

Portable Antenna Controller (PAC-I™) User's Guide



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Revision History

Date	Version	Description
06/06/2004	KC-50-0001-Draft Version	Initial production release of the portable antenna controller (PAC-I) for KMW remote controlled antenna products.
07/20/2004	KC-50-0001-01	Production release
10/22/2004	KC-50-0001-02	Revision update
04/13/2007	KC-50-0001-03	Company information change

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9. Troubleshooting Guide

9.4. Description of Alarm Codes

Item	Code (Hex)	Description
Same Code Over Count	0x01	Current position was detected after a fixed number of trials. Check torque or control voltage.
Open Code Over Count	0x02	Open value was detected after a fixed number of trials. Check connections between Bias-T, cable, and antenna.
Unknown Code Detection	0x04	Unknown position value was detected. Failure due to motor box encoder inside antenna, Bias PCB, Bias-T, AD converter of the controller, etc.
Maximum Limit Detection	0x08	Out of control range. Failure due to motor malfunction or incorrect actuating voltage.
Minimum Limit Detection	0x10	Out of control range. Failure due to motor malfunction or incorrect actuating voltage.
Next Code Not Detection	0x20	Control position failure. Failure due to insufficient torque, motor encoder, etc.
Miss Path Detection	0x40	Failure in control path relay, controller, incorrect position of motor during antenna assembly, etc.

Note: The above alarms include failures that may not be repaired by end-users. Contact KMW Technical Support for further assistance.

9.5. General Information

- PAC reset while operating:
This may be caused by insufficient amount of remaining battery power. Check the battery level and recharge if necessary.
- Recovering from Alarm:
For any alarms listed above (Table 6-1), the PAC automatically recovers from the alarm. If an alarm continues to appear, user may try to recover from the alarm by pressing 'ENT' key after alarm appeared. If the alarm continues after the manual recovery process, contact KMW Technical Support for further assistance.

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1. Preface

1.1 Purpose

- 1.1.1 The purpose of this document is to explain how to operate PAC-I (Portable Antenna Controller – First Edition of Controller Series: herein “PAC-I”) for antenna beam control of KMW’s adjustable antennas (1-Way EDTA, Hybrid 2-Way Antenna).
- 1.1.2 The main use of this portable, easy-to-carry controller is to control vertical and horizontal beam width of KMW’s adjustable antennas.
- 1.1.3 The purpose of PAC-I is to increase the effectiveness of base station operations by offering easier and cost-effective network optimization through remote control capability of antenna beam direction control.

1.2 General Information

- 1.2.1 By incorporating RS-485/422 communications interface, PAC-I is designed to be interoperable with the base station systems.
- 1.2.2 By incorporating RS-232 communications interface, PAC-I supports the value-added features such as user registration, antenna beam control data log management, firmware download, etc.
- 1.2.3 PAC-I is designed to be portable and user-friendly and features Graphic LCD Screen and 4×4 key function.

1.3 Related Documents

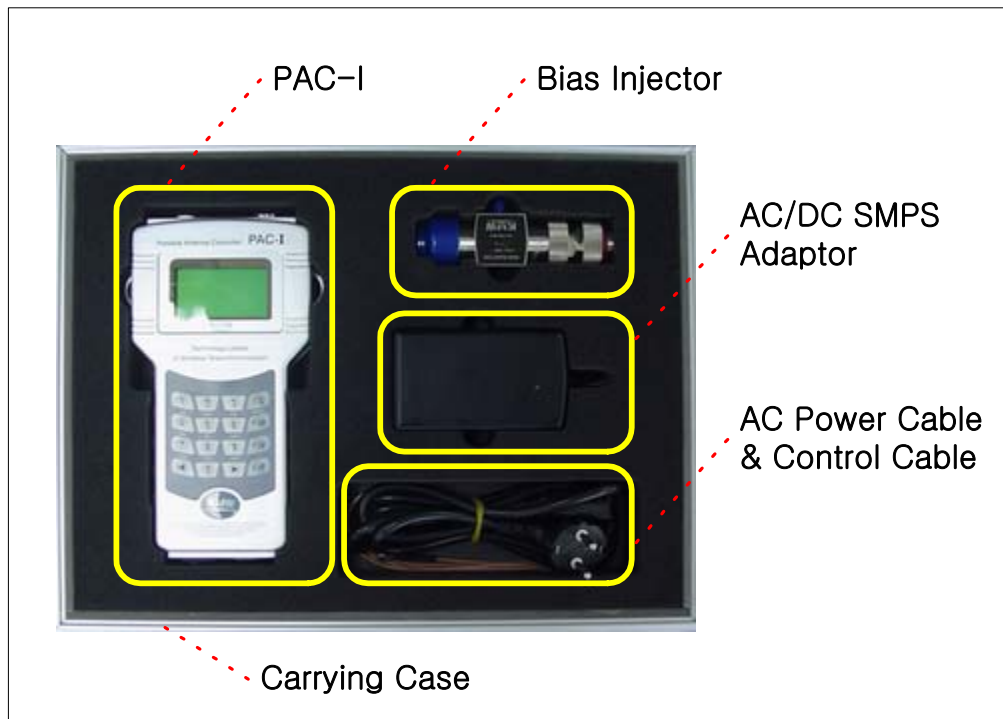
- 1.3.1 PAC-I Specifications
- 1.3.2 Communications protocol between PAC and PAC PC Application software (KMW proprietary protocol)

2. Overview of Portable Antenna Controller Kit

2.1 Controller Kit Packing List

Items	Qty.	Size	Part Number
PAC-I KIT	1	-	KMDAN0104000
PAC-I	1	Refer to product specification in Section 10	KMDAN0103000
Rechargeable Battery (included in PAC-I)	1	3.7V, 3CELL(11.1V, 1.5A) LI-POLYMER	PXZZMD0280A
AC/DC SMPS Adaptor	1	Input: 100~240V, 50/60Hz 1.5A Output: 19VDC, 3.68A 70W	XW01MD028ZA
AC Power Cable	1	250V, 2M	XMJ0MD028ZA
AC Power Plug	1	220V to 110V	PXZZMD0281A
Control Cable	1	SMA(M)-to-SMA(M), RG316Type, 2 meter	KCA051011056
RS-232 Cable	1	DSUB(M) to DSUB(F), 2 meter	WA01MD0519A
Bias-Injector with DIN-Barrel Adaptor	1	-	KASCTR182019
Shoulder Strap	1	2 meter	PXZZMD0282A
Carrying Case	1	410×310×125 mm	GC91MD0519A
User guide	1	-	KC-50-0001-02
Program CD	1	PAC PC Application	-
Adaptor	1	DIN(M) - DIN(M)	KAD828211000

Figure 2-1. Inside View of PAC Kit



2.2 Controller Functions

- Vertical (electrical) and/or horizontal (mechanical) antenna beam control
- Antenna model (EDTA 1-way, Hybrid 2-way) and sector selection
- User ID and password input for security protection
- Base station ID input for history log
- Data interoperability between PAC and PAC PC Application
 - Registration of user ID and password
 - Registration of base station ID
 - Antenna control data upload and management
 - Firmware (F/W) download
- Power detector and indicator
 - AC/DC Adaptor connection detector
 - Battery level indicator
- Time and date display
- Automatic speed control of antenna beam controlling motor
- Automatic recovery of antenna control alarm
- Various communications protocol support
 - RS-232: PAC-I ↔ PAC PC Application
 - RS-485/422: PAC-I ↔ Base station systems

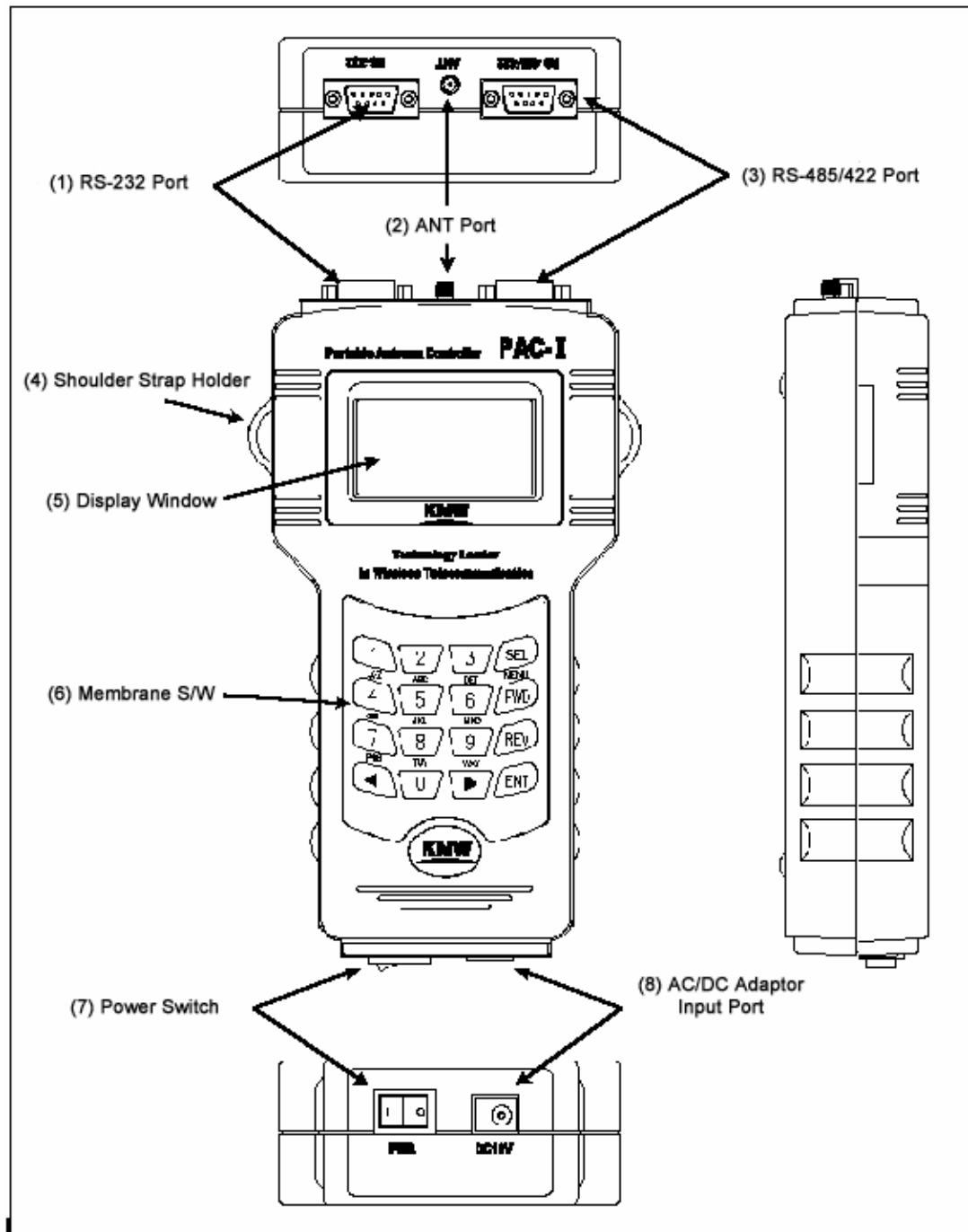
2.3 PAC-I Operating Requirements

- PAC-I allows antenna control of KMW's remotely adjustable antennas only.
- User has the basic operations knowledge of the KMW current antenna products. For new antenna models KMW develops in the future, user may need to update the software.
- PAC-I uses rechargeable battery as its main source of power, and user should frequently check and charge the battery to maintain its optimal power level.
- Although PAC-I has Super User ID and BTS ID already stored in it, it is advised that the user registers its own user ID and BTS ID using PAC PC Application software in order to secure and manage the data effectively.

3. Overview of PAC-I

3.1 External View

Figure 3-1. External View of PAC-I



3.2 Part Description

- **RS-232 Port:**
This is for communication between PAC-I and PAC PC Application software (RS-232 communications standard) installed on a PC.
- **ANT Port:**
This is for antenna beam control. Connect DC input port of Bias-T and ANT Port with Control Cable.
- **RS-485/422 Port:**
This is for communication between PAC-I and base station systems. For its use, protocol should be discussed with the customer.
- **Shoulder Strap Holder:**
Used to hold shoulder strap.
- **Display Window:**
Displays the date, time, battery level, and antenna control information and status.
- **Membrane S/W:**
This is the keypad to input antenna control information. 4×4 Matrix Key Function is used to enhance easy operation and support multiple functionalities PAC-I offers.
- **Power Switch:**
Switch for power supply.
- **AC/DC Adaptor Input Port:**
This is the input port for outside power supply. It connects PAC-I to outside power supply in case the built-in battery dies or does not have enough power charged to operate PAC-I.

4. Preparation

4.1 PAC-I Packing List

User should make sure that there is no missing part from PAC-I Kit to prevent any control failure or error during operation. (Refer to Section 2.1)

4.2 Power Supply/Battery

After turning on the power switch of PAC-I, user should check the battery indicator located on the top right corner of LCD screen to verify if the battery is charged sufficiently to operate PAC-I. If this indicator blinks every second, user needs to recharge the battery.

Figure 4-1. View of LCD Screen

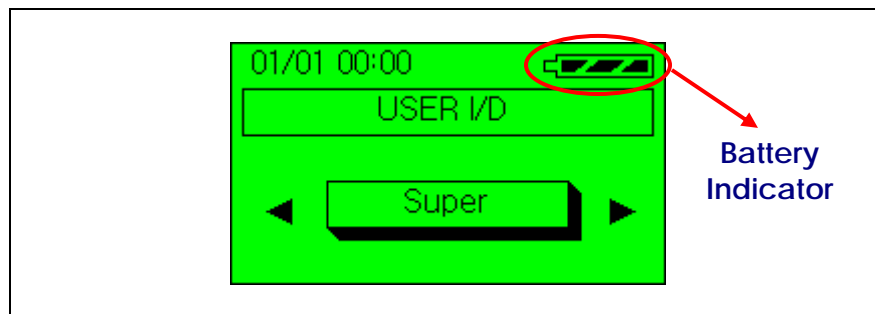



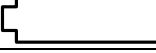



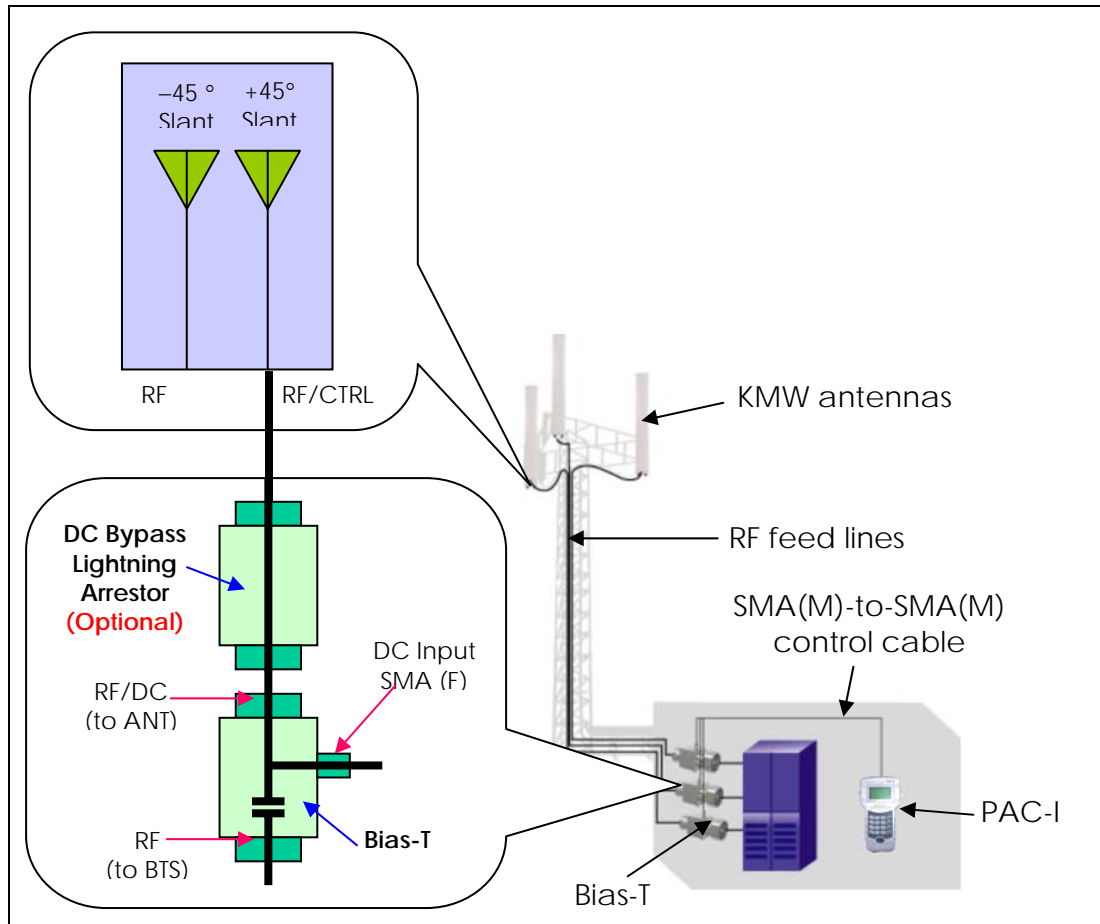
Figure 4-2. Battery Level Indicator

Battery Indicator	Power Level
	75% to 100% full
	50% to 75% full
	25% to 50% full
	Below 25% full
	If power level is below 20%, the indicator blinks every second to warn the user to recharge.

4.3 Connecting PAC using Control Cable

As shown in Figure 4-3, connect DC input port of the Bias-T to the ANT port of the PAC using the SMA(M)-to-SMA(M) RG316 type control cable.

Figure 4-3. Interface between the PAC-I and KMW remote adjustable antennas

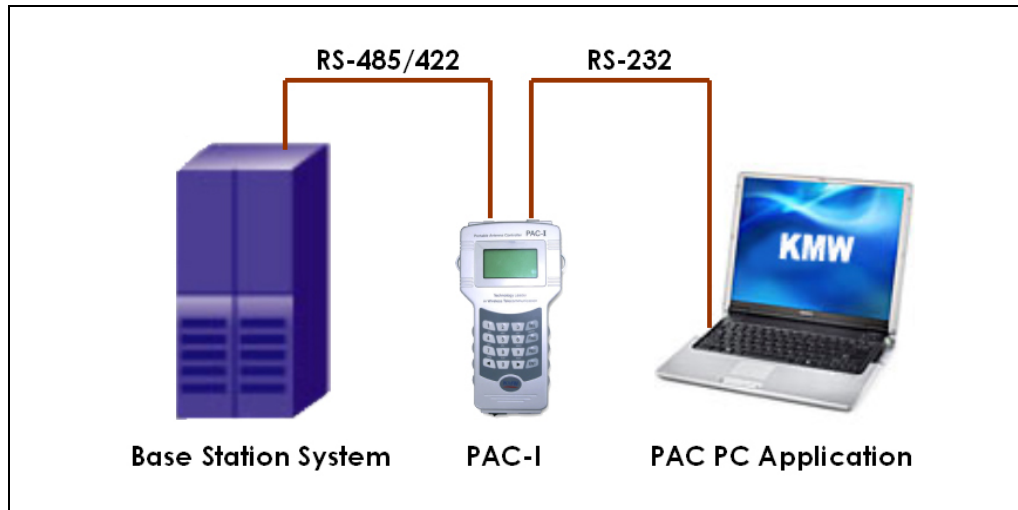


Important: There should be direct DC path from the PAC through Bias-T to the antenna in order for the remote control signal to flow up to the antenna. If additional lightning protection is required, use a lightning arrestor with DC bypass feature.

4.4 Connecting Optional PAC Communication Cables

When configuring PAC using the PAC PC Application software or connecting PAC to the base station, use RS-232 cable (included in the PAC Kit) and/or RS-485/422 cable (not included in the PAC Kit) to connect the PAC to a PC or to a base station system as shown in Figure 4-4.

Figure 4-4. Interface between the PAC-I and Personal Computer/Base Station System



Note: RS-485/422 cable is not included in the PAC Kit.

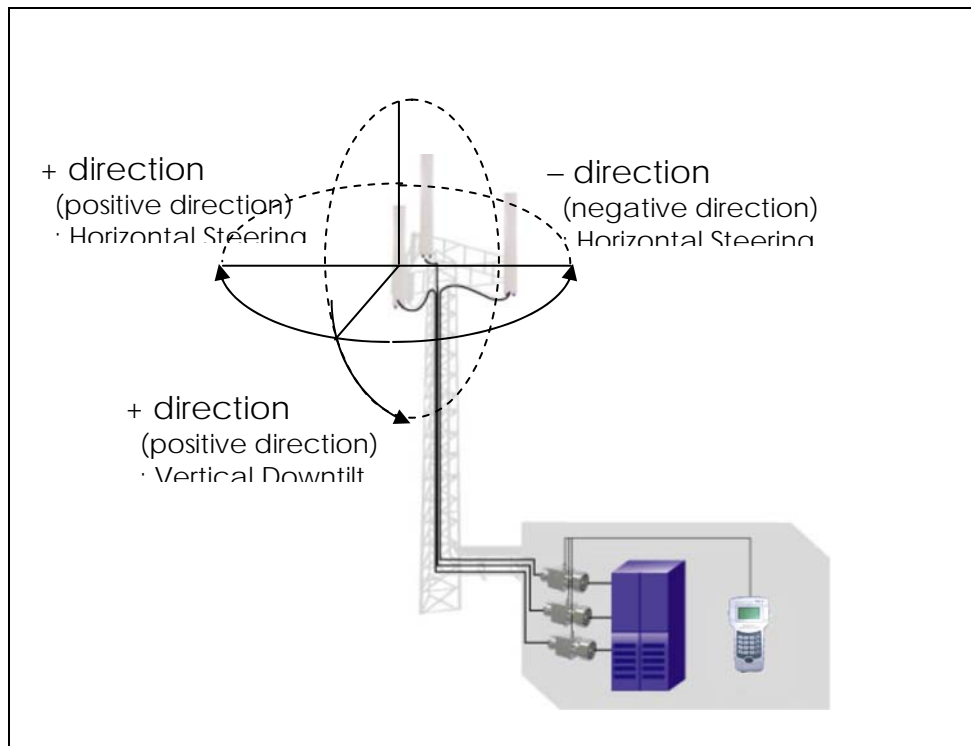
4.5 Connecting Optional PAC Communication Cables

KMW's remotely adjustable antenna products follow the following direction conventions. When using the Portable Antenna Controller, please refer to the following conventions for the changes in the peak gain direction.

The positive horizontal beam steering angles mean clockwise rotation from the boresight of the antenna (i.e., the perpendicular direction of the mounting surface) and the negative horizontal beam steering angles mean counterclockwise rotation from the boresight of the antenna.

As for the vertical downtilt, the positive angles mean the electrical downtilt angles, and no electrical uptilt is currently available.

Figure 4-5. Antenna Configuration Direction Convention



5. Operating PAC-I

5.1 Key Functions

Figure 5-1. Key Pad Layout

1 .QZ	2 ABC	3 DEF	SEL MENU
4 GHI	5 JKL	6 MNO	FWD
7 PRS	8 TUV	9 WXY	REV
◀	0	▶	ENT

5.1.1 Numeric (Character) Key

Used when inputting password, time, date and etc.

5.1.2 Function Key

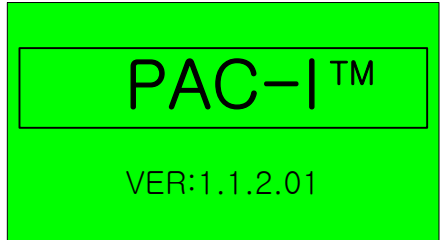
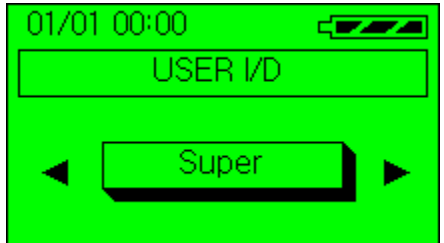
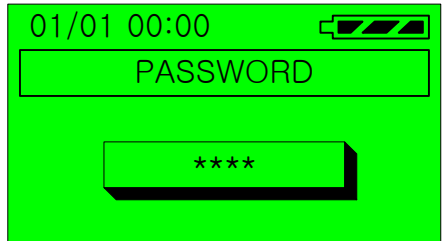
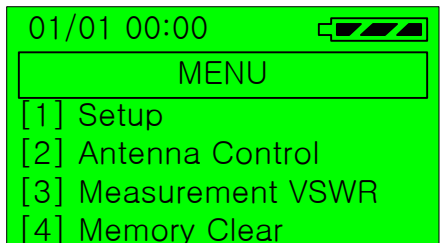
- 'SEL/MENU' Key
Used to change antenna configuration (vertical, horizontal). To select the MENU option, press SEL/MENU key for more than a second.
- 'FWD' Key
Used to increase (targeted) antenna steering angle. Also used when selecting MENU (UP Key).
- 'REV' Key
Used to decrease (targeted) antenna steering angle. Also used when selecting MENU (DOWN Key)
- 'ENT' key
Used to select menu and activate antenna control.

5.1.3 Shift Key

- Left Shift Key (◀)
Used to move cursor to the left.
- Right Shift Key (▶)
Used to move cursor to the right.

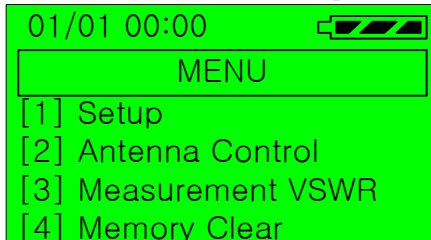
5.2 Verifying User ID and password

In order to prevent unauthorized use of PAC and to track/manage user data, all users must go through the user verification process.

1.	Check to make sure that ANT Port(F) on PAC is connected to DC Input Port(F) on Bias-T with SMA(M)-to-SMA(M) Control Cable.	
2.	Turn on the power switch at the bottom of PAC-I.	
3.	Select USER ID by using left (◀) or right (▶) 'Shift' key, then pressing 'ENT'. User can register up to 10 USER ID's using both PAC-I and PAC PC Application.	
4.	Type in four-digit password. Note: If the inputted password is correct, the next screen will appear automatically. If the password is incorrect, it will flash "Retry..!" then ask for the password again.	
5.	If the correct password is entered and the user is verified, the MENU screen will appear.	

5.3. Menu

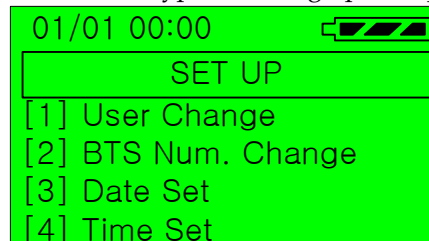
MENU brought up during antenna beam control has the same menu items and uses as the MENU appeared in the beginning. To bring up MENU while controlling antenna, press 'SEL' for more than a second. Re-press 'SEL' to go back to the previous screen.



- [1] Setup : Selecting different options for antenna beam control and data management.
- [2] Antenna Control : Vertical, Horizontal, Beam Width control
- [3] Measurement VSWR : Measuring VSWR. It is not used currently.
- [4] Memory Clear : Deleting antenna beam control data stored in memory.

5.4. Setup

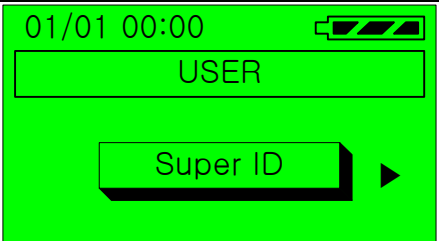
While on the above MENU screen, press '1' on the keypad to bring up 'Setup' menu. To go

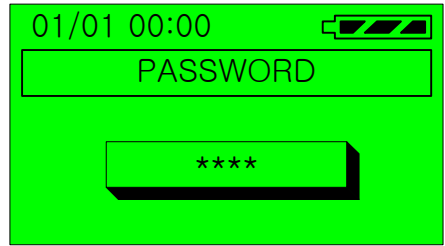


back to the previous menu, press 'SEL.'

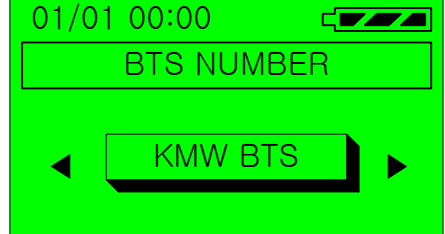
5.4.1. [1] User Change

Used to change the current user. From SET UP menu screen, press '1' on the keypad to select 'User Change.' In order to cancel the selection, press 'SEL' and go back to the previous menu.

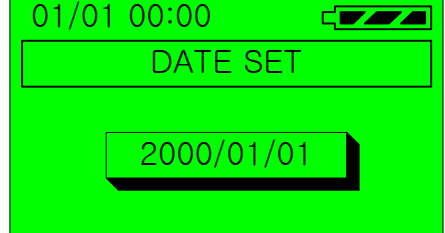
1. Using Left(◀) or Right(▶) 'Shift' Key, select the registered USER'S I/D and press 'ENT.' User can register up to 10 USER I/Ds using both PAC-1 and PAC PC Application.	
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<p>2. Type in four-digit password.</p> <p>Note: If the inputted password is correct, the next screen will appear automatically. If the password is incorrect, it will flash "Retry..!" then ask for the password again.</p>	
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- 5.4.2. [2] BTS Num. Change
Used to change the BTS Number. From SET UP menu screen, press '2' to select 'BTS Num. Change.' In order to cancel the selection, press 'SEL' and go back to the previous menu.

<p>Using left(◀) or right(▶) 'Shift' Key, select the registered BTS Number and press 'ENT.' Up to 10 BTS Numbers can be registered using PAC PC Application.</p>	
--	--

- 5.4.3. [3] Date Set
Used to set the date. From SET UP menu screen, press '3' to select 'Date Set.' In order to cancel the selection, press 'SEL' key and go back to the previous menu.

<p>1. Using the keypad, input the DATE. The cursor automatically shifts to the right when numbers are entered, however, it can also be moved by pressing left(◀) or right(▶) 'Shift' key. Press 'ENT' to complete the date set up.</p>	
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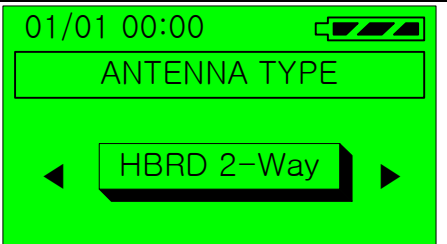
- 5.4.4. [4] Time Set
Used to set the time. From SET UP menu screen, press '4' to select 'Time Set.' In order to cancel the selection, press 'SEL' key and go back to the previous menu.

<p>2. Using the keypad, input the TIME (00:00 ~ 23:59). The cursor automatically shifts to the right when numbers are entered, however, it can also be moved by pressing left(◀) or right(▶) 'Shift' key. Press 'ENT' to complete the date set up.</p>	
--	--

5.5. Antenna Control(Finding current antenna beam configuration)

This menu is for antenna beam controls. User must go through the below steps to control antenna beams. From the main MENU screen, press '2' to select 'Antenna Control.' In order to cancel the selection, press 'SEL' key and go back to the previous screen.

5.5.1. Antenna Type Selection

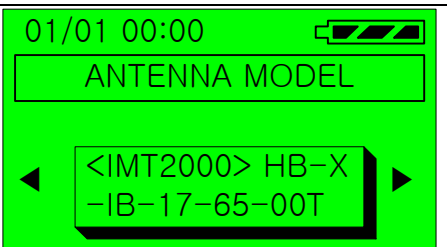
1. Using left(◀) or right(▶) 'Shift' Key to select the ANTENNA TYPE to be controlled and press 'ENT.'	
---	--

* Antenna Type List

Antenna Type	Description
EDTA 1-Way	Vertical beam tilt capability
HBRD 2-Way	Vertical beam tilt and horizontal steering capability
<3> Sector	3 Sector Antenna control
Dual Band	Vertical beam tilt and horizontal steering capability for 2 different frequency band
Qaud Band	Vertical beam tilt and horizontal steering capability for 2 same frequency band
<3> Column	Beam width control and horizontal steering capability

5.5.2. Antenna Model Selection

Select Antenna Model for the Antenna Type selected in the above menu.

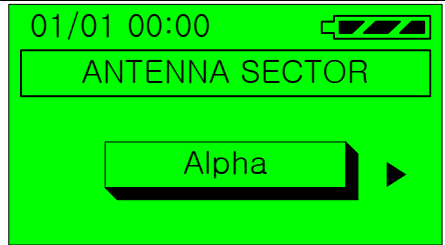
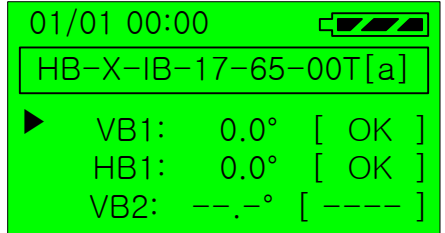
1. Using left(◀) or right(▶) 'Shift' Key to select the ANTENNA MODEL, and press 'ENT.'	
--	--

* Antenna Model by Antenna Type

Antenna Type	Antenna Model	Ver No.1 Range	Ver No.2 Range	Horizontal Range	Remark
EDTA 1-Way	AM-X-CB-15-65-00T	0°~14°	-	-	Cellular 800
	AM-X-CB-15-65-06T	6°~20°	-	-	Cellular 800
	AM-X-CB-17-65-00T	0°~14°	-	-	Cellular 800
	AM-X-GB-15-65-00T	0°~14°	-	-	GSM 900
	AM-X-DB-17-65-00T	0°~16°	-	-	DCS 1800
	AM-X-PA-17-65-00T	0°~16°	-	-	US PCS
	AM-X-IB-17-65-00T	0°~16°	-	-	IMT 2000
HBRD 2-Way	HB-X-CB-15-65-00T	0°~14°	-	-30°~ +30°	Cellular 800
	HB-X-GB-15-65-00T	0°~14°	-	-30°~ +30°	GSM 900
	HB-X-CB-15-65-06T	6°~20°	-	-30°~ +30°	Cellular 800
	HB-X-PA-17-65-00T	0°~16°	-	-30°~ +30°	US PCS
	HB-X-IB-17-65-00T	0°~16°	-	-30°~ +30°	IMT 2000
<3>Sector	E3-X-CB-15-65-00T	0°~14°	-	-	Cellular 800
	H3-X-PA-17-65-00T	0°~16°	-	-15°~ +15°	US PCS
Dual Band	HD-X-CA-FH-65-00T	0°~16°	0°~14°	-30°~ +30°	US PCS / Cellular 800
Quad Band	HQ-X-PA-17-65-00T	0°~16°	0°~16°	-30°~ +30°	US PCS*2
<3>Column	HH-X-PA-18-VA-02T	35°,65°,90°,120°	-	-30°~ +30°	Beam Width

5.5.3. Antenna Sector Selection

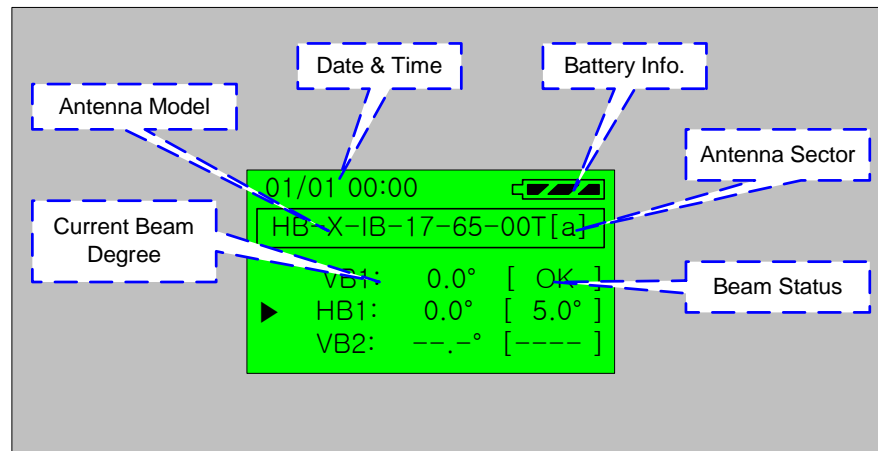
Select Antenna Sector for the Antenna Model selected in the above menu.

1. Using left(◀) or right(▶) 'Shift' Key to select the ANTENNA SECTOR to be controlled and press 'ENT.'	
2. When all the above set up process is completed, PAC will automatically start finding the current antenna configuration, and when it's found, PAC allows user to control/change antenna beam configuration.	

5.6. Antenna Beam Direction Control

5.6.1. LCD Screen

Figure 5-2. View of LCD Screen



- Date & Time: Current date and time
- Battery Info.: Indicate battery power level
- Antenna Model: Controlling antenna model
- Antenna Sector: Controlling antenna beam sector
- Current Beam Degree: Steering antenna beam angle (vertical, horizontal)
- Beam Status: Antenna beam status

5.6.2. Changing Control Path (Vertical, Horizontal, Beam Width)

Change control path using 'SEL/MENU' key. Each time 'SEL/MENU' key is pressed, different control path (vertical or horizontal) is selected; this does not apply to EDTA, 1-way antenna. By checking where the arrow is pointing, the user can verify the current control path.

5.6.3. Changing Antenna Configuration

Using Function Key (SEL/MENU, FWD, REV, ENT Key) input the new configuration. Pressing 'SEL/MENU' Key during the process will delete all the inputted figures and send the user back to the previous stage.

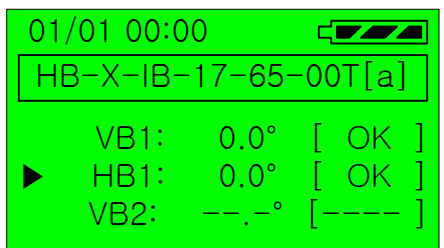


<p>1. Select control path using 'SEL/MENU' key.</p> <p>Diagram: Horizontal Beam Control</p>	
<p>2. Input desired configuration angle using 'FWD', 'REV' key. Pressing 'FWD' will increase the angle and pressing 'REV' will decrease the angle. If either key is pressed for more than a second, the angle will automatically increase('FWD')/decrease('REV').</p>	


Diagram: Forward Control (0.0° → 5.0°)	<div>01/01 00:00 </div> <div>HB-X-IB-17-65-00T[a]</div> <div> <div>VB1: 0.0° [OK]</div> <div>▶ HB1: 0.0° [5.0°]</div> <div>VB2: --.-° [----]</div> </div>
3. Activate antenna beam control by pressing 'ENT'.	<div>01/01 00:00 </div> <div>HB-X-IB-17-65-00T[a]</div> <div> <div>VB1: 0.0° [OK]</div> <div>▶ HB1: 5.0° [OK]</div> <div>VB2: --.-° [----]</div> </div>

5.7. Measurement VSWR

This menu is to measure VSWR, but is not used currently.

5.8. Memory Clear

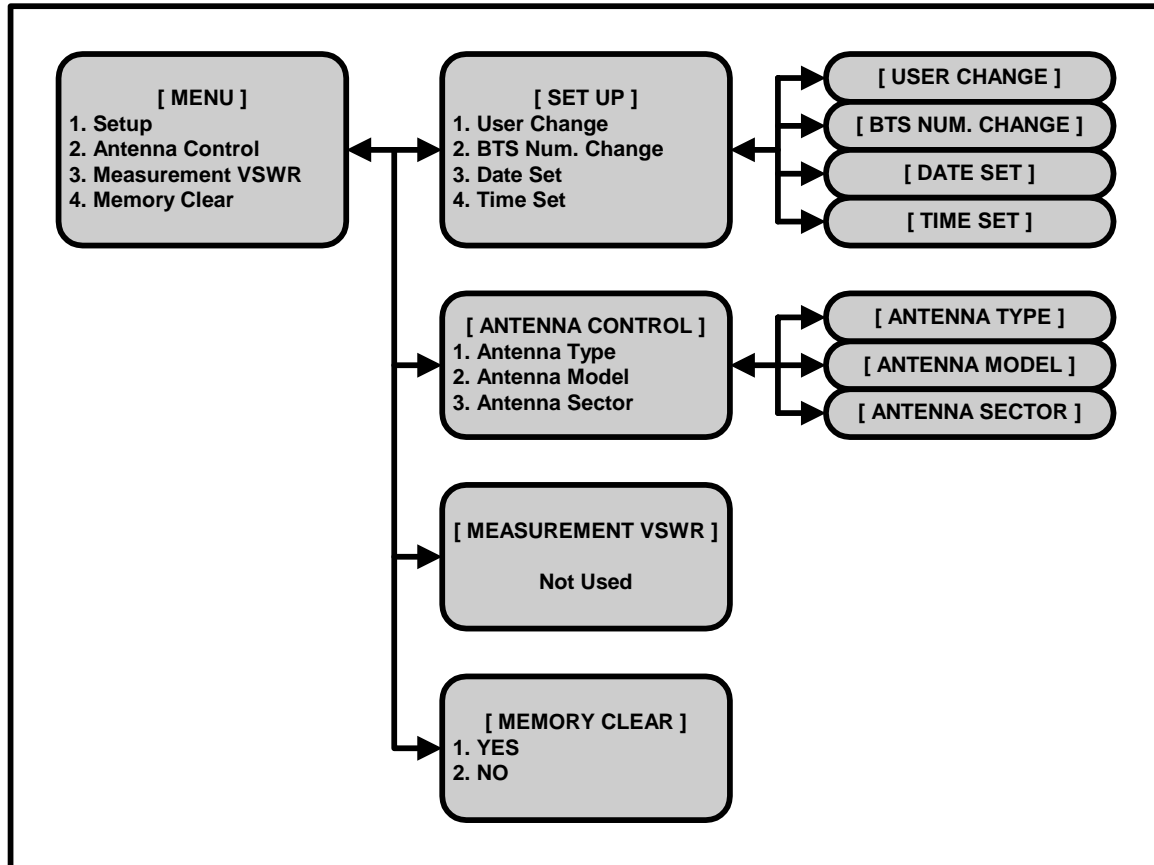
This menu is to allow users to clear the logging data stored in memory. The current PAC-I can store up to 400Frame logging data. If data is stored more than 395Frame while operating PAC-I, the warning message ('Memory Full') will appear. In such case, the user has to print the logging data, then perform 'Memory Clear' to prevent any damage to the stored data. From SET UP menu screen, press '4' on the keypad to perform 'Memory Clear.'

<p>1. Press 'ENT' key to perform 'Memory Clear' or press 'SEL' key to cancel.</p> <p>In order to minimize damage to the data, user must print the data using PAC PC Application program, and then perform 'Memory Clear.'</p>	<div>01/01 00:00 </div> <div>MEMORY CLEAR</div> <div> <div>YES : <ENT> Key</div> <div>NO : <SEL> Key</div> </div>
---	--

6. PAC Menu Structure

6.4. Menu Diagram

Figure 6-1. PAC Menu Diagram Structure Overview



7. PAC PC Application User's Guide

7.4. Operating Environment

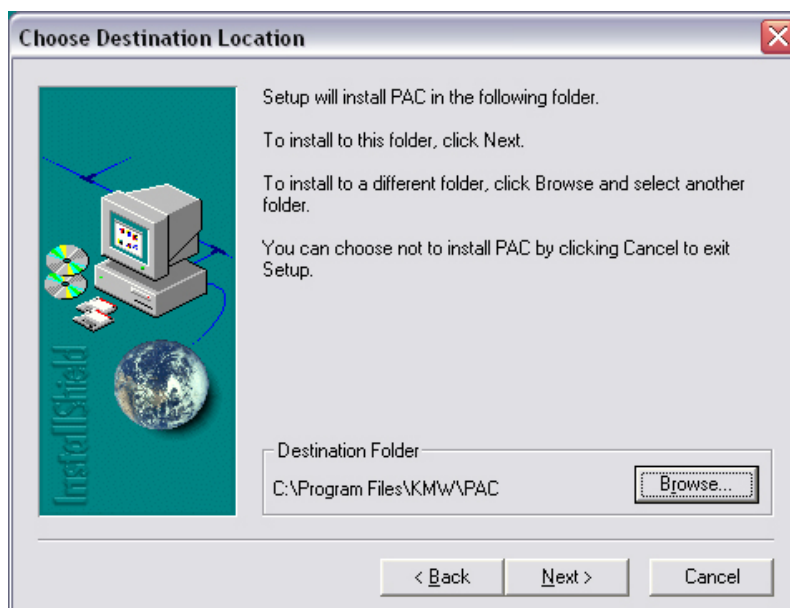
- Operating System: Windows 95/98/ME/2000/XP/NT
- Processor: Pentium 500 MHz or higher
- Memory: 128 MB RAM or higher

7.5. Program Installation and Execution

7.5.1.1. Insert companion CD in to the CD/DVD drive of your PC.

7.5.1.2. Run 'PAC PC application.exe' and follow the on-screen instructions to install the program to the desired directory.

Figure 4-1. Program Installation Destination Selection Window



7.5.1.3. After the program has been successfully installed, run the PAC Application program by selecting 'START' → 'All Programs' → 'Portable Antenna Controller' → 'PAC' from the Windows menu.

7.6. Start-up Window

When you run the PAC program, the following window will appear.

Note: This program cannot be run simultaneously for more than one window on a single PC.

Important: This program requires at least one available serial port (i.e., COM1, COM2, COM3, or COM4). If the serial port is not installed or available, the following error message will appear.

Figure 4-2. Serial Port Error Message Window

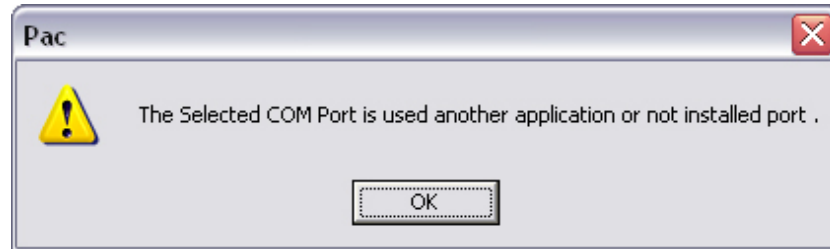
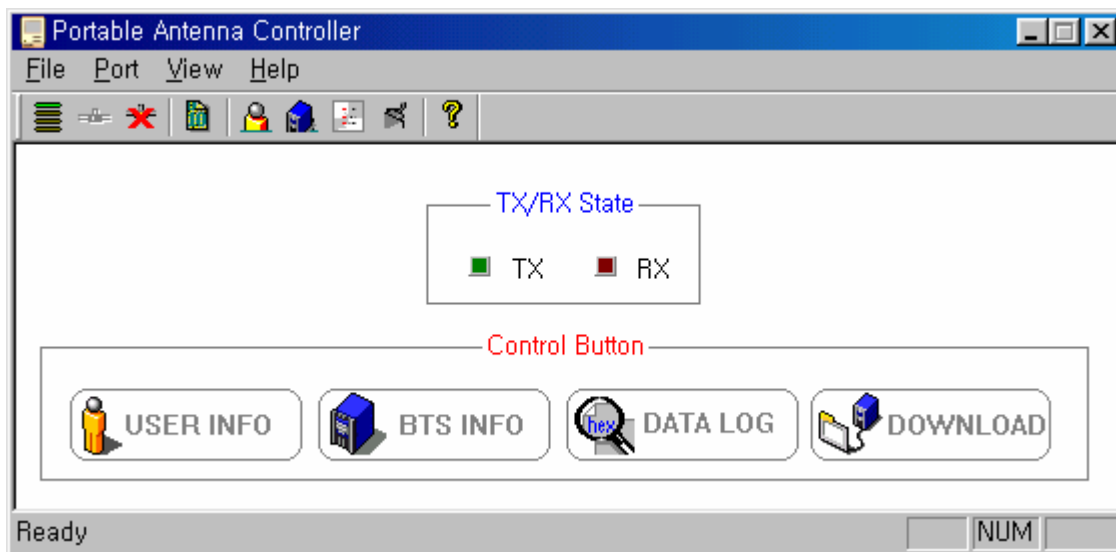


Figure 4-3. PAC Program Start-up Window



- **TX/RX State**
The TX LED flashes when data is being transferred from the PC to the PAC and the RX LED flashes when data is being received from the PAC to the PC.

Note: If the TX LED is not flashing when sending data to PAC, make sure that a serial port has been opened from the **Port** menu. If RX LED is not flashing after sending data to the PAC for a long time (i.e., exceeding the Timeout period), check the status of PAC if it's powered-on or the serial cable in between.

- **USER INFO**
Used to set up User ID and Password.
- **BTS INFO**
Used to set up Base Station (BTS) ID.
- **DATA LOG**
Used to read the LOG DATA from the PAC.

- **DOWNLOAD**

Used to download new version of the PAC program to the PAC's ROM.

7.7. Getting Started

7.7.1. Port Setup

Select **P**ort menu from the window (Figure 4-4) and select **P**ort **S**et menu from the pull-down menu to launch PORT Properties setup window (Figure 4-5).

Figure 4-4. Port Setup Menu

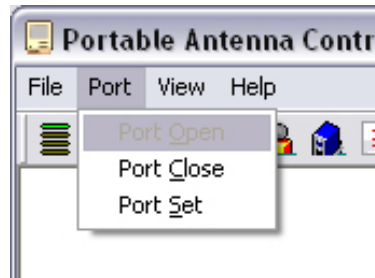
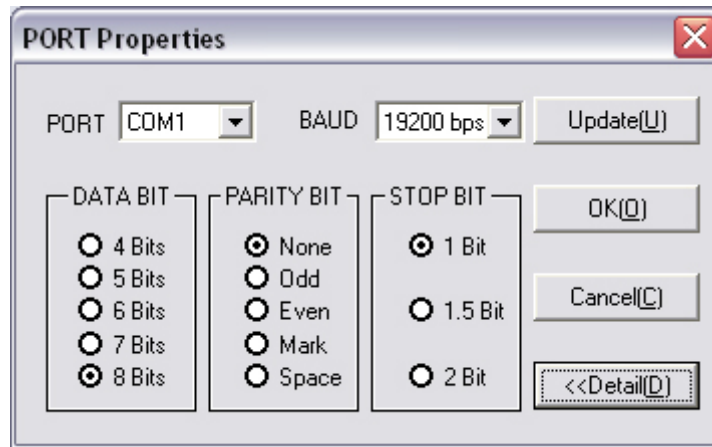


Figure 4-5. PORT Properties Window



Select the serial port number (COM1, for example) that is connected to the PAC, set BAUD rate to 19200 bps, DATA BIT to 8 Bits, PARITY BIT to None, STOP BIT to 1 Bit, and click 'OK (O)' button.

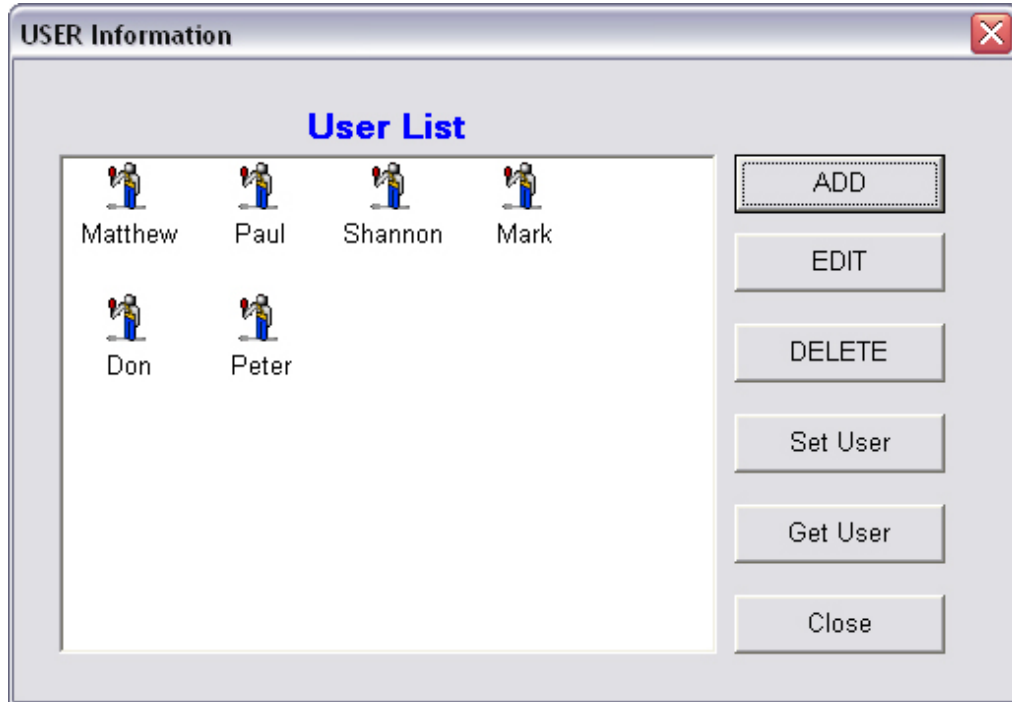
Note: Once the port properties have been set up, the configuration is stored on to the PC so that the selected port is automatically connected and opened the next time the program is ran.

7.7.2. User Information

Select **V**iew → **U**ser **I**nformation from the menu or click **USER INFO** button to set up the authorized user information.

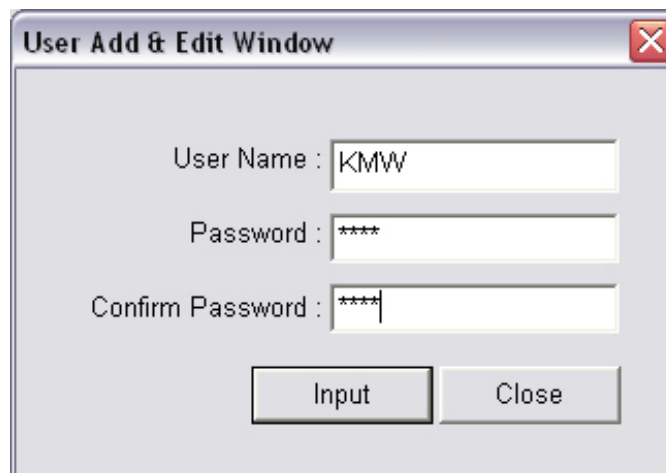
Important: Before registering new users, make sure to down load the existing user information from the PAC by clicking **Get User** button FIRST.

Figure 4-6. User Information Window



- **ADD**
Used to register new user ID (up to 8 characters) and password (four digit number). The maximum number of users is 10.

Figure 4-7. User Add & Edit Window



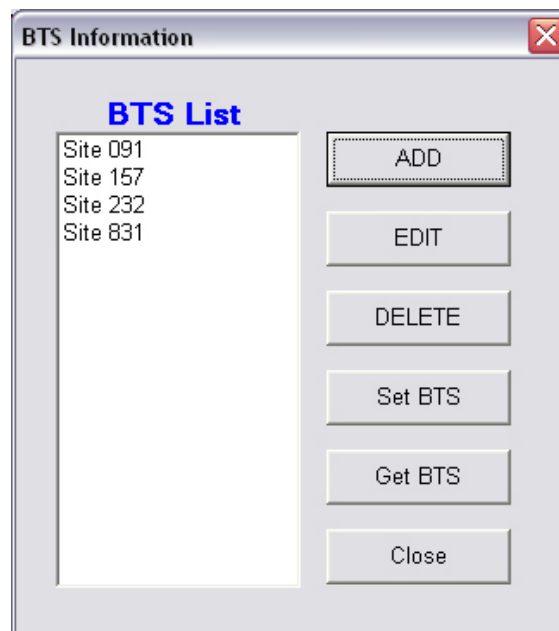
- **EDIT**
Used to change user ID (up to 8 characters) or password (four digit number). Select the user ID to be edited, change user ID or password, and click **Input** button.
- **DELETE**
Used to delete user ID from the User List. Select the user ID to be deleted and then click the **DELETE** button to delete.
- **SET USER**
Used to send the new user list information to the PAC. After updating the user list, click this **SET USER** button to download the new user list information to the PAC's ROM.
- **GET USER**
Used to retrieve the user list information stored on the PAC's ROM to the PC.

7.7.3. BTS Information

Select **View → BTS Information** from the menu or click **BTS INFO** button to set up the base station information.

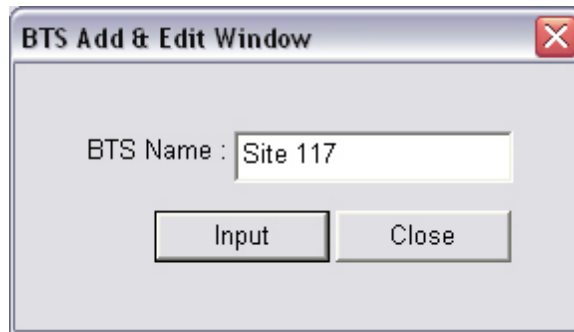
Important: Before registering new cell site base stations, make sure to down load the existing BTS information from the PAC by clicking **Get BTS** button FIRST.

Figure 4-8. BTS Information Window



- **ADD**
Used to register new BTS ID (up to 10 characters). The maximum number of BTS ID's is 10.

Figure 4-9. BTS Add & Edit Window



- **EDIT**
Used to change BTS ID (up to 10 characters). Select the BTS ID to be edited, change BTS ID, and click **Input** button.
- **DELETE**
Used to delete BTS ID from the BTS List. Select the BTS ID to be deleted and then click the **DELETE** button to delete.
- **SET BTS**
Used to send the new BTS list information to the PAC. After updating the BTS list, click this **SET BTS** button to download the new BTS list information to the PAC's ROM.
- **GET BTS**
Used to retrieve the BTS list information stored on the PAC's ROM to the PC.

7.7.4. Data Log

Select **View → Control Data Log** from the menu or click **DATA LOG** button to view all the control history log of the PAC. To download the data log from the PAC, click **Data Out** button. Once data log has been retrieved from the PAC, clicking the Print button can print out the information displayed.

Important: Once data log has been retrieved from the PAC, all data log information stored on the PAC is erased. Therefore, if you want to keep the data log information, print out the data log to make a hard copy and store it in a safe place.

Figure 4-10. Data Log Window

NO.	Date	Time	BTS Name	User	ANT. Model	Sector	VER.	HOR.	VER. Alarm	HOR. Alarm
0	01/02/03	04/05/06	KMW_BTS_**	KMW_KMW8	CEL800M V20 H60	Gamma	1.5	-26.0	Same Code	Max Code
1	02/03/04	05/06/07	KMW_BTS_**	KMW_KMW8	CEL800M V14 H30	Alpha	0.0	-21.0	Same Code	Same Code
2	03/04/05	06/07/08	KMW_BTS_**	KMW_KMW8	CEL800M V20	Alpha	1.5	--	Unknown Code	--
3	04/05/06	07/08/09	KMW_BTS_**	KMW_KMW8	GSM1800M V16 H30	Alpha	4.0	-27.0	Next Code	Same Code
4	05/06/07	08/09/10	KMW_BTS_**	KMW_KMW8	US PCS V16	Beta	0.5	--	Next Code	--
5	06/07/08	09/10/11	KMW_BTS_**	KMW_KMW8	CEL800M V14 H60	Alpha	1.5	-25.0	Min Code	Good
6	07/08/09	10/11/12	KMW_BTS_**	KMW_KMW8	GSM1800M V16	Beta	2.5	--	Mis Code	--
7	08/09/10	11/12/13	KMW_BTS_**	KMW_KMW8	GSM900M V13 H30	Alpha	3.0	-22.0	Min Code	Mis Code
8	09/10/11	12/13/14	KMW_BTS_**	KMW_KMW8	IMT2000 V16 H30	Beta	1.0	-26.0	Next Code	Min Code
9	10/11/12	13/14/15	KMW_BTS_**	KMW_KMW8	IMT2000 V16	Beta	0.0	--	Same Code	--
10	11/12/13	14/15/16	KMW_BTS_**	KMW_KMW8	US PCS V16 H30	Gamma	6.0	-23.0	Good	Open Code
11	12/13/14	15/16/17	KMW_BTS_**	KMW_KMW8	CEL800M V14	Gamma	5.5	--	Next Code	--
12	13/14/15	16/17/18	KMW_BTS_**	KMW_KMW8	GSM900M V13	Alpha	4.0	--	Next Code	--
13	14/15/16	17/18/19	KMW_BTS_**	KMW_KMW8	CEL800M V20 H60	Gamma	6.0	-32.0	Max Code	Open Code
14	15/16/17	18/19/20	KMW_BTS_**	KMW_KMW8	US PCS V16	Gamma	0.0	--	Unknown Code	--
15	16/17/18	19/20/21	KMW_BTS_**	KMW_KMW8	CEL800M V14	Alpha	2.0	--	Same Code	--
16	17/18/19	20/21/22	KMW_BTS_**	KMW_KMW8	CEL800M V14 H30	Alpha	5.0	-27.0	Same Code	Unknown Code
17	18/19/20	21/22/23	KMW_BTS_**	KMW_KMW8	IMT2000 V16 H15	Alpha	3.0	-21.0	Same Code	Open Code
18	19/20/21	22/23/24	KMW_BTS_**	KMW_KMW8	CEL800M V20 H60	Alpha	1.5	-30.0	Max Code	Good
19	20/21/22	23/24/25	KMW_BTS_**	KMW_KMW8	US PCS V16 H15	Alpha	5.0	-20.0	Same Code	Good
20	21/22/23	24/25/26	KMW_BTS_**	KMW_KMW8	GSM900M V13	Alpha	4.5	--	Unknown Code	--
21	22/23/24	25/26/27	KMW_BTS_**	KMW_KMW8	CEL800M V14 H60	Beta	0.5	-31.0	Next Code	Next Code
22	23/24/25	26/27/28	KMW_BTS_**	KMW_KMW8	IMT2000 V16 H30	Beta	2.0	-21.0	Unknown Code	Mis Code
23	24/25/26	27/28/29	KMW_BTS_**	KMW_KMW8	CEL800M V14 H60	Alpha	0.0	-30.0	Same Code	Mis Code
24	25/26/27	28/29/30	KMW_BTS_**	KMW_KMW8	CEL800M V20	Gamma	4.0	--	Min Code	--
25	26/27/28	29/30/31	KMW_BTS_**	KMW_KMW8	CEL800M V14 H30	Beta	5.5	-28.0	Min Code	Good
26	27/28/29	30/31/32	KMW_BTS_**	KMW_KMW8	US PCS V16	Gamma	1.5	--	Open Code	--
27	28/29/30	31/32/33	KMW_BTS_**	KMW_KMW8	CEL800M V20 H30	Gamma	3.5	-23.0	Unknown Code	Same Code
28	29/30/31	32/33/34	KMW_BTS_**	KMW_KMW8	GSM900M V13	Gamma	4.0	--	Next Code	--

7.7.5. Download

Select **View → Download** from the menu or click **Download** button to download an updated version of the PAC software on to the PAC's ROM. Click button and select the *.HEX file supplied by KMW Communications, then click **Download** button to download on to the PAC.

Important: Do not send any other command while downloading is in progress. Once download is complete, reset the power by turning off and turning on the PAC.

Figure 4-11. PAC Software Download Window

PAC[Portable Antenna Controller] - Downloader	
Download File :	C:\Wpac_i_V102.hex
<input type="text"/>	
<input type="button" value="Download"/> <input type="button" value="Cancel"/>	

7.7.6. TX/RX Data Log

Select **View → TX/RX Data Log** from the menu to see transmit and receive data log.

Figure 4-12. TX/RX Data Log Menu

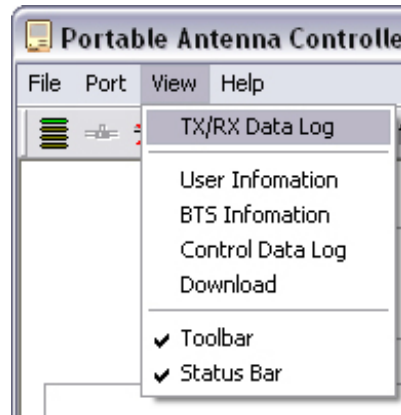
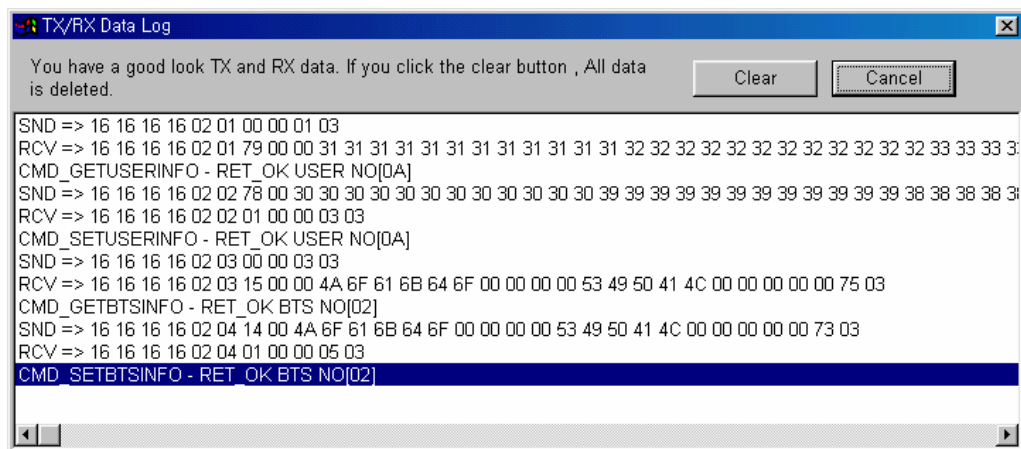


Figure 4-13. TX/RX Data Log Window



The Figure 4-13 (TX/RX Data Log Window) shows the actual data communication between the PC and the PAC and this window is used for debugging purpose. To clear the TX/RX Data Log, click **Clear** button.

Displayed Character	Description	Note
SND	Data transfer from PC to PAC.	
RCV	Data transfer from PAC to PC.	

8. Cautions

- This Portable Antenna Controller (PAC) is designed to withstand nominal shock or impact. However, do not drop, throw, or hit while carrying or operating.
- This PAC uses a built-in rechargeable battery with over-charge and over-drain protection circuits. However, excessive over-charge or discharge may degrade the performance and the life of the battery.
- To recharge the built-in battery or use AC power, use the AC/DC adaptor supplied by KMW ONLY.
- Use KMW provided accessories or batteries ONLY with the PAC.
- Unauthorized modification, dismantle, repair of any KMW components voids KMW's warranty.
- This PAC cannot be used with any 3rd party antenna products.
- For any technical support or repair, contact KMW Technical Support at +1-562-926-2033 or at support@kmwcomm.com.

10. Portable Antenna Controller Specifications

Item	Specification
Communication Interface	RS-232 (DSUB 9Pin, Female), RS-485/422 (DSUB 9Pin, Male)
Communication Speed	19200 bps (Max 115200 bps)
Antenna Control Interface	KMW Proprietary Interface (SMA, Female)
LCD	128 ? 64 Graphic LCD
KEY PAD	4 ? 4 Key Matrix type, Membrane Switch
Rechargeable Battery	11.1V (3.7V 3CELL), 1.5AH, LI-POLYMER
External Power	19V, 3.68A, AC/DC SMPS Adaptor
Weight	Approx. 750g (including Rechargeable Battery)
Size	129 ? 214 ? 47 mm
Compatibility/Controllability	All KMW Remote Antenna Products (EDTA 1-way, Hybrid 2-way)
Antenna Control Time	Less than 2 min. (MAX) for each control dimension (Vertical or Horizontal)

Note: The above specifications are subject to change without notice. KMW reserves the rights to, without notice, make changes in equipment design or components as engineering and manufacturing requirements demand.

11. Technical Support

For more information on KMW's products and other useful information, visit our website at <http://www.kmwcomm.com>.

If you have any technical questions or need support, please contact:

KMW Communications
Technical Support
1521 East Ornagethorpe Ave.
Suite A.
Fullerton, CA 92831
1-714-895-3659 (Phone)
1-714-898-5025 (Fax)
<http://www.kmwcomm.com>
support@kmwcomm.com



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Chapter 4. Operating PAC-I	5	4	3	2	1	0
Chapter 5. Operating PAC-I	5	4	3	2	1	0
Chapter 6. PAC Menu Structure	5	4	3	2	1	0
Chapter 7. PC Application User's Guide	5	4	3	2	1	0
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Chapter 9. Troubleshooting Guide	5	4	3	2	1	0
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1521 East Orangethorpe Ave.
Suite A.
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