WS-2100/4100 Manual

DOWTEL

CONTENTS

APPENDIX

About Dowtel FWT

(1) WS-2100/4100 both have a practical but elegant design. It can be used at office or home. WS-2100/4100 also offers many useful features and technological advantages.

(2) WS-2100/4100 has Versatile Installation Options

(3) WS-2100/4100 looks perfect on your desk in the office. It can also be installed on any wall in your office or home thanks to the wall-mount kit that comes with the unit.

(4) WS-2100/4100 offers its users superior voice quality through its use of QCELP EVRC Vocoder.

(5) WS-2100/4100 owners can easily adjust the volume of the handset with the volume control, and set the volume at an optimal level.

(6) Tricolor LEDs visually indicate the status of the terminal.

(7) The owner can control who can access, and use the terminal with the Outgoing Lock function.

(8) Simple and quick transmission of the stored number in the phone book with One-Touch and Two-Touch Dial.

(9) The Hotline Call function allows the most frequently used number to be automatically connected when a user picks up the handset.

(10) Various sounds and LED functions provide audio and visual alerts for Low Battery, Air Link Cut-Off and Incorrect Use

(11) A connected terminal allows DTMF transmission for ARS connection.

(12) Connect WS-2100/4100 with your PC for data transmission and PC fax communication.

(13) The Voice Privacy function ensures against illegal phone tapping can be prevented.

(14) The Authentication Key function prevents the owner's phone number from being cloned by others.

(15) Caller I.D function lets you know who is calling you.

(16) WS-2100/4100 user interface menu driver is easy to use.

(17) G3 Fax (Optional) service is supported for analog environment.

(18) The Pay Phone Interface allows WS-2100/4100 to work as a payphone.

(19) This terminal supports High Speed Packet Data using MSM 5000 series chip.

1. Before Using Your Terminal

This manual contains chapters on terminal introduction, installation method, basic directions, feature code and the technical standard, troubleshooting for potential problems. Please read through the contents of this manual carefully before using this product.

[Note]
If you have any questions or think that the product maybe defective, please contact the store where the unit was purchased.

1.1 Unpacking

WS-2100/4100 terminal package contains the following parts and accessories. Upon opening the package please check and make sure if all of the parts and accessories are included. If there are items missing, please contact the store where the unit was purchased.
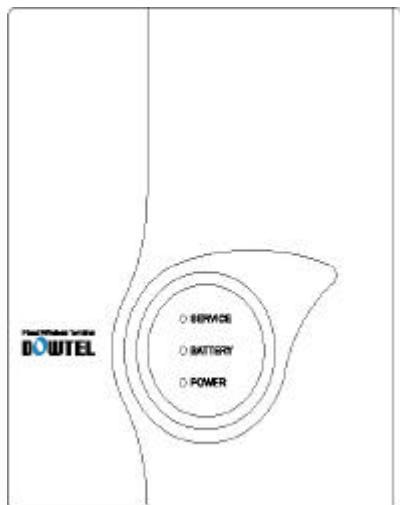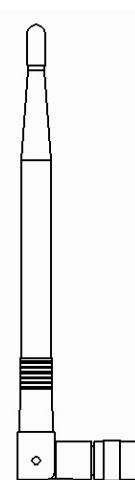
FWT terminal   **Antenna**   **TEL LINE**
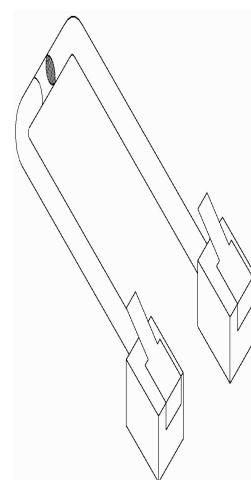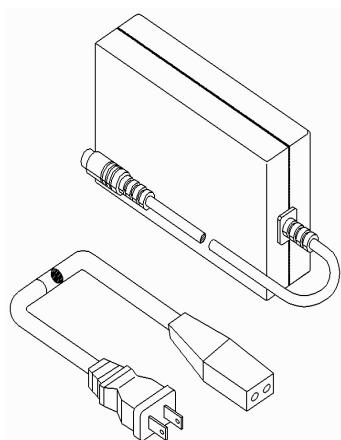
SMPS   **Manual**

1.2 Name and Function of Each Part

SERIAL PORT — RJ-11 JACK — DC JACK — POWER SWITCH — ANTENNA

SERVICE LED — POWER LED — BATTERY LED
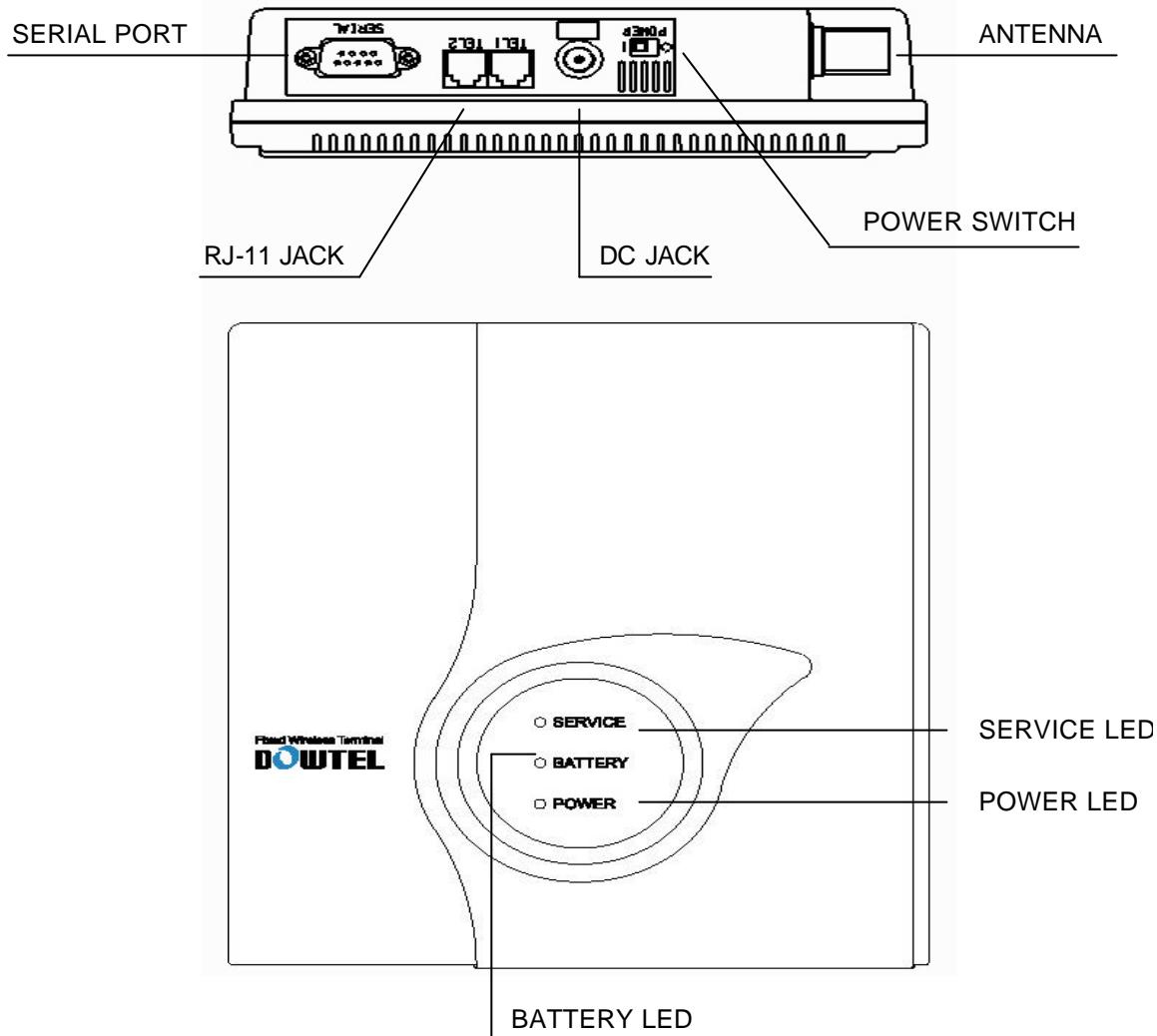
- **POWER LED**
LED lights in red indicates the external power is supplied.

- **BATTERY LED**
Indicates the status of backup battery.
The terminal can be operated if the backup battery is connected, even though the external power supply is cut off.
Please refer to the following table for the LED operation.
- Once the battery LED starts to blink, a phone call is only possible for the next 2~3 minutes.

Battery Power (V)	Battery Level	Battery LED	Power LED	Terminal Status
6.6 ~	5	Green	Off	Normal
6.1 ~ 6.5	4	Green	Off	Normal
5.8 ~ 6.0	3	Orange	Off	Normal
5.6 ~ 5.7	2	Orange & Blink	Off	Normal Warning Tone
~ 5.5	1	Off	Off	Power off
External power supply		Off	Red	Normal

● **SERVICE LED**

Indicates the Signal Strength in your area. For better signal strength, please perform signal strength test to find the best operating location.

Power intensity (dBm)	RSSI Level	LED status	Terminal status
~ -85	5	Green	Service available
-86 ~ -91	4	"	"
-92 ~ -97	3	"	"
-98 ~ -103	2	"	"
-104 ~ -110	1	Green & Blink	"
-111 ~	0	Red	No Service
During a call		Orange	Indicates during a call

LED Green & Blink: Indicates minimum call service is available due to weak signal strength.
LED Green: Indicates the strong signal strength and the normal call service are available.
LED Red: Indicates call service is not available as the signal strength is too weak.
LED Orange: Indicates the call is in progress, regardless of the signal strength.

[Notice] Malfunction Indicator
In case of the terminal malfunction, Service LED and Battery LED will light up red and blink.
Please contact your service provider for service.

● **DC JACK**
The SMPS supplies the power to the FWT terminal.
- AC Input voltage of SMPS ranges from 100V to 240V.

● **POWER SWITCH**
The terminal has two power sources; External AC Power, and Internal DC Battery Power.
Even the AC power is disconnected to the phone by power failure, or for any reason, the power sources will be automatically changed to the internal battery.
To disconnect all power from the phone, the power switch should be in OFF position.

● **SERIAL PORT**
The Serial Port used to connect the terminal to the PC for maintenance/repair, and data communication.

● **RJ-11 JACK**
Connects to a land line phone or a fax.
- This terminal has 2 jacks.
- You can connect 2 phones at the same time but there is no mutual security function.
- You can connect up to 5 phones to the terminal using RJ-11 jack.
 (A user must buy additional parts to extend the connection)

1.3 Sound & Tone

1.3.1 Power-Up Sound
When the terminal's power is turned on, a beep-sound is transmitted.

1.3.2 Dial Tone
Indicates that call service is available.

1.3.3 Warning Tone
The sound transmitted to the handset in the following cases.
- In case the call is not available due to broken air link.
- In case the dialing is delayed after the handset is picked up.
- In case the terminal is not in the correct working mode.

1.3.4 Howler Tone
In case the handset is not properly placed, loud alarm buzzer will sound for 30 seconds, after short Warning Tone.

1.3.5 Keypad Tone
When the keypad is pressed, a tone will be transmitted through the handset.

1.3.6 Ring Sound
The sound transmitted to the buzzer indicating the receipt of a call while the handset is lifted

1.3.7 Low Battery Warning Tone
When the terminal operates with the built-in battery and the battery strength is weak, a Low Battery Warning tome will be heard.

1.3.8 VMS Notification Tone
A VMS notification buzzer will sound when VMS Message has been received.

1.3.9 Error Tone
An Error Beep Tone will sound when the keypad is pressed incorrectly. In this case, the terminal will ignore incorrect operation.

1.4   Safety Instructions

● **Basic safety precautions should always be followed to reduce the risk while using this unit.**

The WS-2100/4100 can be in service and remain in good condition for a long period of time if used properly, and given proper care.

1) To reduce the risk of electric shock, do not disassemble or alter the terminal.

   (Please contact the authorized service center for service or assistance)

2) Do not hold or make contact the antenna during a call.

3) Do not overload the wall outlets and extension cord.

4) Do not use this product near the water and never spill any liquid on the unit. This may result in the risk of fire or electric shock.

5) Do not place this product on an unstable location (cart, stand or table). If this product should fall from an unstable location, the result may be risk of serious damage.

6) Do not cover the slots and openings on the unit. They are provided for ventilation and protection against overheating. Do not place this product near the heater or radiator where proper ventilation is not provided.

7) This product should only be operated from the type of power source marked on the product. If you are not sure of the type of power available, consult your dealer or local power company.

8) Never push objects of any kind into this product, since this may result in a serious voltage short and may result in the risk of fire or electric shock.

9) During thunderstorms, avoid using this product. There may be a remote risk of an electric shock from lighting.

10) Unplug this product from the wall outlets and obtain service from an authorized service center under the following conditions:

   - When the power supply plug is damaged or frayed.

   - If liquid has been spilled into this product.

   - If this product has been exposed to water or rain.

   - If this product does not work properly when the operating instructions are followed.

   - If this product has been dropped or damaged.

   - If this product exhibits a distinct change in performance.

2. Installations

2.1 General Installation

● Thank you for choosing this product. Before installing the terminal, please check whether the products package contains all the l parts and accessories are in the package. If there are items missing, please contact the store where the unit was purchased. If you have all the necessary parts and accessories, please follow the instructions shown below:

1) As shown in the figure below, plug in the antenna in the direction of the arrow and turn it clockwise to connect with terminal.
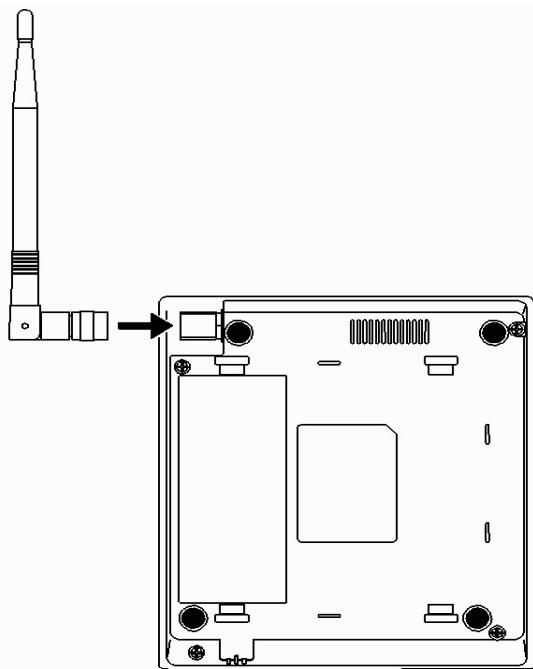
2) Connect a regular phone set to the terminal using RJ-11 Jack as shown in the figure below. There are 2 RJ-11 Jacks in the terminal and you can connect it to either one.
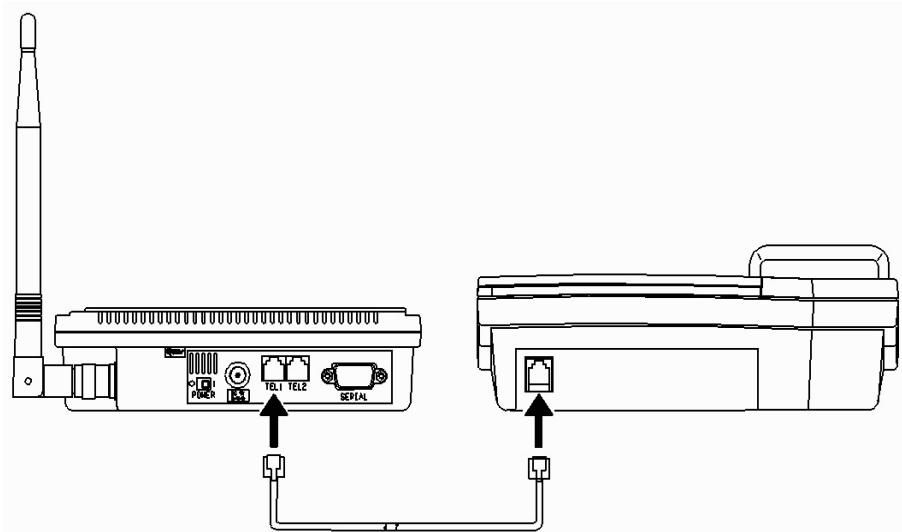
3) Connect the DC-JACK to the back panel of the terminal and insert the power jack to SMPS as shown below.
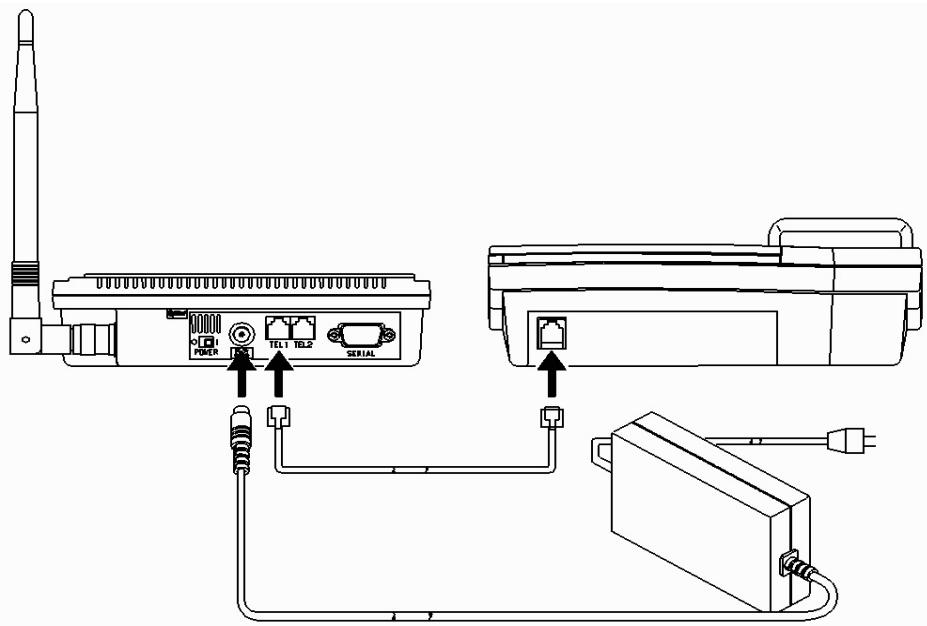
4) Connect the power plug of SMPS to a power outlet.
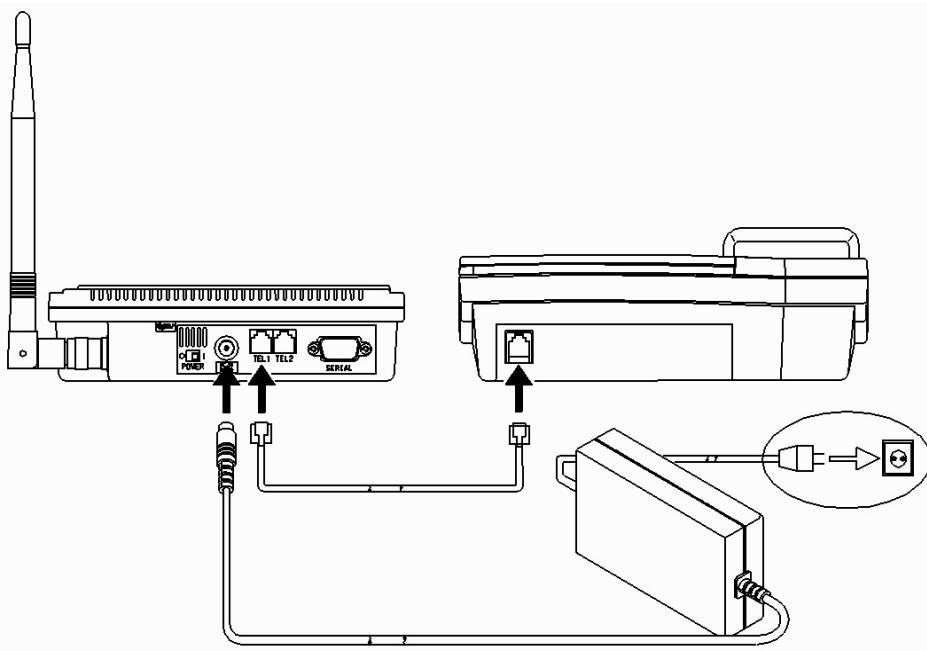
5) Turn power on by moving the switch to the right.

- All 3 lamps (LED) light up initially.
- After a power-up melody plays through, a service lamp will turn green indicating call services is available.
- At this time Red Power light and Green Service light will remain on.

[Notes] Malfunction Indicator

In case of a malfunction, a service LED and a battery LED will light up in red and blink.

In this case, please contact your service provider.

2.2 Installation For the Data Service.

1) PC – FWT connection
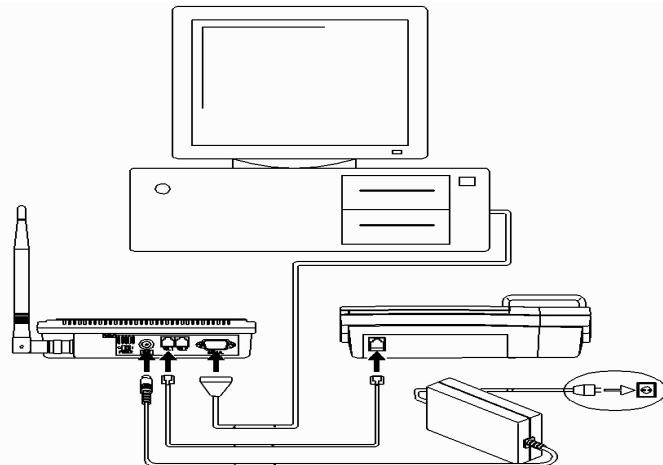
< Connection of terminal to a PC for the Data communication >

As shown above, connect a RS-232 cable to the Serial Port of the terminal and COM1 (or COM2) of PC. RS 232 cable is available from the service provider, or at any electronics store.

2.3 Installing the Wall Bracket (Option)

Before finalizing the precise location of the phone, please perform the signal strength test to ensure the best operating condition location for the assembled unit.

For installing the unit into a concrete wall, attach the installation sheet onto a concrete wall and make 3mm holes with a drill at the marked location. When installing mounting screws, do not screw them in all the way. Leave 2mm space between the screw head and the installation sheet.
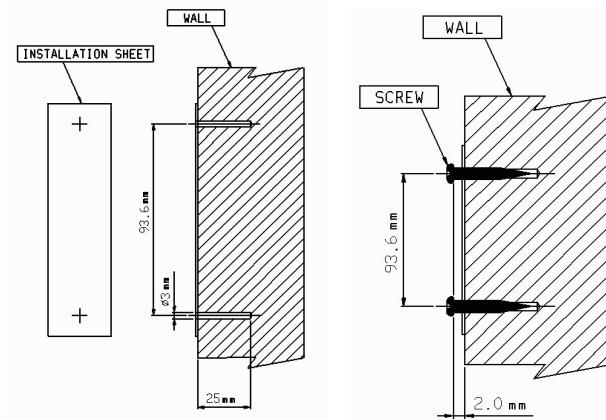
Assemble the Wall-Bracket by using A1~A4 (4 Places) slots on the bottom of the phone, and then hook up B1 ~ B2 holes of the Wall-Bracket to the screw head.
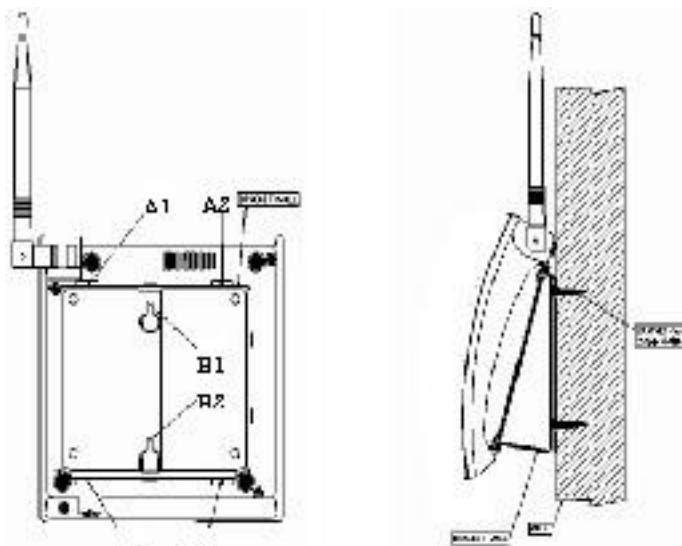
3. Basic Functions

3.1 Power On

The power for the terminal is supplied through SMPS and built-in battery.

When the power is supplied through SMPS, the battery is automatically being re-charged and in case of a power loss, the power source is automatically changed from AC power to internal Battery.

In addition, when the external power is restored, the power source is automatically back to AC power

3.1.1 How to Operate with External Power.

Connect the SMPS to the DC- JACK in the terminal and then the power plug of SMPS to a power outlet.

Insert the power jack properly, and then turn the power on by moving the power switch to right to position [I].

If the power is supplied to the terminal, 3 lamps will come on initially, and the Service Lamp and Power Lamp will stay illuminated, when call service is available.

3.1.2 How to Operate with the Built-in Battery.

If the SMPS gets unplugged or if there is a power failure while the power switch is on, power is automatically switched to the battery built into the terminal. The battery must be always charged up to the full operational strength and if the external power is restored, the power source will be automatically switched back to AC power, and the battery will be re-charged up to full strength automatically.

3.2 Power Off

If the power switch is moved to left to the position [O], both the external and internal powers will be disconnected.

3.3 Making a Call

3.3.1 General Method

1) Pick up the handset and you will hear a dial tone (off-hook state).

2) If you hear the Dial Tone, then you can make a call.

    * If there is a warning tone at a 0.5 second interval, you can not make a call, check the LEDs, and contact your service provider.

3) Dial the telephone number and press the "*" button.

4) Start talking with the other party when the call is connected (Service LED is orange).

5) If you put down the handset (on-hook), the call will be terminated.

[Notice] Malfunction Indicator

In case of a malfunction, both a service LED and a battery LED light up in red and blink at the same time.

Please contact your service provider for assistance.

3.3.2 Making a Call Using the Speed Dial Function

In order to use this function, the Speed Dial Function must be set up in advance.

To set up Speed Dial Function, please refer to section **4.1**.

1) For single digit addresses (1-9) in your Phonebook, pick up the handset and press the desired number and press the "*" button, or press the desired number and hold it down until you hear the ringing. When the call is connected, the Service LED will be changed to Orange, and you can start to talk. To end the call, just hang up the handset.

2) For double digits numbers (10-99) in your Phonebook, pick up the handset, and press the desired numbers and press the "*" button, or press the first digit shortly and press second digit and hold it down until you hear the ringing. When the call is connected, the Service LED will be changed to Orange, and you can start to talk. To end the call, hang up the handset.

3.3.3 Making a Call Using the Redial Function

The Redial Function is used when you want to make a call to the number last dialed.

1) Pick up the handset and press the "*" button and hold it down, a call is connected to the last number dialed. But, if no number was dialed after power was on, this function will not work.

2) Start talking when the Service LED turns orange indicating the call has been connected to the other party.

3) The call is terminated when you hang up the handset.

3.4 Receiving an Incoming Call

3.4.1 On-Hook State

1) The phone will ring when receiving an incoming call.

2) Pick up the handset, and start talking when connected to the other party (Service LED is Orange).

3) A call is terminated when you hang up the handset.

3.4.2 Off-Hook State

1) Even if the handset is off-hook state with dial tone or warning tone, you still can receive an incoming call. When there is an incoming call at Off-Hook state, the telephone will ring through the buzzer. At this time, press the hook-flash and answer the phone. But, receiving a call in Off-Hook state is possible only when there is either Dial Tone or the Warning Tone. It rings through the buzzer.

2) Talk when the other party is connected. (Service LED is Orange).

3) To end the call, hang up the handset.

3.5 How to Use Analog G3 Fax

Terminals with the Analog G3 Fax Board can send and receive documents with Fax machine. Fax Board is an optional item. To use Fax function, Fax machine should be connected with terminal.

3.5.1 To Send a Document by Fax

Pick up the Fax handset and make sure there is a dial tone then press *00 and then dial the number you want to send the Fax on Fax machine and follow the instructions of the Fax machine connected to the terminal.

3.5.2 To Receive a Document by Fax

You need to set the Terminal to Receiving Mode to receive documents through the Analog G3 fax using this terminal. Pick up the Fax handset and press ###005 to set the terminal to Receiving Mode of Analog G3 fax. An incoming Fax message will be received by Fax machine connected to the terminal.

[Note]   Once the terminal is set to the Analog G3 Fax Receiving Mode, you can not receive regular incoming calls. To go back to normal mode after receiving Fax, press ###000 to release Fax Receiving Mode.

3.6 Data Service

Using RS-232 Data Cable, you can connect this terminal to PC for Internet, PC Communication and/or PC Fax communication, if your service provider provides Wireless Data Communication Service.

3.6.1 Setting Data Service Receiving Mode

There are several options for Data Service Receiving Mode as follows;

- PC Modem Receiving, One Time Mode; After one connection and/or after 10 minutes, the setting will be automatically released and terminal will be changed to Normal Phone mode.

- PC Modem Receiving, Always Mode: The terminal will remain at this mode until you changed the mode or the power is turned off.

- PC Fax Receiving, One Timer Mode; After one connection and/or after 10 minutes, the setting will be automatically released and the terminal will be changed to Normal Phone mode.

- PC Fax Receiving, Always Mode; The terminal will remain at this mode until you change the mode or the power is turned off.

[Note]

While terminal is at Data Service Receiving mode, you can not make or receive calls, so after using Data Receiving service, you have to change the mode to Normal Phone mode, by pressing ###000.

1) Setting Data Services Receiving Mode using a regular phone set.

You can set the unit to the Data Service Receiving Mode by using a regular phone set connected to the terminal.

Pick up the phone handset and press ###001.

The unit has been programmed to the PC Fax Receive, One Time Mode.

Pick up the phone handset and press ###002.

The unit has been programmed to operate in the PC Fax Receive Always Mode.

Pick up the phone handset and press ###003.

The unit has been programmed to the P.C MODEM Receive, One Time Mode.

Pick up the phone handset and press ###004.

The unit has been programmed to the P.C MODEM Receive, Always Mode.

The default setting value for Normal Phone Mode is ###000 and after using Data Service, please change the mode to Normal Phone Mode.

2) How to set Data Service Receiving Mode using AT Command.

By using a communication emulator of a PC connected to the terminal, you can set the Data Service-Receiving mode.

First, Run the communication emulator program in the PC and input each command as described below.

To remove the Data Service Receiving Mode of terminal, type ' AT+RCVMOD=0' in the program and press the ENTER KEY. When the setting is set, the unit will indicate OK and operates in the normal phone mode.

To set the terminal to the PC Fax Receiving, One Time Mode, type ' AT + RCVMOD = 1' in the program and press the ENTER KEY. It will indicate OK when the setting has been set.

To set the terminal to PC Fax Receiving Mode (always), type 'AT + RCVMOD=2' in the program and press the ENTER KEY. The unit will indicate OK when the setting has been set.

To set the terminal to the Modem Receiving Mode (one time), type ' AT + RCVMOD = 3' in the program and press the ENTER KEY. It will indicate OK when the setting is completed.

To set the terminal to the Modem Receiving Mode (always), type 'AT+RCVMOD =4' in the program and press the ENTER KEY. The unit will indicate OK when the setting has been set.

The default setting in the terminal booting is ' AT+RCVMOD = 0' and this is for normal phone mode.

Remark !!!

Check if the system supports 2-Number or 2-Stage Dialing. If system supports this function, our FWT supports automatic "Data Service and Analog G3 Fax receiving" without setting up the receiving mode <3.5 How to use Analog G3 Fax and 3.6 Data Service> To use the function of 2-Number or 2-Stage Dialing, you are requested to contact Service Provider since you should get the separate Prefix which is designated by Service Operator.

4. Supplementary Functions

4.1 Call Functions

4.1.1 Speed Dial

This terminal will store up to 99 phone numbers using 2 digit addresses (01-99). The stored number in the Phonebook allows a call to be placed by pressing the two digit address. This terminal has the ability to search and edit numbers stored in the Phonebook, and the methods for storing, searching and editing a stored phone number are explained in section 4.2.

4.1.1.1 Speed Dial Function On / Off

You can set the Speed Dial function by entering the following functions.

1) Speed Dial On

  Press;

  #0*100 → 1 → 1 → 1 → * : Speed Dial function on

2) Speed Dial Off

  Press;

  #0*100 → 1 → 1 → 2 → * : Speed Dial function off

4.1.1.2 Making a Call Using the Speed Dialing Function

1) Make sure the Speed Dial Function is "on" and find the memory station number in the Phonebook.

2) If the saved address is a single digit, between 1 and 9, pick up the handset and press the number and hold it down, or press the number briefly and press the "*" button, then the call will be made.

3) If the saved address is two digits, pick up the handset and press the first digit and then press the second digit and hold it down or press both digit briefly and press the "*" button, then a call is made.

[Notice] If you attempt a Speed Dialing while the Speed Dial Function is OFF, an error tone will sound to indicate wrong operation.

4.1.2 Hot Line function

1) This function is used to make an automatic, quick call to a designated number without dialing. Just pick up the handset, then a call will be made.

2) The Hot Line number should be registered at address 99 in the Phone book. Hotline operates in 2 modes;

   *Timed Hot Line; The call will be made in delayed manner between 4-8 seconds (sending waiting time), depending on your default value, after you pick up the handset. Original default value is 6 seconds.

   *Immediate Hot Line; The call will be made as soon as you pick up the handset.

   - The Hotline function overrides any other functions.

4.1.2.1. Hot Line function On / Off

1) Timed Hot Line On

Press;

#0*100 → 1 → 2 → 1   *

2) Immediate Hot Line On

Press;

#0*100 → 1 → 2 → 2   *

3) Hot Line Off

Press;

#0*100 → 1 → 2 → 3   *

4.1.2.2 Making a Hot Line Call

When a phone number is saved in address [99], and the Hot Line function is set to the Timed Hot Line mode, a call is automatically made, and if the send waiting time (4 ~ 8 seconds) elapses, if the handset is lifted. .

If the Hot Line function is set to the Immediate Hot Line mode, and you pick up the handset, the call is made automatically to the number saved in the memory address [99].

[Note]

If the Hot Line function is in the Immediate Hot Line mode, a call may not be made to another number. In this case, to make a call to another number, change the setup mode. Pick up the handset and press <#> within 1 second and go to the setup mode, and deactivate the Hot Line function as shown at 4.1.2.1.

4.2 Phone Book

4.2.1 Storing Phone Numbers

Press;

#0*100 → 2 → 1 → address (2 digits) → phone number → *

Pick up the telephone handset and enter the code as shown below.

< #0*100 → 2 → 1 >

enter the 2 digit address you would like to store the phone number. Suppose the address is <4>, press [04]

Enter the phone numbers to be saved digit by digit .

When you press <*> button (saving), you will hear a <confirmation beep> indicating the number has been successfully stored.

4.2.2 Deleting Phone Numbers

4.2.2.1 Deleting a Number

#0*100 → 2 → 2 → address (2 digits) → *

Pick up the telephone handset and enter the code as shown below.

< #0*100 → 2   2 >

Enter the 2 digit address to be deleted.

When you press <*> button (saving), you will hear a <confirmation beep> indicating the number has been successfully deleted.

4.2.2.2 Deleting All Numbers

#0*100 → 2 → 3 → *

Pick up the telephone handset and enter the code as shown below.

< #0*100 → 2   3 >

When you press <*> button (saving), you will hear a<confirmation sound> indicating all stored numbers have been successfully deleted.

4.3 Additional Functions

4.3.1 Alarm Reminder

The terminal sends a reminder to the user by ringing at a specified time. The time is set using a 24 hours format. 2 specific settings are possible.

The <one time mode> activates the alarm only once while the <always mode> it activates the alarm everyday at the same specified time.

The time and function setting are shown below.

Setting the Alarm Time

Enter #0*100 → 3 → 1 → 1

Input four digits (using a 24 hours clock format) for the desired time and then press <*> button.
Example: 3:30 pm, press < 1 → 5 → 3 → 0 → * > sequentially.

After setting the alarm time, the Detailed Alarm Setting function is automatically set to the <one time mode> and when the specified time comes, the alarm is activated.

After setting the alarm time, if you want to have the alarm activated at the same time every day, enter #0*100 → 3 →1→ 3 → * to change the Detailed Alarm Setting function to <always mode>.

In case you want to reset the alarm function enter #0*100 → 3→1→ 4 → * .

#0*100 → 3 → 1 → 1 → hour (4 digits, 24 hours format) → *

: Alarm time input and setting (one time)

#0*100 → 3 → 1 → 2 → *

: Alarm Reminder on (one time)

#0*100 → 3 → 1 → 3 → *

: Alarm Reminder on (Always)

#0*100 → 3 → 1 → 4 → *

: Alarm Reminder off

4.3.2 Handset Volume Control

This function is used to control the volume of handset. The handset volume can be set at 5 different levels and the default setting is Level 3.

2 methods for changing this setting are listed below.

1) Change using the menu code (Idle State)

Enter #0*100→3→2

Select and press a desired level: #1 (Level 1: minimum) , #2(Level 2) , … , #5 (Level 5: maximum).

Press <*> button to save the setting.

| #0*100 →3→2→1 5→ * | : Handset Volume Control (method 1)

2) Fast operation (Call State)

Pick up the telephone handset.

Press   <###30>

Enter a number between <1> ~ <5>.

Press <*> button to save the setting. When the setting is successfully set, you will hear a dial tone.

| ###30 → 1~5 → * | : Handset Volume Control (method 2)

4.3.3 Setting the Voice Privacy Function

This terminal is equipped with voice privacy function to prevent illegal tapping.

There are two detailed settings available, <Standard> for regular level voice privacy mode and <Enhanced> for reinforced voice privacy mode.

The Voice Privacy function can be enabled using the method shown below.

1) While In idle state

 Enter #0*100→3→3 sequentially.

 Press <1> button for < Enhanced > mode and <2> button for < Standard > mode.

 Press <*> button to save the setting .

   | #0*100 → 1 → 3 → 1 → * | : Enhanced Voice Privacy On

   | #0*100 → 1 → 3 → 2 → * | : Standard Voice Privacy On

2) During a call

 Enter #0*100→1 sequentially.

 Press <1> button for <Voice Privacy On> and <2> button for <Voice Privacy Off>.

 Press <*> button to save the setting.

   | #0*100 → 1 → 1 → * | : Enhanced Voice Privacy On

   | #0*100 → 1 → 2 → * | : Standard Voice Privacy Off

4.3.4 Serial Baud Rate Setting

This terminal supports the Data Service function with a connection to PC through a RS-232 Serial Interface. Two communication speeds are used.

115,200 bps for the high-speed packet data service and 19,200 bps for a modem, PC fax and low speed packet data service.

1) Setting the Serial Baud Rate to 19,200 bps

  | #0*100→3 →3→1 → * |

2) Setting the Serial Baud Rate to 115,200 bps

  | #0*100→3→3→2 → * |

Ref.] The default value is 115,200bps. If the terminal power turns off and on while other Baud Rate was selected, the Baud Rate of the terminal will automatically return to the default value of 115,200bps. In this case, the prefered Baud Rate setting is needed again.

4.4 LOCK

4.4.1 Outgoing Lock

The Outgoing Lock function is used to block other people from using the terminal.

If you make a call while this function is on, the terminal generates an error sound indicates that making a call is not possible.   This function only prevents outgoing calls. Receiving a call is still possible while the Outgoing Lock function is turned on.

To use the phone, you need to unlock the phone by entering your password.

The Default setting is <Outgoing Lock off>.

4.4.1.1 Turning the Outgoing Lock On / Off

Enter #0*100 → 4

Enter your four digit password.

[Note] If you enter an incorrect password, the Reject Tone will sound and you need to re-enter the password.

Press <1> button to enable this function and <2> to reset this function.

Press <*> button to terminate this function.

| #0*100 → 4 → password → 1 → * | : Lock function On

| #0*100 → 4 → password → 2 → * | : Lock function Off

4.4.2 Changing Lock Code (User's Password)

Enter #0*100 → 4 to change your password.

Press <3> after entering a password in use.

Enter the new password and press * button.

Enter the new password again and press * button.. The new password has been activated.

| #0*100→4→password→ 3→new password→ * →new password→ * | : password change

[Note]

The Default password is 0000

4.4.3 Reset as Default

This function is used to change the main settings of the terminal back to the default settings, which were programmed into the terminal at the factory.

How to reset to the default setting.

Press #0*100→4

Enter your password and press <4>.

If you press <*> button, all the major functions listed below are reset to the following values.

#0*100 →4→password→ 4 → *   : How to do the default setting

[Note]

Reset items and their status are as shown in the table below.

Items	Status
Speed Dial	Off
Hot line call	Off
Alarm	Off
Outgoing Lock	Off
Handset Volume	Level 3

4.5 Maintenance Setup

4.5.1 CLIP Setting

Since this terminal does not have an LCD, incoming calls are displayed on the LCD of the specific module or telephone connected to the terminal.

Consequently, a communication method between the terminal and the module need to be set in one of the following two available modes: DTMF mode and FSK mode.

DTMF mode

| #0*100→8→Maintenance Code→1→1→ * | CLIP method setting (DTMF mode)

FSK mode

[Type 2]

  - Type 2 FSK mode supports the Multi-Format type FSK.

| #0*100→8→Maintenance Code→1→2→1→ * | CLIP method setting (FSK Type2 mode)

[Type 1]

  - Type 1 FSK mode supports the Single-Format type FSK.

| #0*100→8→Maintenance Code→1→2→2→ * | CLIP method setting (FSK Type1 mode)

CLIP mode off

| #0*100→8→Maintenance Code→1→3→ * | CLIP method setting (CLIP mode off)

Reference : Maintenance Code is "0202"

      This code is used for maintenance & repair only.

4.5.2 Analog G3 Fax Setting

1) WS-2100/4100 support Analog G3 Fax Service using the standards below:

- IS-99/IS-707.4 based PC Fax standard

- IS-707A.7 Analog G3 Fax standard

[Note]

In case of <u>IS-99/IS-707.4 based PC Fax standard</u>, a service provider will require the user to decide the fax receiving method in advance: a PC fax program or Analog G3 fax.

(The fax program or the Analog G3 Fax becomes a Default Fax Receiver)

2) In case of IS-99/IS-707.4 based PC Fax standard,

   Enter #0*100→8→Maintenance Code→2→1 sequentially

   Set the Default Fax Receiver

Press <1> button to receive an incoming fax through a PC fax program.

Or press <2> button to receive an incoming fax through the Analog G3 Fax machine connected to the terminal.

   Press <*> button to save the setting.

[Note]

The Default Fax Receiver function is system-dependent.

   When a Single Phone Number is used

: If a user use a single phone number for both fax and voice call, the Data Service Receiving Mode Setting in section <3.6.1>will determine whether a voice call will be processed or a fax transmission will be processed.   In this case, Default Fax Receiver Setting does not have any effect.

   When two Phone Numbers are used.

: In other words, if one number is dedicated to voice call and the other to fax despite using in the same terminal, an incoming fax will be received automatically since fax service option is already available. Accordingly, depending on what the Default Fax Receive setting is, the terminal receives a fax via a PC fax program or through an Analog G3 fax machine connected to the terminal.

3) In case of IS-707A.7 Analog G3 Fax standard

   Enter #0*100→8→Maintenance Code→2 sequentially

   Press <2> button

   Press <*> button to finish

4.5.3 Default Data Rate setting

This terminal supports the standard data rates listed below.

- IS-99 Rate Set 1
- IS-99 Rate Set 2
- IS-707.4 Rate Set 1
- IS-707.4 Rate Set 2

The following is the Default Rate setting for Data Signal access.

1) Setting IS-99 Rate Set 1 (9.6K)

Enter #0*100→8→Maintenance Code→3 in order.

Press <1> button.

Press <*> button to save the setting.

#0*100→8→Maintenance Code→3→1 → *

2) Setting IS-99 Rate Set 2 (14.4K)

Enter #0*100→8→Maintenance Code→3 in order

Press <2> button

Press <*> button to save the setting

#0*100→8→Maintenance Code→3→2 → *

3) Setting IS-707.4 Rate Set 1 (9.6K)

Enter #0*100→8→Maintenance Code→3 in order

Press <3> button

Press <*> button to save the setting

#0*100→8→Maintenance Code→3→3 → *

4) Setting IS-707.4 Rate Set 2 (14.4K)

Enter #0*100→8→Maintenance Code→3 in order

Press <4> button

Press <*> to save the setting

#0*100→8→Maintenance Code→3→4 → *

4.5.4 Ringer Frequency & Cadence Control

You can set the Ringer Frequency and On/Off Time (Cadence) in this terminal.

The Default setting is 20Hz, 1 Sec. On – 2 Sec. Off.

Listed below are the ringer frequency selection and Cadence settings.

Enter #0*100→8→Maintenance Code→4

Select the ringer frequency

Press the desired number between No. 1(16Hz), No. 2(20Hz), No. 3(25Hz)

Select Cadence

No 1 (1 sec On – 2 sec Off),

No 2 (0.4 sec On – 0.2 sec Off - 0.4 sec On – 2 sec Off),

No 3 (1 sec On – 4.5 sec Off),

No 4 (1 sec On – 4 sec Off),

No 5 (0.25 sec On – 0.25 sec Off - 0.25 sec On – 1.25 sec Off),

No 6 (2 sec On – 4 sec Off)

Press <*> button to finish

#0*100→8→Maintenance Code→4→1   3(frequency)→1   6(cadence)→ *

4.5.5 Dial Tone Frequency Control

This function is used to select the frequency of the Dial Tone transmitted through the handset.
The default setting is 350 + 440Hz.

1) Menu Code Method

   Enter #0*100→8→Maintenance Code→5

   Press the number of your choice between No 1(350+440Hz), No 2(400Hz), No 3(425Hz), No4(450Hz)

   Press <*> button

   #0*100 →8→Maintenance Code→5→1   4→ *

4.5.6 Waiting tone Frequency control

The default setting is 350 + 440Hz.

1) Menu Code Method

   Enter #0*100→8→Maintenance Code→6

   Press the number of your choice between No 1(350+440Hz), No 2(400Hz), No 3(425Hz), No4(450Hz)

   Press <*> button

   #0*100 →8→Maintenance Code→6→1   4→ *

4.5.7 Default Vocoder Selection

The user can select a Vocoder rate that provides the best sound quality during a voice call.
The options provided are 8K EVRC, 13KQCELP, or 8K QCELP.
To change the Vocoder Options

   Enter #0*100→8→Maintenance Code→6

If you press <1> for 8K EVRC,   <5> for 13k loop,

         <2> for 13K Qcelp,   <6> for old 8k Markov,

         <3> for 8K Qcelp,   <7> for 8k Markov,

         <4> for 8k loop,   <8> 13k Markov

   Press <*> button to save the setting.

   #0*100→8→Maintenance Code→7→1~8→ *

4.5.8 Auto Dial Send Time Control

Auto Dial Send is a function that makes a call to the dialed number after specified time lapses. Terminal starts making a call, specified seconds after user finishes dialing the number.

Auto dial send time is adjustable from 4 seconds to 8 seconds and default setting is 6 sec.

2 setting methods are provided below.

　　Auto Dial Send Time Setting

1) Using A Menu Code

　　Enter #0*100 → 8 → Maintenance Code→8

　　Press any number among 4 , 5 , 6 , 7 , 8 on the key pad. For example, if you press <5> key, the send waiting time becomes 5 seconds.

　　Press <*> button in succession.

#0*100 → 8 → Maintenance Code→ 8 → 4   8 →   *

4.5.9 PCO Frequency Setting

　This terminal supports the Metering Pulse and the Polarity Reverse for the PCO Interface.
　If the Metering Pulse is required for the PCO Interface, 2 kinds of frequencies can be supported.

1) Setting Metering Pulse Frequency to 12KHz

#0* 100→8→Maintenance Code→9→1→ *

2) Setting Metering Pulse Frequency to 16KHz

#0* 100→8→Maintenance Code→9→2→ *

4.5.10 PRL select (Only applicable to WS- 2100)

This is a crucial function to decide the source of Channel information when the phone searches for CDMA Cellular Channel.
Prefer Roaming List which is being used in CDMA PCS Channel Searching can be partially used in Cellular Channel Searching too.
If "Enable" is selected, channel information necessary for Cellular Channel Searching is brought from Prefer Roaming List.
If "Disable" is selected, the original Channel Searching Method is proceeded. In other words, it searches for CDMA Primary A/B, Secondary A/B channel.

[Note] This phone supports Prefer Roaming List stated in accordance with IS-683A.

[Note] As the mal-operation with this terminal while referring to this manual may cause the terminal impossible to acquire the system, it should be carefully operated and advance consult with a terminal supplier is required.

1) Setting PRL select to "Enable" mode

$$\boxed{\#0^*100 \rightarrow 8 \rightarrow \text{Maintenance Code} \rightarrow 0 \rightarrow 1 \rightarrow *}$$

2) Setting PRL select to "Disable" mode

$$\boxed{\#0^*100 \rightarrow 8 \rightarrow \text{Maintenance Code} \rightarrow 0 \rightarrow 2 \rightarrow *}$$

4.6 System Parameter Setup

Every point on the System Parameter setup is much important enough to determine the possibility for this terminal's service. In particular, because the terminal (WS-2100/4100) does not have the display module, there is no way to check the parameter setup procedure.

Therefore, in case of changing parameters, a careful reference on this chapter is required.

[Note] In case of changing the System Parameter, this terminal re-operates through the power on/off by occasional necessity. This is the procedure to secure the best acquisition of the system by changing parameters. But, for the change of A. Key and System Preference, the terminal re-operation is not needed.

[Note] If the wrong key input was done while inputting the System Parameter, the terminal transmits the Error tone of #1.3.9. In this case, if the handset is hung up, the previous key input shall be discarded.

4.6.1 Phone Number (MIN) Input

This terminal features the direct MIN input by using the telephone, among system parameters. The method of MIN input is shown below.

Press #0*901→1 in order
Enter MIN. Up to 10 digits can be input as MIN.
Press <*> button to finish

> #0*901→1→MIN No.→ *

If a user wants to delete the saved phone number, he or she can skip above procedure and just press <*>. The procedure is as below.

> #0*901→1→ *

4.6.2 Directory Number Input

This method shows how to input the Mobile Directory Number into the terminal by using the telephone.

Press #0*901→2 in order
Input MIN. Up to 10 digits can be input as MIN.
Press <*> button to finish

> #0* 901→2→Directory No.→ *

If a user wants to delete the saved Directory Number, he or she can skip above procedure and just press < * >. The procedure is as below.

> #0* 901→2→Directory No.→ *

[Note] Mobile Directory Number is allowed up to 15 digits.

4.6.3 Country Code (MCC) Input

Press #0* 901→3 in order
Enter 3 digits of MCC
Press < * > button to save

> #0* 901→3→MCC(3 digits)→ *

4.6.4 Network Code (MNC) Input

Press #0* 901→4 in order
Enter 2 digits of MNC
Press < * > button to save

> #0* 901→4→MNC(2digits)→ *

4.6.5 Slot Cycle Index Input

Press #0* 901→5 in order
Input the Slot Cycle Index to use
Press < * > button to save

> #0* 901→5→SCI(1digit)→ *

4.6.6 A- Key Input

This terminal supports OTASP. The authentication procedure is required for this OTASP service and this is the function about how to input A Key value which is essential for this authentication procedure. The terminal does not go through power on/off after this menu setting.

Press #0* 901→6 in order
Input 26 digits of A Key value
Press < * > button to save

> #0* 901→6→A Key No. (26 digits)→ *

4.6.7 SID/NID Input & Delete

[Note] If the terminal in use now is WS-2100, this menu appears only if PRL function in 4.5.10 PRL Select is set to Disable.

1) SID/NID Input

 Press #0*901→7 in order
 Select 1~4 to input or change SID_NID Pair
 After inputting SID value, press <*> button
 After inputting NID value, press <*> to finish

> #0*901→7→1~4→SID→ * NID→ *

2) SID/NID Delete

 Press #0*901→7 in order
 Select 1~4 to delete SID_NID
 Press <*> button to finish

> #0*901→7→1~4→ *

4.6.8 System Preference

[Note] If the terminal in use now is WS-2100, this menu appears only if PRL function in 4.5.10 PRL Select is set to Disable.

 Press #0*901→8 in order
 Enter <1> for "Home Only" or <2> for "Home Pref" selection
 Press <*> button to finish

> #0*901→8→1/2→ *

4.6.9 Channel Input & Delete (Only applicable to WS-2100)

**[Note] This menu comes on only if RPL function in 4.5.10 PRL Select is set to Disable
 and this menu is not applied to WS-4100.**

1) Channel Input

 Press #0*901→9 in order
 Select 1~4 to input or change channel

        1 : CDMA Primary A Channel
        2 : CDMA Primary B Channel
        3 : CDMA Secondary A Channel
        4 : CDMA Secondary B Channel
Input channels
Press <*> button to finish

#0*901→9→1~4→Channel → *

2) Channel Delete

Press #0*901→9 in order
Select 1~4 to delete channel
        1 : CDMA Primary A Channel
        2 : CDMA Primary B Channel
        3 : CDMA Secondary A Channel
        4 : CDMA Secondary B Channel
Press <*> button to finish

#0*901→9→1~4→ *

APPENDIX

1. Summary Table-Supplementary Functions

Analog G3 Fax Receiving	On (Fax receiving)	###005
	Off (Voice receiving)	###000
Data Service Receiving Mode Off	With a regular phone	###000
	With an Emulator	'AT+ RCVMOD = 0 ' → Enter Key
Fax Receiving Mode Setting (1 time)	With a regular phone	###001
	With an Emulator	'AT+ RCVMOD = 1 ' → Enter Key
Fax Receiving Mode Setting (till Power Off)	With a regular phone	###002
	With an Emulator	'AT+ RCVMOD = 2 ' → Enter Key
Modem Receiving Mode Setting (1 time)	With a regular phone	###003
	With an Emulator	'AT+ RCVMOD = 3 ' → Enter Key
Modem Receiving Mode Setting (till Power Off)	With a regular phone	###004
	With an Emulator	'AT+ RCVMOD = 4 ' → Enter Key

Speed Dialing	On	#0*100 → 1 → 1 → 1 → *
	Off	#0*100 → 1 → 1 → 2 → *
Hot Line	Timed Hot Line On	#0*100 → 1 → 2 → 1 → *
	Immediate Hot On	#0*100 → 1 → 2 → 2 →*
	Off	#0*100 → 1 → 2 → 3 →*
Phone Number Saving & Deleting	Memory saving	#0*100 → 2 → 1 →memory address →phone number → *
	Deleting one memory	#0*100 → 2 → 2 →memory address → *
	Deleting all addresses	#0*100 → 2 → 3 → *
Alarm Reminder	Time input (1 time)	#0*100 → 3 → 1 → 1 → time(4 digits, 24 hours) → *
	One Time Mode	#0*100 → 3 → 1 → 2 → *
	Always Mode	#0*100 → 3 → 1 → 3 → *
	Alarm Off	#0*100 → 3 → 1 → 4 → *
Ear-Piece Volume Control (5 levels)		###3 → 01 / 02 / 03 / 04 / 05 → * (01:min ← 03:middle → 05:max)
		#0*100 → 3 → 2 → 1~5 → * (1~5 : level 1 ~ level 5)
Voice Privacy Function	On	#0*100 → 1 → 3 → 1 → *
	Off	#0*100 → 1 → 3 → 2 → *
Setting Serial Baud Rate	19,200 bps setting	#0*100 → 3 → 3 → 1 → *
	115,200 bps setting	#0*100 → 3 → 3 → 2 → *
Lock	On	#0*100 → 4 → password → 1 → *
	Off	#0*100 → 4 → password → 2 → *
	Password change	#0*100→4→password→3→new password→* →new password→ *
Default Setting		#0*100 → 4 → password → 4 → *

CLIP Setting	#0*100→8→ Maintenance Code →1→1→*　　:　DTMF mode on	
	#0*100→8→ Maintenance Code →1→2→1→*　:　FSK Type2 mode on	
	#0*100→8→ Maintenance Code →1→2→2→*　:　FSK Type1 mode on	
	#0*100→8→ Maintenance Code →1→3→*　　:　CLIP mode off	
Analog G3 Fax Standard Setting	IS-99/707.4 PC Fax method	#0*100 → 8 → Maintenance Code → 2 → 1 → 1 / 2 → *
		1: PC Fax receiving default
		2: Analog G3 receiving default
	IS-707A.7 method	#0*100 → 8 → Maintenance Code → 2 → 2 → *
Default Rate Set	#0*100 → 8 → Maintenance Code → 3 → 1 / 2 / 3 / 4→ *	
	(1: RS 1 (IS99), 2: RS 2 (IS99), 3: RS 1 (IS707.4), 2: Rate Set 2 (IS707.4))	
Ringer Frequency & Cadence Control	#0*100 → 8 → Maintenance Code → 4 → 1 / 2 / 3　(frequency)　　　　　　　→ 1 / 2 / 3 / 4 / 5 / 6　(cadence) → *	
	(Refer to Frequency 1: 16Hz 2: 20Hz 3: 25Hz　/ Cadence 1,2,3,4,5, 6: 4.8.2)	
Dial Tone Frequency Control	#0*100 → 8 → Maintenance Code → 5 → 1 / 2 / 3 / 4 → *	
	(1: 350+440Hz　　2: 400Hz　　3: 425Hz　　4: 450Hz)	
Waiting Tone Frequency Control	#0*100 → 8 → Maintenance Code → 5 → 1 / 2 / 3 / 4 → *	
	(1: 350+440Hz　　2: 400Hz　　3: 425Hz　　4: 450Hz)	
Default Vocoder S.O Selection	#0*100 → 8 → Maintenance Code → 7 → 1/ 2 / 3/ 4/ 5/ 6/ 7/ 8/ → *	
	(1: 8K EVRC, 2: 13K Qcelp, 3: 8K Qcelp, 4: 8k loop, 5: 13k loop, 6: Old 8k Markov, 7: 8k Markov, 8: 13k Markov)	
Auto Dial Send Time	#0*100 → 8 → Maintenance Code → 8 → 4 / 5 / 6 / 7 / 8 → *	
	(4: 4sec　　5: 5sec　　6: 6sec　　7: 7sec　　8: 8sec)	
PCO Frequency Setting	12KHz setting	#0*100 → 8 → Maintenance Code → 9 → 1 → *
	16KHz setting	#0*100 → 8 → Maintenance Code → 9 → 2 → *
PRL Select(WS_2100)	PRL Enable	#0*100 → 8 → Maintenance Code → 0 → 1 → *
	PRL Disable	#0*100 → 8 → Maintenance Code → 0 → 2 → *
Phone number (MIN)	(input) #0*901 → 1→ MIN (10digits) → *	
	(delete) #0*901→1→ *	
Directory Number	(input) #0*901→2→ MDN (Up to 15digits) → *	
	(delete) #0*901→2→ *	
MCC Input	(input) #0*901→3→ MCC (3digits) → *	
	(delete) #0*901→3→ *	
MNC Input	(input) #0*901→4→ MNC (2digits) → *	
	(delete) #0*901→4→ *	
Slot Cycle Index Input	(input) #0*901→5→ Slot Cycle Index (0~7) → *	
A Key Input	#0*901 → 6 → "AKEY" (26 digits) → *	
SID_NID Pair	(input) #0*901 → 7 → SID_NID select (1~4) → SID select → * → NID select → *	
	(input) #0*901 → 7 → SID_NID select (1~4)→ *	
System Preference	#0*901 → 8 → 1(Home Only) / 2(Home Pref) → *	

Channel(WS2000 Only)	(input) #0*901 → 9 → Channel select (1~4) → Channel input → *
	(delete) #0*901 → 9 → Channel select (1~4) → *

2. Technical Specification

2.1   800MHz bandwidth

Air Interface	Common air interface standard IS-95A/B & IS-95C(CDMA2000) FREQUENCY TX: 824 – 849MHz RX: 869 – 894MHz TX Max. Output Power 200mW ~ 300mW RX Sensitivity - 104dBm below Vocoder 8K/13K QCELP, 8K EVRC Channel Bandwidth CDMA 1.25Mhz RX Conducted Spurious TX BAND: -61dBm below RX BAND: -81dBm below MOD/DEMOD O QPSK/QPSK Frequency Accuracy Fo±300Hz
Battery Back-Up	Type Ni-Cd Capacity 6V @ 1.7A Talk Time 2 Hours Standby Time 20Hours (at slot cycle index 1)
Connectors for Various Service Support	RJ-11 Standard wire-line telephone Analog G3 Fax (Optional) Serial port Maintenance Purpose Data Service Purpose (Internet, PC Fax)
Physical	Dimension (D×W×H) 190×170×55mm Weight (Including Backup battery) 750g
Environmental	Operating temperature 0 °C ~ +50 °C
Power Supply	Input Power 100 ~ 240V, 50/60Hz Output Power DC 12V @ 1.3A
Accessories	Internal Antenna Di-Pole Antenna Power supply (SMPS) Power Cord Tel-line Cord External Antenna (Optional) 10dBi Gain Directional Panel Antenna

2.2　1.9GHz Bandwidth

Air Interface	Common air interface standard　J-STD-008, IS-95B & IS-95C
	FREQUENCY　TX: 1850-4100MHz
	RX: 1930-1990MHz
	TX Max. Output Power　200mW ~ 300mW
	RX Sensitivity　- 104dBm below
	Vocoder　8K/13K QCELP, 8K EVRC
	Channel Bandwidth　CDMA 1.25Mhz
	RX Conducted Spurious　TX BAND:　-61dBm below
	RX BAND:　-81dBm below
	MOD/DEMOD　O QPSK/QPSK
	Frequency Accuracy　Fo±150Hz
Battery Back-Up	Type　Ni-Cd
	Capacity　6V @ 1.7A
	Talk Time　2 Hours
	Standby Time　20Hours (at slot cycle index 1)
Connectors for Various Service Support	RJ-11　Standard wire-line telephone
	Analog G3 Fax (Optional)
	Serial port　Maintenance Purpose
	Data Service Purpose (Internet, PC Fax)
Physical	Dimension (D×W×H)　190×170×55mm
	Weight (Including Backup battery)　750g
Environmental	Operating temperature　0 °C ~ +50 °C
Power Supply	Input Power　100 ~ 240V, 50/60Hz
	Output Power　DC 12V @ 1.3A
Accessories	Internal Antenna　Di-Pole Antenna
	Power supply (SMPS)
	Power Cord
	Tel-line Cord
	External Antenna (Optional)　10dBi Gain Directional
	Panel Antenna

3. Trouble Shooting

In the event of a product malfunction, please check the list below for a possible solution before contacting your local service provider.

In Case…	Try This…
No sound after picking up the phone	Check if the terminal Power LED or Battery LED is on. If the power is off, check if the SMPS power plug is properly connected.
	Check if RJ-11 Jack is properly connected.
Battery LED does not light up after the AC power is gone	Check to make sure the Terminal's Power Switch is ON.
When the Service LED blinks or down.	Check if the antenna is correctly connected or change the terminal location for better signal strength.
When you hear the Warning Tone instead of the Dial tone after picking up the phone	Check if the antenna is correctly connected and or change the terminal location for better signal strength.
When you attempt a call and hear the Warning Tone. Example "Beep beep"	This means no call channel is available or there is a communication failure with the base station.
	Check if the Service LED is on and try to make a call again.
When the call does not go through, and there is a Warning Tone, but you can receive calls.	Probably The Lock Function is on.
	Refer to Section 4.4 of the Manual
	If you do not know the Lock Code, consult
	your distributor or your local service center.
A voice echo during conversations.	The echo removing function of the base station is incorrectly set.
	Refer to Section 4.3.2 of the Manual and adjust the volume.
The other party's voice is faint.	Refer to Section 4.3.2 and adjust the volume.
Battery LED blinks or goes off when in the back up battery is in use.	The Backup Battery Power is very low or being discharged, so re-charged Battery with SMPS

If the problem you are experiencing persists or is not mentioned above, please contact your local distributor or service center. M

Safety Information

1 . SAFETY INFORMATION FOR FIXED WIRELESS TERMINALS

.POTE NTIALLY EXPLOSIVE ATMOSPHERES

Turn your phone OFF when in any area with a potentially explosive atmosphere and obey all signs and instructions. Sparks in such areas could cauls e an explosion or fire resulting in bodily injury or even death.

.İNTERFERENCE TO MEDICAL DIVICES

Certain electronic equipment may be shielded against RF signal from you wireless phone. (pacemakers, Hearing Aids, and so on)
Turn your phone OFF in health care facilities when any regulations posted in these areas instruct you to do so.
RF signals may affect improperly installed or inadequately shielded electronic system in motor vehicles.

.EXPOSURE TO RF ENERGY

Use only the supplied or an approved replacement antenna.
Do not touch the antenna unnecessarily when the phone is in use.
Do not move the antenna close to, or touching any exposed part of the body when making a call.

SAR INFORMATION

THIS MODEL PHONE MEETS THE GOVERNMENT ' S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

Your wireless phone is a radio transmitter and receiver. It is designed and anufactured not to exceed the emission limits for exposure to radio frequency (RF)energy set by the Federal Communications Commission of the U.S.Government.These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluate on of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless mobile phones employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg.*Tests for SAR are conducted with the phone transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the phone while operating can be well below the maximum value. This is because the phone is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output. Before a phone model is available for sale to the public, it must be tested and certified to the FCC that it does not exceed the limit established by the governmentadopted requirement for safe exposure.

The tests are performed in positions and locations (e.g., at the ear and worn on the body) as required by the FCC for each model. The highest SAR value for this model phone when worn on the body, as described in this user guide, is **0.961 W/kg**. (Body worn measurements differ among phone models, depending upon available accessories and FCC requirements). While there may be differences between the SAR levels of various phones and at various positions, they all meet the government requirement for safe exposure. The FCC has granted an Equipment Authorization for this model phone with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model phone is on file with the FCC and can be found under the Display Grant section of http://www.fcc.gov / oet / fccid after searching on **FCC ID : PV4WS-4100.**

Additional information on Specific Absorption Rates (SAR)can be found on the Cellular Telecommunications &Internet Association (CTIA)web-site at http://phonefacts.net.*In the United States and Canada, the SAR limit for mobile phones used by the public is 1.6watts/kg (W/kg)averaged over one gram of tissue. The standard incorporates a substantial margin of safety to give additional protection for the public and to account for any agitations in measurements.

FCC RF EXPOSURE INFORMATION

In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC regulated transmitters. Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of this phone complies with the FCC guidelines and these international standards.

To comply with FCC RF exposure requirements, a minimum separation distance of **2.5cm (0.98 inch)** must be maintained between the user/ bystander and the back of the unit, including the antenna.

For more information about RF exposure, please visit the FCC website at www.fcc.gov

WARNING! Read this information before use

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 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.