close proximity to your mouth?
- Is the other user transmitting, or is the VOX sensitivity set so high that the transmitter is constantly activated?
- Are you speaking loud enough?

### **Suggestions for proper operation:**

- When using VOX mode, speak in a constant flow and avoid silent periods between words.
- Inform the other listener when your transmission stops.
- When you receive a transmission, the PAWN block VOX transmission, PTT is always available.

## **3. BATTERY MAINTENANCE AND CHARGING PROCEDURE**

**Important:** Before first use charge the battery for 10 hours.

- 1st. Always charge with power turned off.
- 2nd. 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.
- 3rd. 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.

#### 4. Hard Hat Attachment

Slide the hard hat attachment into the hard hat slot and press down until it snaps into position. When the cups are in either store or ventilation position, the operating position is accomplished by pressing the cups against the head until the clicking sound indicates that the cups are in operating position. In order to prevent leakage, ensure that the neither the cup or the suspension touches the hard hat when the cups are in the operating position.



#### 5. HEADSET MAINTENANCE AND USER INFORMATION

PAWN must be worn, adjusted, cleaned and maintained in accordance with the instructions in this manual.

- ◆ In order to fully benefit from the superior noise attenuation, wear PAWN 100% of the time you are exposed to noise!
- ◆ Regularly cleans 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 gust pull off the old ones. 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 effected.*

## 6. TECHNICAL SPECIFICATIONS

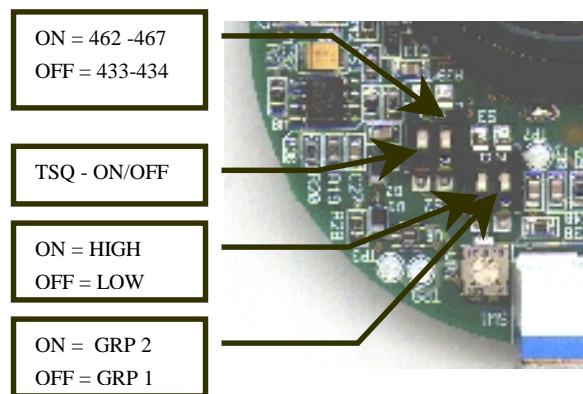
**Operating Distance:** Approx. 2800 m (8400 ft) over level terrain.

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

|                           |   |   |          |
|---------------------------|---|---|----------|
| Frequency Coverage MHz    | 462.5625 ~ 467.7125 MHz   |   |          |
| *CTCSS TONE (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 (4.5V standard with 3 AA batteries)             |   |          |
| 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.                                |   |          |
| <b>TRANSMITTER</b>        |   |   |          |
| *Output Power             | Max 500mW high power, 50mW low power  | / | 10mW 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   |   |          |
| <b>RECEIVER</b>           |   |   |          |
| 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 82 dBA   |   |          |
| Speaker Impedance         | 220 Ohms  |   |          |

**\*Can be changed by the user internally**

Specifications are subject to change without notice or obligation.



### 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 labelled Protection is maximised 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** 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.



Cool 3455/56

**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-101 460

FCC ID: M5U-101-460

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 interference that may cause undesired operation.

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.

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.