

USER'S MANUAL

Read this information before using your product.

Acknowledging Special Precautions and the FCC Notice Cautions.

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC compliance Information

This device complies with part 15 of 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.

Information to User

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 instruction, 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.

RADIO FREQUENCY ENERGY SAFETY INFORMATION

This UNIMO transceiver has been tested and complies with the standards listed below, in regards to radio Frequency(RF) energy electromagnetic energy(EME) generated by the transceiver

- > FCC RF exposure limits for Occupational use only. RF exposure limits adopted by the FCC are generally based on recommendations from the national council on radiation protection and measurement, & the American National National Standards Institute.
- > FCC OET Bulletin 65 Edition 97-01 Supplement C
- > American National Standards Institute(C95.1-1992)
- > American National Standards Institute(C95.3-1992)

WARNING

This UNIMO transceiver generates RF EME while transmitting. RF EME(Radio Frequency Electric & Magnetic Energy)has the potential to cause slight thermal, or heating effects to any part of your body less than the recommended distance from this radio transmitter's antenna.

RF energy exposure is determined primarily by the distance to and the power of the transmitting device. In general, RF exposure is minimized when the lowest possible power is used or transmission time is kept to the minimum required for consistent communications, and the greatest distance possible from the antenna to the body is maintain.

The transceiver has been designed for and is classified for Occupational use only. Occupational/controlled exposure limits are applicable to situations in which persons are exposed to RF energy as a consequence of their employment, and such persons have been made aware of the potential for exposure and can exercise control over their exposure.

This means you can use the transceiver only if you are aware of the hazards of operating a transceiver and are familiar in ways to minimize these hazards. This transceiver is not intended for use by the general public in uncontrolled environments.

Uncontrolled environment exposure limits are applicable to situations in which the general public may be exposed to RF energy ,or in which the persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

The following list provides you with the information required to ensure that you are aware of RF exposure and of how to operate this transceiver so that the FCC RF exposure limitations are not exceeded.

- > While transmitting(holding the PTT switch), always keep the antenna at least 2.5cm (1 inches) from your body or face ,as well as from any bystanders
- > Do not transmit for more than 50% of the total transceiver use time; transmitting over 50% of the total use time may exceed the limits in accordance to the FCC RF exposure requirements. Nominal transceiver operation is 5% transmission time,5% reception time, and 90% stand-by time
- > Use only the specified antenna for this transceiver; this may be either the antenna provided with the transceiver or another antenna authorized by UNIMO.

Use only UNIMO authorized accessories (antennas, battery packs, belt clips, Speaker/Mics or headsets etc.):

When worn on the body, always place the radio in a UNIMO recommended clip or carrying case meant for this product. The use of other than recommended or approved body-worn accessories may result in RF exposure levels which exceed the FCC's occupational /controlled environment RF exposure limits.

CAUTION

To ensure that your exposure to RF EME is within the FCC limits for occupational use, you must observe and adhere to the above points.

Electromagnetic Interference Compatibility

Electronic devices are susceptible to electromagnetic interference(EMI)if they are not adequately shielded or designed for electromagnetic compatibility. Because this transceiver generates RF energy, it can cause interference to such equipment.

>Turn OFF your transceiver where signs are posted to do so. Hospitals and health care facilities use equipment that is sensitive to electromagnetic radiation.

> Turn OFF your transceiver while on board an aircraft when so instructed, Use of the transceiver must be in accordance with airline regulations and/or crew instructions.

1. PRODUCT INTRODUCTION

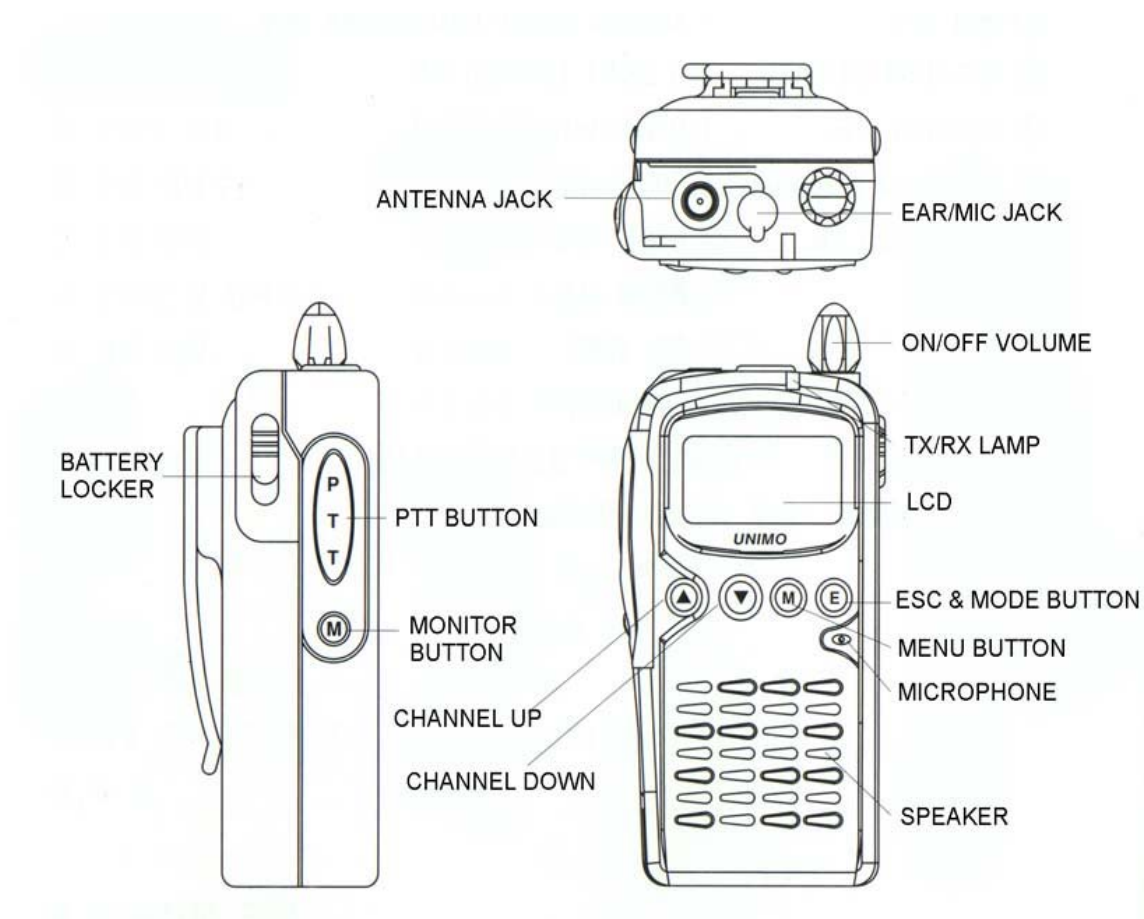
THE PF-400NW LMR(Land Mobile Radio) of UNIMO Technology Co., Ltd. is a sophisticated State-of-The-Art unit which incorporates The modern technology available in Tow-Way Radio Communications.

The use of microprocessor technology makes changing radio characteristics such as operating frequencies and squelch codes both fast and economical any computer equipped PF-400NW dealer can easily reprogram your radio's operating characteristics, or your radio can be "Cloned" from a radio already programmed to your desired frequencies and codes. PF-400NW LMR satisfies tough environmental requirements while providing cost effective and reliable communications.

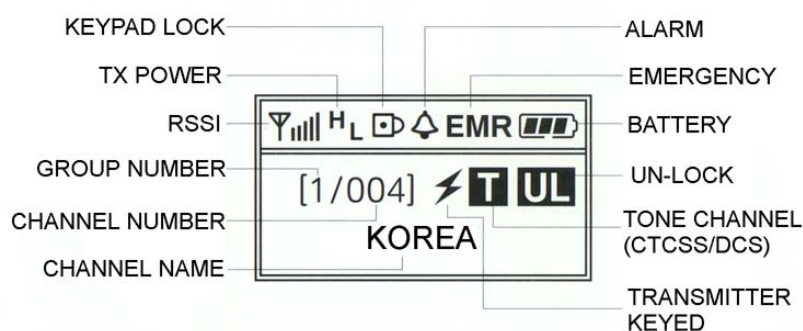


Fig.1 PF- 400NW TRANSCEIVER

1.1 FRONT, SIDE, TOP OVERVIEW



1.2 LCD DISPLAY



2. HOW TO USE

2.1 POWER ON/OFF, VOLUME CONTROL

Turning the power switch clockwise turn power ON and sets the volume level. When the power is on, transceiver's ID and name appear on the LCD

2.2 PUSH-TO-TALK(PTT) SWITCH

When depressed and held, engages the transmitter and puts radio in the transmit mode. at that time, TX lamp(red) is lighted. When released, The radio operates in the receive mode.

2.3 MONITOR BUTTON

Selects the mode of operation, Carrier squelch or tone squelch.

CASE 1 : In case of pressing the monitor key for less then 2Sec, checks the channel in use scanning each channel. Then monitor operation stops as monitor key is released, The receive mode begins.

CASE 2 : In case of pressing the monitor key for 2Sec, stop to the channel in use and keeps the receive mode until identifying the next monitor key.

When the monitor key is pressed, The current operation stop and returns to the receive mode.

2.4 CHANGE THE CHANNEL

Use the channel button for changing the channel. If press the UP[▲] button, channel number increases. If press the DOWN[▼] button, the channel number decreases. If press and hold the button for a while, the channel is rapidly changed.

2.5 CHANGE THE TX OUTPUT

The TX output is selected between HIGH(5W) and LOW(1W). If press the UP button with PTT button pressed, it is converted to "H"(High). If press the DOWN button with PTT button pressed, it is converted "L"(Low).

2.6 TRANSMISSION

In Tx mode, as soon as pressing the PTT button, DTMF and 5-Tone ID are transmitted. At that time, you can't communicate and the Rx/Tx lamp is lighted.

Note) If it is keyed continuously for longer than the programmed time, the transmission is inhibited. (BCLO, TOT feature)

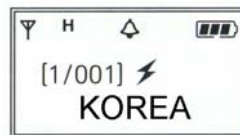


Fig.4 Transmission

2.7 RECEIVING

You can receive with PTT button released. DTMF or 5-tone sounds and display the caller's name on LCD according to Transceiver.(See Call Mode section) Whether it is in bad condition or has a different tone(CTCSS/DCS) in spite of same frequency, it can't be received. In normal, it can receive all signals by pressing the monitor button and it continues the monitor mode by pressing the button for 2 seconds. Press the monitor button again to release the monitor mode. Select the channel for the call.

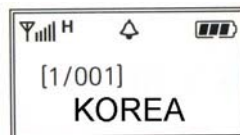


Fig.5 Receiving

2.8 ACCESSORY CONNECTOR(PHONE JACK AND MIC JACK)

Provides accessibility for connection to remote accessories such as a speaker microphone.

NOTE : The accessory connector protects the accessory connector. This cover should remain in place whenever The radio is not being used with an accessory.

2.9 ANTENNA

Helical(VHF) or Whip(UHF) with threaded base.

2.10 LED INDICATOR

A Tri-Colored Light-Emitting Diode(LED) Indicates scan operating status.

2.11 MULTI-FUNCTION LED INDICATORS

- 1) Transmit Mode(PTT Switch Depressed)
 - Continuous RED Light : Normal Transmission
 - Flashing RED Light : Low Battery
 - Flashing Pink : Selective Call

- 2) Receive Mode(PTT Switch Not Depressed)
 - . Continuous Green(5 Seconds) : Channel monitor active
 - . Flashing Pink : Selective Call or Call alert present
 - . Flashing Green : with carrier, Incorrect Tone Detect.
- 3) PC to LMR Programming Down-Loading
 - . Flashing Green : Down-Loading Active
- 4) LMR to PC Programming UP-Loading
 - . Flashing RED : UP-Loading Active
- 5) LMR to LMR Cloning
 - . Flashing RED : UP-Loading Active
 - . Flashing Green : Down-Loading Active

2.12 TIME-OUT-TIMER(T.O.T) (PROGRAMMABLE)

The T.O.T Feature ends a transmission which is over 60 seconds in length. after time out, a continuous alert tone sounds until The PTT switch is released.

2.13 CHANNEL SCAN

To initiate the scan feature, Rotate the channel selector to the location with the scan list programmed to it.

- 1) Non priority channel scan
- 2) Priority channel scan

2.14 DEFINITION OF PRIORITY CHANNEL

- . Only one priority channel.
 - . Parameter format is designated by pc program.
 - . Priority channel is always selection by pc program.
 - . Home channel is also designated by pc program.
 - . Methods of priority scan
- Priority scan is proceeded as follows :

CH#1	P CH	CH#2	P CH	CH#3		P CH	CH#N
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2.15 POWER SAVING MODE

- 1) Power saving mode operation by the following conditions.
 - . Only if the receive mode does not have the carrier, Power saving mode is on.
But it is off in the scan mode.
 - . NO Carrier.
 - . Power saving mode is designated by PC program.

2) Power saving mode starts after 4Sec of the following conditions

- After power ON
- After selecting the new channel.
- After ending the calls(After receiving or transmitting)

2.16 Cloning Operation

Cloning is the function that clones data, such as frequency/time/scan, to other PF-400NW, transceivers.

1. Prepare the cable (PECLONA) for PF-400NW.

(* Available in agency)

2. Turn on the source transceiver with PTT button pressed and turn on the target transceiver with 'E' button pressed.

3. The "clone mode" message is displayed on the source's LCD and the "program mode" message is displayed on the target's LCD.

4. Connect the cloning cable to EAR/MIC jack of both transceivers.

5. Press 'M' button of the source to start to clone. After cloning, remove cable and turn on and off both transceivers' power. Check the cloned data.

3. GENERAL SPECIFICATION

GENERAL

Operating Mode	Conventional (nontrunked) only
Frequency Range	UHF : 400 ~470 MHz
Frequency Stability	± 2.5 PPM(-30 to $+60^{\circ}\text{C}$)
Frequency Control	PLL Synthesizer
Programmable Channels	128 Channels/16 Group
Channel Spacing	Dual Channel Spacing 12.5/25kHz
Speaker Impedance	16 ohm
Dimensions	111mm(H) $\times$ 54mm(W) $\times$ 36mm(D)
Weight	310g
Power Source	7.5V DC rechargeable Li-MH battery pack
Power Supply Voltage Range	6.75 ~ 8.25VDC
Current Drain(maximum)	Receive mode, rated audio out – 340mA(Audio Max) Transmit mode – 2.0AH Standby mode – 70mAH hour battery saver on, hour battery saver off
Typical Battery Life Before Recharge – [Scan Off, High Power selected, Duty cycle 5–5–90% (Rx/Tx/Standby)	

RECEIVER

Sensitivity	.35uV 12 dB SINAD
Squelch Sensitivity	.25uV 10dB SINAD
Selectivity	60dB (12.5KHz), 65dB (25KHz)
Spurious and Harmonic Rejection	65dB
Intermodulation	60dB (12.5KHz), 65dB (25KHz)
FM Hum and Noise	40dB(12.5KHz), 45dB(25KHz)
Maximum Frequency Spread	40MHz
Audio Output Power	1.2Watt across an 16-ohm load
Audio Distortion	Less than 5% at rated output
Audio Response	+1, -3 dB from 6dB per octave de-emphasis

Speaker Impedance	characteristic from 300~3000Hz 16 ohms
IF Frequencies	45.3MHz and 455kHz
Input Impedance	50 ohms

TRANSMITTER

RF Power Output	4/1Watt
Spurious and Harmonic	60dB
FM Hum and Noise	40dB(12.5KHz), 45dB(25KHz)
Audio Distortion	5% maximum with 1kHz modulation
Audio Frequency Response	+1, -3dB from 6dB per octave pre-emphasis characteristic from 300~3000Hz
Maximum Channel Spread	40MHz
Output Impedance	50 ohms