User Manual
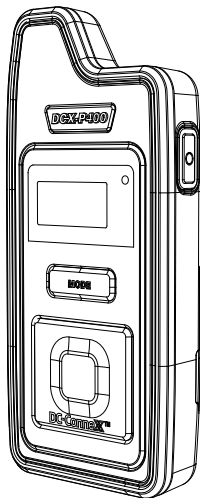
USER'S MANUAL FOR GrandCom

The Most Optimized Wireless Intercom Solution for Hands-free Simultaneous Communication between Multiple People
Model; GC-900

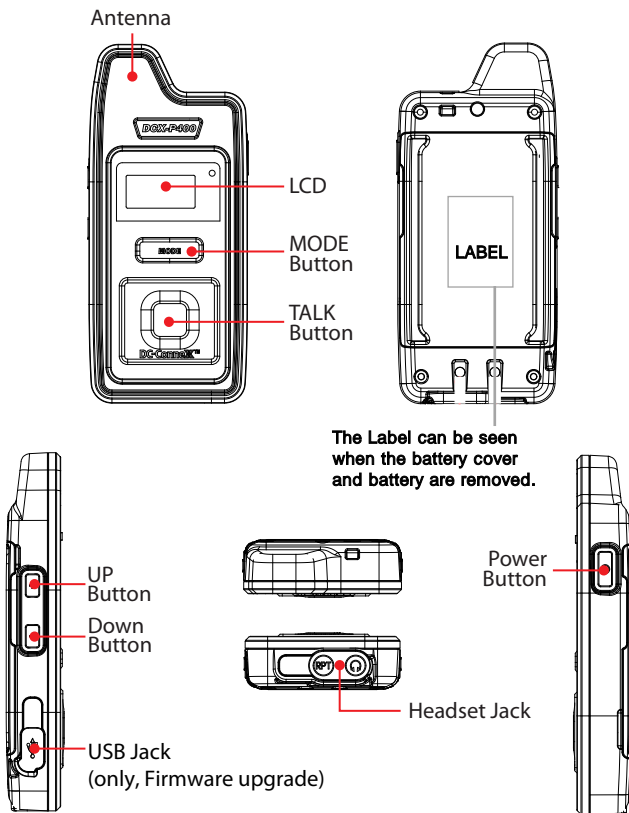## Maytel Co., Ltd.

1. General Information

1.1 Introduction

- GrandCom is a wireless intercom available of simultaneous communication between maximum of 10 people and supports 9 people talking simultaneously and unlimited number of listeners.
- Equipped with 4 operation modes to select the most optimized mode in the field depending on the talk distance in the field environment.
- Crystal clear sound quality with perfect noise cancellation function.
- This is the best solution with a full-duplex communication approach that allows you to use both hands freely and maximizes user convenience without the need to operate the device during communication.

1.2 Main Feature

- Realize 9 fixed users + Any one out of unlimited participants directly talking together with hands-free simultaneously while rest members are listening.
- Support 4 professional operating modes and directly select the optimized mode according to the environment in the field to ensure maximum talk performance.
- Worldwide compatible 900MHz frequency range.
- Crystal clear sound quality, loud enough audio output and super dynamic noise cancellation more than 95dB.
- Long enough talk distance through 4 professional operating modes that can be directly selected in the field.
- Completely secured talk through individual PIN encryption settings for each group directly by the user.
- IP54 performance, including strong and rugged mechanism.
- Convenient drop-in charging and USB charging system.

2. Controls and Indicators

2.1 GC-900

Antenna

DCX-P400

LCD

MODE Button

TALK Button

DC-Control

LABEL

The Label can be seen when the battery cover and battery are removed.

UP Button

Down Button

USB Jack (only, Firmware upgrade)

RPT

Headset Jack

Power Button

Power Button

Press and hold the Power button for a second to turn the device power On/Off

MODE Button

Select Group number, ID number, Side Tone On/Off, Microphone sensitivity Level, Operation mode selection and Wireless alarm

Up Button

Increase Volume Level, Channel number, and ID number etc. in each mode

Down Button

Decrease Volume Level, Channel number, and ID number etc. in each mode

TALK Button

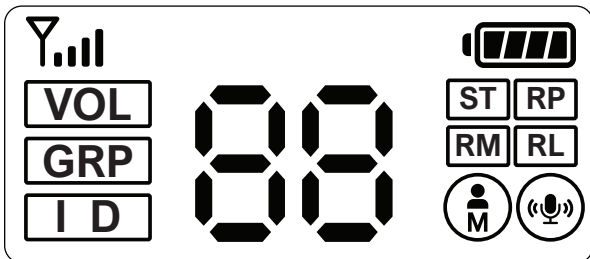Talk and Mute On/Off

MIC Jack

Microphone contact

LCD

Indicate current status and setting

USB Jack

Type-C USB port for firmware upgrade (No USB charging function)

2.2 LCD

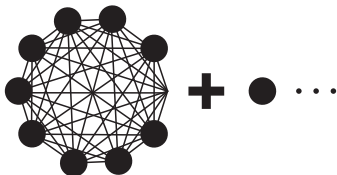|	
$\mathbf{Y}_{\text{.ill}}$	Signal Strength
(▮▮▮)	Battery Status
VOL	Volume
GRP	Group
I D	ID
88	Current Setting
(((🎤)))	TALK State
(👤/M)	Set as Master
ST	Operation Mode (9+Any one mode)
RL	Operation Mode (Relay mode)
RP	Operation Mode (Starcast mode)
RM	Operation Mode (Roaming mode)

3. Four Mode

3.1 [ST] 9+any one Mode

9 fixed user + any one out of the participants talking together simultaneously

3.1.1 Operation Mode

ID of the device is assigned from 00~08, A (Any one), L (Listen Only), 09. Refer to Table 1 below

Table 1 Operation Mode

ID	Master /Slave	ID Status	Explanation
00	Master	Fixed TX/RX of ID 0	Must exist in each group
01	Slave	Fixed TX/RX of ID 1	Full duplex simultaneous communication between the members
02	Slave	Fixed TX/RX of ID 2	Full duplex simultaneous communication between the members
03	Slave	Fixed TX/RX of ID 3	Full duplex simultaneous communication between the members
04	Slave	Fixed TX/RX of ID 4	Full duplex simultaneous communication between the members
05	Slave	Fixed TX/RX of ID 5	Full duplex simultaneous communication between the members
06	Slave	Fixed TX/RX of ID 6	Full duplex simultaneous communication between the members
07	Slave	Fixed TX/RX of ID 7	Full duplex simultaneous communication between the members
08	Slave	Fixed TX/RX of ID 8	Full duplex simultaneous communication between the members
A	Slave	ID 9 ; Shared	Unlimited, Can listen to other members' conversation, Can talk by pressing the Talk button
L	Slave	Listen Only	Unlimited, Can listen to other members' conversation
09	Slave	Fixed TX/RX of ID 9	Full duplex simultaneous communication between the members, Should not use A when setting the device

3.2 [RM] Roaming Mode

Talking distance expansion thru mutual relay between Master and Submaster
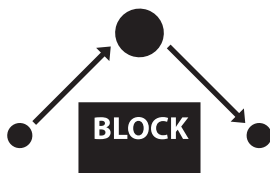

3.2.1 Operation Mode

ID of the device is assigned from 00~08, A (Any one), L (Listen Only), 09. Refer to Table 2 below

Table 2 Operation Mode

ID	Master /Slave	ID Status	Explanation
00	Main Master	Fixed TX/RX of ID 0	Must exist in each group
01	Sub Master	Fixed TX/RX of ID 1	Full duplex simultaneous communication between the members
02	Slave	Fixed TX/RX of ID 2	Full duplex simultaneous communication between the members
03	Slave	Fixed TX/RX of ID 3	Full duplex simultaneous communication between the members
04	Slave	Fixed TX/RX of ID 4	Full duplex simultaneous communication between the members
05	Slave	Fixed TX/RX of ID 5	Full duplex simultaneous communication between the members
06	Slave	Fixed TX/RX of ID 6	Full duplex simultaneous communication between the members
07	Slave	Fixed TX/RX of ID 7	Full duplex simultaneous communication between the members
08	Slave	Fixed TX/RX of ID 8	Full duplex simultaneous communication between the members
A	Slave	ID9 ; Shared	Unlimited, Can listen to other members' conversation, Can talk by pressing the Talk button
L	Slave	Listen Only	Unlimited, Can listen to other members' conversation
09	Slave	Fixed TX/RX of ID 9	Full duplex simultaneous communication between the members, Should not use A when setting the device

3.3 [RP] Repeater Mode

Ideally located Master unit relays each user's talking to minimize the impact of surrounding obstacles
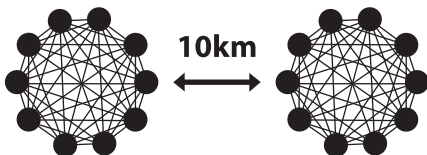

3.3.1 Operation Mode

ID of the device is assigned from 00~07, A (Any one), L (Listen Only), 08. Refer to Table 3 below

Table 3 Operation Mode

ID	Master /Slave	ID Status	Explanation
00	Master	Fixed TX/RX of ID 0	Must exist in each group
01	Slave	Fixed TX/RX of ID 1	Full duplex simultaneous communication between the members
02	Slave	Fixed TX/RX of ID 2	Full duplex simultaneous communication between the members
03	Slave	Fixed TX/RX of ID 3	Full duplex simultaneous communication between the members
04	Slave	Fixed TX/RX of ID 4	Full duplex simultaneous communication between the members
05	Slave	Fixed TX/RX of ID 5	Full duplex simultaneous communication between the members
06	Slave	Fixed TX/RX of ID 6	Full duplex simultaneous communication between the members
07	Slave	Fixed TX/RX of ID 7	Full duplex simultaneous communication between the members
A	Slave	ID8 ; Shared	Unlimited, Can listen to other members' conversation, Can talk by pressing the Talk button
L	Slave	Listen Only	Unlimited, Can listen to other members' conversation
08	Slave	Fixed TX/RX of ID 8	Full duplex simultaneous communication between the members, Should not use A when setting the device

3.4 [RL] Relay Mode

Long-distance relay via two-way radio for intra-group talking

10km

3.4.1 Operation Mode

ID of the device is assigned from 00~08, A (Any one), L (Listen Only), 09. Refer to Table 4 below

Table 4 Operation Mode

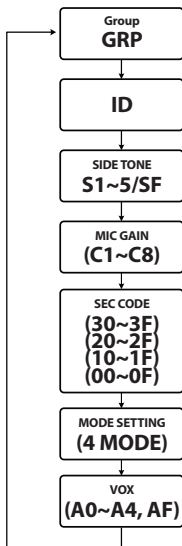| ID	Master /Slave	ID Status	Explanation
00	Master	Fixed TX/RX of ID 0	Must exist in each group, Connected with 2way radio
01	Slave	Fixed TX/RX of ID 1	Full duplex simultaneous communication between the members
02	Slave	Fixed TX/RX of ID 2	Full duplex simultaneous communication between the members
03	Slave	Fixed TX/RX of ID 3	Full duplex simultaneous communication between the members
04	Slave	Fixed TX/RX of ID 4	Full duplex simultaneous communication between the members
05	Slave	Fixed TX/RX of ID 5	Full duplex simultaneous communication between the members
06	Slave	Fixed TX/RX of ID 6	Full duplex simultaneous communication between the members
07	Slave	Fixed TX/RX of ID 7	Full duplex simultaneous communication between the members
08	Slave	Fixed TX/RX of ID 8	Full duplex simultaneous communication between the members
A	Slave	ID9 ; Shared	Unlimited, Can listen to other members' conversation, Can talk by pressing the Talk button
L	Slave	Listen Only	Unlimited, Can listen to other members' conversation
09	Slave	Fixed TX/RX of ID 9	Full duplex simultaneous communication between the members, Should not use A when setting the device

4. How to Use

4.1 Functions

There are 2 operation modes, NORMAL mode and SETTING mode. The default mode is NORMAL when turn on the power. Long press MODE button to go to setting mode. Setting values are shown in the order of GROUP-> ID-> SIDE TONE-> MIC GAIN -> SEC CODE -> MODE change as shown in Figure 1.
Can see the setting modes in order when short press the MODE button.

Figure 1

```
┌──────────────┐
│   Group      │
│   GRP        │
└──────────────┘
       │
┌──────────────┐
│     ID       │
└──────────────┘
       │
┌──────────────┐
│  SIDE TONE   │
│  S1~5/SF     │
└──────────────┘
       │
┌──────────────┐
│  MIC GAIN    │
│  (C1~C8)     │
└──────────────┘
       │
┌──────────────┐
│  SEC CODE    │
│  (30~3F)     │
│  (20~2F)     │
│  (10~1F)     │
│  (00~0F)     │
└──────────────┘
       │
┌──────────────┐
│ MODE SETTING │
│  (4 MODE)    │
└──────────────┘
       │
┌──────────────┐
│    VOX       │
│ (A0~A4, AF)  │
└──────────────┘
```

Long press MODE button to go to SETTING mode to change the setting values such as Channel and ID.

4.2 Power On/Off

Press and hold the "Power" button for a second to turn the device power on/off.

4.3 Volume Adjustment

Volume adjustment function to let the user to change the volume when needed.

- Volume Level appears on the top of the LCD screen when turn on the power.
- In NORMAL mode, adjust the volume to the desired level by pressing Up/Down button on the left side of the device.
- Volume can be set from 0 ~ 8 [Default Level: 3]
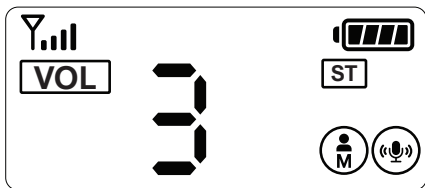
4.4 Group Selection

Group setting function to let the user to change the Channel when needed.

- Turn on the power of the device.
- Long press the MODE button then the LCD screen becomes SETTING mode and GRP blinks.
- Press Up/Down button on the left side of the device to set the desired Group.

```
GRP  00
```
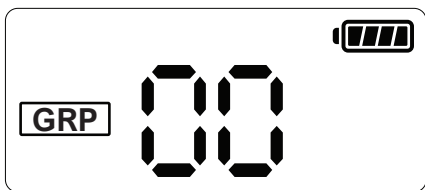
- Group can be set from 0~39
- Long press the MODE button to finish the setting.

4.5 ID Selection

ID setting function to let the user to change ID when needed.

- Turn on the power of the device.
- Long press the MODE button to go to SETTING mode.
- Short press MODE button to go to ID Setting screen, and ID blinks.
- Press Up/Down button to set to the desired ID.
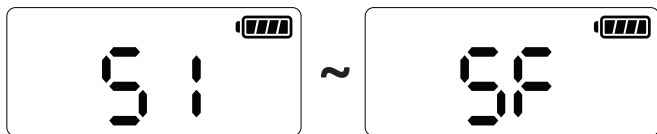- Refer to Tables 1~4 for ID Setting method of each Mode.


```
I D  00
```
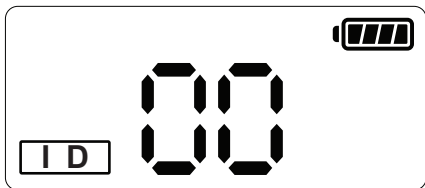
- Long press the MODE button to finish the setting.

4.6 Side Tone Selection

Side Tone can be turned On/Off

- Turn on the power of the device.
- Long press the MODE button to go to SETTING mode.
- Short press MODE button to go to ID Setting screen
- The user can turn Side Tone level 1(SO) ~level(S5) 5 or Off(SF) by Up/Down buttons.
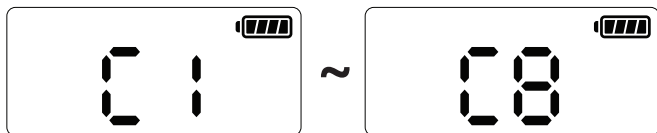

- Long press the MODE button to finish the setting.

4.7 Microphone Sensitivity Level Selection

MIC gain Level can be adjusted when using.

- Turn on the power of the device.
- Long press the MODE button to go to SETTING mode.
- Short press MODE button to go to MIC level setting screen.
- Adjust the MIC gain setting by Up/Down buttons.

- Long press the MODE button to finish the setting.

4.8 Security Code Selection

Security Code can be modified by the user.

- Turn on the power of the device.
- Long press the MODE button to go to SETTING mode.
- Short press MODE button to go to security code setting screen.
- The user can change the Security Code by Up/Down buttons. Security Code is composed of 4 digits and each digit can be set as 0~9, A, b, C, d, E, F.
- Security Code can be set one digit by one digit. Short press MODE button to move to the next digit. 1, 2, 3, 4 on the left indicates which digit the code is located. The right indicates hexadecimal number.
- For example, to set the code as 0xFC10, it should be set in the following order: 3F -> 2C -> 11 -> 00.
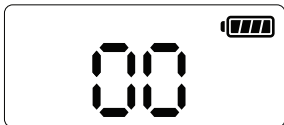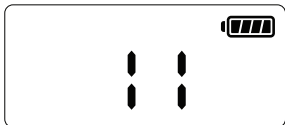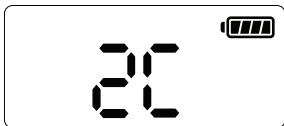
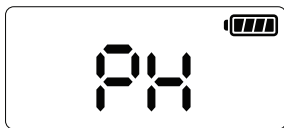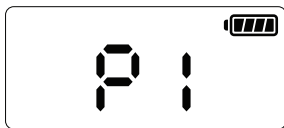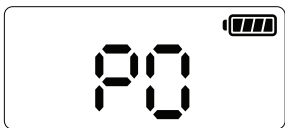- Long press the MODE button to finish the setting.

4.9 Roaming Setting

Roaming function can be set by the user. It can be set as Auto Roaming, Manual Roaming, Master Fix, Sub master Fix.

| Roaming function	Description
H0	Auto Roaming
H1	Manual Roaming. Short press Power button to manually change connection between Master and Sub master
H2	Master Fix
H3	Sub master Fix

4.10 Operation Mode Selection

Operation Mode can be selected to boot the device with the selected one of the 4 modes.

- Turn on the power of the device.
- Long press the MODE button to go to SETTING mode.
- Short press MODE button to go to Operation mode selection setting screen.
- Press Up/Down buttons to select the desired application.
  ; Operation Mode
  - P0 ; indicates ST Mode
  - P1 ; indicates RL Mode
  - PS ; indicates RP Mode
  - PH ; indicates RM Mode
- Long press the MODE button to finish the setting.
- The power automatically goes Off once the Operation Mode has changed. The device will be booted with the changed application when turn on the power afterwards.

4.11 VOX Selection

- Vox can be set with this function.
- Vox function operates on devices with ID 0~ID 9.
- Turn on the power of this device.
- Long press the MODE button to go to SETTING mode
- Short press MODE button to go to VOX mode selection setting screen.
- Adjust the VOX Level setting by Up/Down buttons.
- VOX Level
  - 0 ~ 4 (VOX on)
  - F (VOX off)
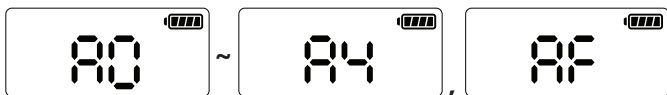
4.12 Audio Alert

- Low battery ; Short & repetitive tone occurs every 2min.
- Out of link ; Tone cotinuously repeats every 2min when the device
               is out of link.

5. Specification

Dimension

120 x 53 x 18.5 mm

Dimension w/Belt clip

121.8 x 56.6 x 27.2 mm

Operating Temperature

-10 ~ +50

Radio Frequency Type

ISM 903MHz ~ 926.5 MHz

Modulation

GFSK with FHSS ; Frequency hopping

Tx Max Output Power

100 mW

Rx Sensitivity

-95dBm

Channel spacing

500KHz

Frequency response

50~4,000Hz

Distance(loss of signal)

500meters(typical)

Number of full duplex(FD) users

Maximum 10 (including Master)

Number of simultaneous listeners

Unlimited(w/up to 9 FD users)

Number of listeners with PTT

Unlimited(w/up to 9 FD users)

Number of group

40

Number of groups operating in the same area

5 (With 5 meter separation between groups)

Environmental Rating

IP54

Power Supply

Li-ion Battery @3.7V/ 1,100 mA

Antenna

Internal

Compliance to FCC US/CAN

- This device complies with Part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s).
- 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 of the device.
- 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 encouraged to try to correct the interference by one or more of the following measures :
  . Reorient or relocate the receiving antenna.
  . Increase the seperation 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.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

WARNING !

FCC Radiation Exposure Statement :

This portable eauipment with its antenna complies with FCC's RF radiation exposure limit set forth for an uncontrolled environment. To maintain compliance follow the instruction below;
- This transmitter must not be colocated or operating in conjunction with any other antenna or transmitter.
- Avoid direct contact to the antenna, or keep it to a minimum while using this equipment.

This device complies with RSS-247 of the Industry Canada 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.

Ce dispositif est conforme a la norme RSS-247 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage prejudiciable, et (2) ce dispositif doit accepter tout brouillage recu, y compris un brouillage susceptible de provoquer un fonctionnement indesirable.

Radiation Exposure Statement

The product comply with the Canada portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

Declaration d'exposition aux radiations :

Le produit est conforme aux limites d'exposition pour les appareils portables RF pour les Etats-Unis et le Canada etablies pour un environment non control. Le produit est sur pour un fonctionnement tel que decrit dans ce manuel. La reduction aux expositions RF peut etre augmentee si l'appareil peut etre conserve aussi loin que possible du corps de l'utilisateur ou que le dispositif est regle sur la puissance de sortie la plus faible si une telle fonction est disponible.

This product has been certified with the following antennas, and may only be used with the same or less antenna gain.

Antenna	Max. Gain
Helical Antenna	3.83 dBi

This equipment complies with the essential requirements of EC Directive 2014/35/EU, 2014/30/EC and 2014/53/EU, as applicable. Declarations are available from your local representative.

This product has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment, if not properly disposed.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems for product disposal. Those systems will reuse or recycle most of the materials of the product you are disposing in a sound way.

The crossed out wheeled bin symbol informs you that the product should not be disposed of along with municipal waste and invites you to use the appropriate separate take-back systems for product disposal.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration. You may also contact your supplier for more information on the environmental performance of this product.

Replaceable battery

If an equipment is provided with a replaceable battery, and if replacement by an incorrect type could result in an explosion (for example, with some lithium batteries), the following:
- if the battery is placed in an OPERATOR ACCESS AREA, there shall be a marking close to the battery or a statement in both the operating and the servicing instructions;
- if the battery is placed elsewhere in the equipment, there shall be a marking close to the battery or a statement in the servicing instructions.

This marking or statement shall include the following or similar text:
CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

CE