

APC400

Antenna Controller Unit

Operations Manual



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Preface

Purpose

The purpose of this manual is to provide a detailed description of, and operating instructions for, ASC Signal Corporation's APC400 Antenna Controller Unit. Qualified personnel should use this manual as a reference for proper operation of the APC400.

Proprietary Information

The technical data contained herein is proprietary to ASC Signal Corporation. It is intended for use with ASC Signal Corporation equipment. Duplication or disclosure of the technical information contained herein without the written consent of ASC Signal Corporation is strictly prohibited.

Notice

The installation, maintenance, or removal of the hardware described in this manual requires qualified and experienced personnel. ASC Signal Corporation installation instructions are written for such personnel. Qualified personnel must perform proper installation and maintenance of the equipment, and must verify the condition of the equipment at initial installation and periodically thereafter.

ASC Signal Corporation is not liable or responsible for the results of improper or unsafe installation and maintenance practices.

All designs, specifications, and availability of products described in this manual are subject to change without notice.

Safety Symbols

The APC400 may have safety symbols on various system components. There are no operator serviceable parts internal to the unit. Be sure to use extreme caution when operating the system labeled with any of the following safety symbols:

Le système de l'antenne 1.2 mètres peut avoir symboles de sécurités sur plusieurs de ses

composants. Il faut utiliser une extrême prudence lors de l'opération su système étiqueté par n'importe quel symboles de sécurité suivants:



WARNING!
RISK OF ELECTRIC SHOCK!
AVERTISSEMENT!
RISQUE D'ÉLECTROCUTION!



WARNING! Refer to manual.
AVERTISSEMENT! Se référer au manuel d'utilisation.

Additionally, the following safety terms may appear on the product:
En plus, les termes de sécurité suivants pouvant apparaître sur le produit:

- **DANGER**—Indicates an injury hazard is immediately accessible as you read the marking and could result in loss of life.
DANGER—Signale, en ayant accès à ce marquage, un risque de blessure immédiat et qui peut être mortel.
- **WARNING**—Indicates an injury hazard that is not immediately accessible as you read the marking and could result in loss of life.
AVERTISSEMENT—Signale, en ayant accès à ce marquage, un risque de blessure non immédiat mais qui peut être mortel.
- **CAUTION**—Indicates a hazard to property, including the product.
PRUDENCE—Indique un risque pour l'environ du produit, le produit inclus.

The following safety symbols and terms may be used in this manual:



WARNING! Warning statements identify conditions or practices that could result in injury or loss of life.



Risk of Electric Shock!

Safety Summary

The following general safety precautions are not related to any specific procedures. Therefore, these precautions do not appear elsewhere in this manual. Personnel must understand and apply these precautions during all phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS



Personnel must observe all applicable safety regulations at all times. Ensure power is disconnected/removed from unit before replacing components. Potential hazards may exist even though the power control switch is in the off position. Capacitors retain charges. Always remove power and use test equipment to confirm that a circuit is at ground potential before touching it. Never reach into or enter an enclosure to service or adjust the equipment until the absence of power is confirmed.

DO NOT SERVICE OR ADJUST ALONE



Under no circumstances should any person reach into the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION



Personnel working with or near high voltage should be familiar with modern methods of resuscitation. Such information may be obtained from local medical personnel.

ELECTROSTATIC DISCHARGE PRECAUTION



This equipment contains electrostatic discharge (ESD) sensitive devices. ESD sensitive equipment handling methods and materials must be used to prevent equipment damage during handling and servicing.

ESSENTIAL HEALTH AND SAFETY REQUIREMENTS



Refer to document “*P/N 240117–Essential Health and Safety Requirements*”.

Technical Assistance

For 24-hour technical assistance, contact ASC Signal Corp. by telephone or facsimile at the following numbers:

Telephone: 1.919.329.8700

Facsimile: 1.919.329.8701

For access to additional support, contact information, and technical documentation, please visit ASC Signal’s website at: www.ascsignal.com.

APC400 Description

This chapter provides an overview of the APC400 and includes the following sections:

- [APC400 Overview](#) on page 1
- [Features](#) on page 1
- [APC400 Subsystems](#) on page 2
 - [Processing Subsystem](#)
 - [Resolver to Digital Subsystem](#)
 - [Limitations](#)
- [Limitations](#) on page 3

APC400 Overview

The APC400 Antenna Control Unit is an antenna controller that provides basic point, maintenance, and optional tracking functions for small and medium-sized earth station antennas. The APC400 provides the user with control over basic motorization kits for earth station satellites by utilizing a simple liquid crystal display (LCD) front panel interface and powerful software protocol options. The software protocols can be manipulated through remote control.

At present time, the APC400 replaces the legacy APC100 Antenna Controller.

While the APC400 is designed to replace the legacy APC300 Tracking Antenna Controller, this option is not currently available. Please contact your ASC Signal Corporation Sales Representative for updated status of this option.

Features

The APC400 utilizes a host of standard features. In future releases, the APC400 can be equipped with several optional features for more complex earth stations.

Standard Features

The APC400 supports the following standard features:

- Motor control for two and three axis motor systems utilizing standard interface
- Two different motor speeds for azimuth and elevation axes
- Single speed polarization rotators
- Automatic positioning of antennas through pre-programmed look angles
- Operator control using an LCD panel and keypad
- Operator remote control through network and serial port-based communication protocols, including legacy protocols and Simple Network Management Protocol (SNMP)
- 10/100 BaseT ethernet interface
- Serial port interface (multiple serial ports)

APC400 Subsystems

This section provides a high-level overview of the APC400's subsystems. The APC400 includes the following subsystems:

- [Processing Subsystem](#)
- [Resolver to Digital Subsystem](#)

Processing Subsystem

The APC400 processing subsystem is a micro-controller that runs a Linux-variant operating system. The physical processor is mounted onto a SIM card, and the SIM card is then installed on a carrier board. The carrier board with the processor and SIM card is located at the base of the APC400 chassis.

The processing subsystem includes the following interfaces:

- LCD panel and keypad
- Digital interface to the motor control subsystem
- Multiple serial ports for internal and external connections
- SD card for archiving and logging files

Note: Do not remove the SD card from the APC400. Doing so will void your APC400 warranty.

RPI-4 Motherboard and Rear Panel Interface

The APC400's motherboard and rear panel interface IV PWA (RPI-4) hosts and supports the Arcturus ColdFire SBC. The RPI-4 provides control logic, buffering, and interface to the APC400's graphic display unit, front panel keyboard, auxiliary RS-232 serial connectors, and ethernet interface connector.

The RPI-4 PWA implements post-voltage regulator circuits to provide 3.3V-DC power to the SBC. Additionally, the post-voltage regulator circuits prevent short circuit conditions from bringing down the entire APC400, allowing you to have continuous access to fault reports and critical system information.

The RPI-4 PWA generates the -15V and +5V required by the graphics displays unit.

By hosting the SBC and handling conversions, buffering, and signal routing, the RPI-4 PWA reduces and simplifies the APC400's chassis wiring.

The RPI-4 PWA is easily replaceable, allowing easy changes to the interface for future development or special site requirements.

Resolver to Digital Subsystem

The Resolver to Digital Converter (RDC-1) PWA provides an interface between the antenna's three resolvers and the SBC in the NBC ACU system. The RDC-1 reads the resolvers in raw binary values, then converts the data to angular values for each axis and returns the values to the SBC as commanded through a serial port. The RDC-1 also monitors resolver status.

The RDC-1 PWA is mounted inside the APC400 chassis, and it is easily replaceable, allowing easy changes to the interface for future development or special site requirements.

Limitations

This section lists the APC400's limitations. The APC400 is limited in the following ways:

- The positioner does not provide any input for fault conditions. Fault conditions include exceeding hard limits, an overcurrent shutdown, and other miscellaneous faults.
- The APC400 (with optional tracking features) is designed to work with geosynchronous satellites only. Use of the APC400 with dynamic satellites is not recommended.

APC400 Interaction

Before you install the APC400, read this chapter to familiarize yourself with the APC400 front panel, LCD screen, soft keys and alphanumeric keypad functions, and access ports.

This chapter includes the following sections:

- [APC400 Front Panel](#) on page 1
 - LCD Screen
 - Stop Key
 - Soft Keys
 - Local/Remote Key
 - Previous Key
 - Alphanumeric Keypad
- [APC400 Back Panel](#) on page 4

APC400 Front Panel

The APC400's front panel is an LCD screen with backlight and 21 push button keys. The APC400's front panel allows you to operate, configure, control, and monitor all aspects of the APC400 and your antenna system. [Figure 1](#) provides an illustration of the APC400's front panel.

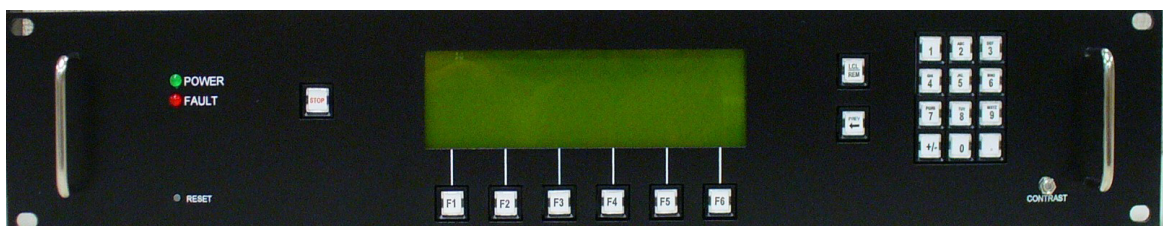


Figure 1: APC400 Front Panel

The APC400's front panel has the following features:

- Power indicator—Green illumination indicates power is on.
- Fault indicator—Red illumination indicates a summary fault is present.

- Microprocessor reset switch—Resets the microprocessor.
- Stop switch—Stops all antenna motion.
- Backlit graphic dot matrix LCD—User interface screen
- Function F1 through F6 keys—Function keys provide you with mode control and each key’s function is indicated on the LCD.
- Local/Remote key—Allows you to select local or remote control of the APC400.
- Previous key—Allows you to return to the previous LCD screen and allows you to back up the cursor when entering data/text on the LCD.
- Alphanumeric keypad—Allows you to enter alphanumeric text on the LCD.
- Display contrast adjustment—Allows you to adjust the LCD contrast.

LCD Screen

The LCD screen provides you with a comprehensive display of system status and alarms. Also, the LCD allows you to interact, configure, and test your system. [Figure 2](#) provides an illustration of a typical HOME Screen.

The APC400 offers dozens of screens, which are detailed in Chapter 5, “[Configuration & Operation](#)”. Each screen displays different content and system status.

At the bottom of the LCD are soft key labels, which indicate each soft key’s function on a particular screen.

A label appearing on the upper left of the LCD indicates the current screen’s function.

A label appearing on the upper right of the LCD indicates that the APC400 is in Local or Remote Mode.

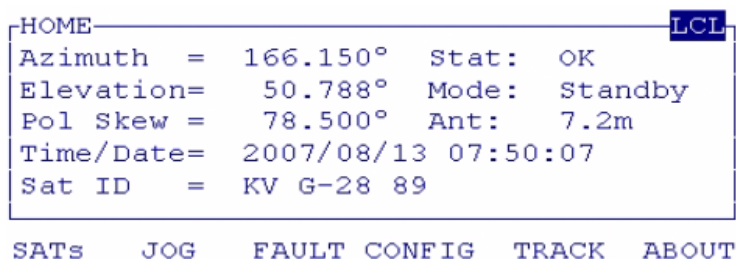


Figure 2: APC400 LCD HOME Screen—example

Stop Key

The stop key is located to the left of the LCD. The stop key stops the system’s movement and functions in both Local and Remote modes.

Soft Keys

Six soft keys, labeled F1 through F6, are located directly below the LCD. Each soft key function is dependent upon the current LCD screen. A soft key function is clearly indicated on the LCD directly above each key. If no indication appears on the LCD, then the soft key has no function on that particular screen.

Some screens offer more than six functions. If more than six functions are available, the F6 key indicates “MORE” to alert you. Pressing the F6 key provides you with the additional soft key functions.

Local/Remote Key

The local/remote (LCL/REM) key is located to the right of the LCD. The LCL/REM key sets control of the APC400 to local or remote mode.

In local mode, you can interact with the APC400 using the front panel and LCD only.

In remote mode, you can interact with the APC400 using M&C protocols and SNMP only.

Previous Key

The previous (PREV) key is located to the right of the LCD, just below the LCL/REM key. The PREV key allows you to do the following:

- Return to the previous LCD without changing settings.
- Move the cursor back a space when entering text on the LCD.

Alphanumeric Keypad

Note: The APC400 does not permit certain characters in a character string. If a character is not permitted in a character string, the APC400 does not display the character on the help list.

The alphanumeric keypad is located on the front panel, to the far right of the LCD screen. It is used for numeric, alpha, and character data entry.

To enter a number, press the desired number on the keypad. The number appears on the LCD.

To enter an alpha character, press the key quickly to cycle through to the desired letter. As you press the key quickly, the LCD displays the alpha characters as you cycle through them. Once you reach the desired letter, wait until the cursor moves to the next character insertion point or press another key to advance the cursor to the next character insertion point.

APC400 Back Panel

The APC400's back panel provides power and interface connections. [Figure 3](#) is an illustration of the APC400's back panel.



Figure 3: APC400 Back Panel

The APC400's back panel includes the following:

- Input Power
- Access ports (J1, J3, J5)
- Auxiliary I/O (J2)—25-pin male connection
- Motor Control Output (J4)—Motor control cable connection, 50-pin female connection
- Resolver I/O (J6)—Resolver cable connection, 50-pin male connection

Input Power

The input power is a 100–250VAC, 1.5A maximum with a 1.5A maximum fuse. The APC400 uses a standard, detachable electrical cord.

Access Ports (J1, J3, J5)

The APC400 has the following three connection ports on the back panel:

- [Serial Ports](#)
 - [Linux Console Port \(J3\)](#)
 - [M&C Protocol Port \(J5\)](#)
- [Ethernet Port \(J1\)](#)

Serial Ports

The APC400 has two serial ports located on the back of the unit and are labeled J3 and J5. The J3 serial port provides Linux system console access. The J5 serial port provides M&C protocol access.

Linux Console Port (J3)

The J3 Linux console port is used for maintenance activities, and does not support M&C protocols. The serial port is standard nine-pin, female DCE EIA-232 connection.

The Linux console port communication parameters are fixed. [Table 1](#) provides the fixed communication parameters.

Table 1: Linux Console Port Fixed Communication Parameters

Baud rate	9600
Data bits	8
Parity	None
Stop bits	1

M&C Protocol Port (J5)

The J5 serial port located on the rear of the APC400 is for the M&C protocol. The specific protocol you use for your system is configurable. Additionally, other parameters, including baud rate, are fully configurable. The serial port is a standard 25-pin male connection.

Ethernet Port (J1)

The APC400 is equipped with an ethernet port (J1). The ethernet port allows the APC400 to function as a host computer over a Transmission Control Protocol/Internet Protocol (TCP/IP) network.

You can perform network setup from the APC400's front panel.

Start Up

This chapter details how to start up the APC400 and includes the following sections:

- [Install the APC400](#) on page 1
- [Power On the APC400](#) on page 1
- [Configure and Test Motor Control](#) on page 2

Install the APC400

Note: The APC400 is intended for indoor, controlled environment use only.

Before you start up the APC400, you must properly install and connect the system.

For detailed instructions on installing the APC400, please refer to the *APC400 Installation Instructions*—Document Number 7577413.

For detailed instructions on installing the antenna's motors, please refer to the *Motor Kit Electrical Installation Instructions*.



WARNING! BE CERTAIN TO PROVIDE ADEQUATE SURROUNDING SPACE FOR VENTILATION BY TAKING CARE NOT TO COVER VENT OR COOLING HOLE/SLOT IN THE UNIT'S COVER AND SIDES.

Power On the APC400

After you have installed the APC400 chassis and all of the electrical connections are made, power on the unit.

Confirm the LCD screen on the front panel comes on. Please be aware that it may take up to one minute for the APC400 to initialize once powered on.

Configure and Test Motor Control

Note: The Motor Control System should be configured and tested before configuring APC400 parameters and satellites.

To test the antenna's motor control, use the manual jog functions on the APC400.

As you move the antenna West (East in the Southern Hemisphere), the AZ display value should increase. Resolver degrees increase as the antenna continues to move West (East in the Southern Hemisphere) and decrease as the antenna moves East (West in the Southern Hemisphere).

As you move the antenna up, the EL display value should increase. Resolver degrees increase as the antenna's EL continues to move up. Resolver degrees decrease as the antenna's EL moves down.

To test polarity, stand behind the antenna's reflector. As you move the antenna polarity clockwise, resolver degrees should increase. As you move the antenna polarity counterclockwise, resolver degrees should decrease.

Migrating Older Systems

The APC400 is a drop-in replacement for an existing APC100. The existing APC100 software tools are used to upload your system's current configuration and download your satellites directly to the new APC400.

This chapter explains how to migrate the APC400 and includes the following sections:

- [Replace an APC100](#)
- [Transfer APC100 Configuration to APC400](#)
- [Configure APC100 DIP Switch Settings](#)

Replace an APC100

Before you begin to replace your APC100 and migrate to an APC400, make sure you have the following equipment:

- One laptop or desktop computer operating with Microsoft Windows™ and is equipped with at least one RS-232 serial port.
- The APCEDIT utility program. APCEDIT is a software utility providing interface between an APC100 and a laptop/desktop computer. The APCEDIT utility diskette is provided with the APC100. You can also obtain the APCEDIT utility at www.ascsignal.com.
- One 25-pin serial port cable for the APC100.
- One 9-pin serial port cable for the APC400.

Transfer APC100 Configuration to APC400

You can transfer your current APC100 configuration to the APC400. Perform the following procedures to transfer configuration information to the APC400.

Transfer APC100 Configurations to Laptop/Desktop Procedure

Perform this procedure to transfer APC100 configurations to your laptop/desktop computer.

PROCEDURE BEGIN

1. Confirm your APC100 is in REMOTE mode. If your APC100 is in LOCAL mode, toggle the **LCL/REM** switch to enter REMOTE mode.
2. Connect the 25-pin serial cable from your laptop/desktop computer serial port to the APC100 serial port.
3. Upload the satellite table data from the APC100 to your laptop/desktop computer.
4. **Save** the satellite table data to your laptop/desktop.
5. Upload the **setup_data** file from the APC100 to your laptop/desktop computer.
6. Disconnect the 25-pin serial cable from the APC100 and your laptop/desktop computer.

PROCEDURE END

Enable APC400 to Emulate APC100 Procedure

The APC400 can emulate the APC100 using M&C serial interface. Perform this procedure to enable the APC400 to emulate the APC100.

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Serial Protocol** field.
4. Press **F4 EDIT**. The Serial Protocol field on the EDIT PARAMS screen displays.
5. Use the arrow keys (**F2, F3**) to select **APC100**.
6. Press **F6 SAVE**.
7. If necessary, restart the APC400 to effect the changes.

PROCEDURE END

Transfer APC100 Configurations from Laptop/Desktop to ACP400 Procedure

PROCEDURE BEGIN

1. Confirm your APC400 is in remote mode. If your APC400 is in local mode, press the **LCL/REM** key to switch to remote mode.
2. Connect the 9-pin serial cable from your laptop/desktop computer serial port to the APC400 serial port.
3. Download the **setup_data** file from your laptop/desktop computer to the APC400.
4. Download the satellite table data from your laptop/desktop to the APC400.

PROCEDURE END

Configure APC100 DIP Switch Settings

Note: If you do not know the internal settings of the APC100, you may need to open the unit to examine the internal settings.

The APC100 uses DIP switches to control several system settings. The APC400 does not use DIP switches. Instead, the APC400 uses software to control system settings. You can configure General Parameters to control system settings through the APC400's front panel.

For detailed information on configuring General Parameters, refer to "[General Parameters](#)" in the *Configuration & Operation* chapter of this document.

Configuration & Operation

This chapter details how to configure and operate the APC400, and it includes the following sections:

- [HOME Screen](#) on page 2
- [Configuring APC400 Parameters](#) on page 3
 - [EDIT CONFIG Screen](#)
 - [General Parameters](#)
 - [Antenna Control Parameters](#)
 - [Loop Closure Control Parameters](#)
- [Configuring Satellites](#) on page 21
 - [GO TO POSITION Screen](#)
 - [Selecting a Satellite](#)
 - [Move the Antenna](#)
 - [Edit a Satellite](#)
 - [Add a New Satellite](#)
 - [Delete a Satellite](#)
- [Manually Adjust the Positioner](#) on page 30
 - [MOVE ANTENNA Screen](#)
 - [Jog the Antenna](#)
 - [Peak the Antenna](#)
- [Clear Faults](#) on page 32
 - [FAULT STATUS Screen](#)
 - [Clear Latched Faults](#)
 - [Clear Summary Faults](#)

HOME Screen

When the APC400 starts up, a splash screen briefly displays on the LCD. After the splash screen displays, the HOME screen automatically displays on the LCD.

Figure 1 provides an illustration of an APC400 HOME screen.

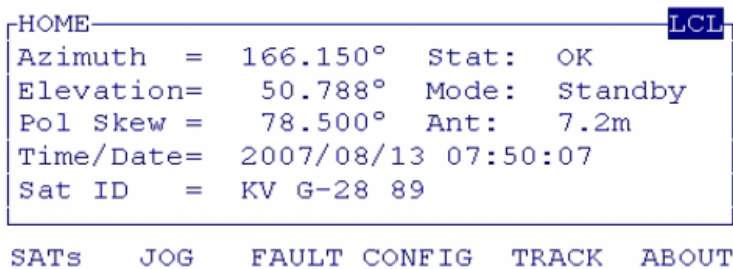


Figure 1: APC400 LCD HOME Screen—example

The HOME screen serves as a top level status panel and provides soft keys for access to basic system functions. The HOME screen displays the following information:

- APC400's current control mode, Local (LCL) or Remote (REM). LCL or REM displays in the upper right corner of the LCD.
- Azimuth, Elevation, and Polarization (Pol Skew) loft angle values, in degrees
- Status (Stat)
- Mode (Active or Standby)
- Antenna size (Ant)
- Time and Date—The time and date line is only present when there are no active system faults. If a fault is active, then the time and date line is replaced with a list of active fault codes.
- Satellite ID (Sat ID)—This line is blank if no satellite is selected.

Additionally, soft key functions/menus are available from the HOME screen. A soft key's function is indicated on the LCD screen directly above the key. The following soft key functions/menus are available for the HOME screen:

- F1 SATs—Press this key to access the [GO TO POSITION Screen](#).
- F2 MOVE—Press this key to access the [MOVE ANTENNA Screen](#).
- F3 FAULT—Press this key to access the [FAULT STATUS Screen](#).
- F4 CONFIG—Press this key to access the [EDIT CONFIG Screen](#).
- F5 TRACK—Press this key to access the AVAILABLE FEATURE screen. This screen is applicable only if you have purchased optional software features for use with the APC400.

- F6 ABOUT—Press this key to access the ABOUT screen. This screen provides copyright, version, and revision information for your APC400.

Configuring APC400 Parameters

The APC400's CONFIG menu allows you to configure system parameters. This section details how to configure system parameters through the CONFIG menu.

EDIT CONFIG Screen

You can configure general parameters, loop parameters, antenna control parameters, and administrative tasks from the EDIT CONFIG screen. From the HOME screen, press the **F4 CONFIG** soft key to access the EDIT CONFIG screen.

The following soft key functions/menus are available from the EDIT CONFIG screen:

- F1 ANTCTL PARMS—Press to edit [Antenna Control Parameters](#).
- F2 LOOP PARMS—Press to view [Loop Closure Control Parameters](#).
- F3 TRACK—Press this key to access the AVAILABLE FEATURE screen. This screen is applicable only if you have purchased optional software features for use with the APC400.
- F4 GEN PARMS—Press this key to edit [General Parameters](#).
- F5 ADMIN TASKS—Press this key to perform [Administration](#) tasks, such as system backup, restore, and reset from the ADMIN TASKS screen.

General Parameters

This subsection details how to configure the APC400's general parameters (GEN PARMS).

[Figure 2](#) provides an example of general parameters on the EDIT CONFIG screen.

```

CONFIGURATION EDIT—LCL
14 MAC                00:06:3B:00:85:22
15 Polarization configured installed
1 UTC                 2007/08/13 16:00:30
2 Net address         10.104.200.42
3 Net mask            255.255.0.0
  
```

↑
↓
EDIT
RESET

Figure 2: EDIT CONFIG General Parameters Screen—example

Note: You may need to reset the APC400 for certain general parameter configuration changes to take effect. If a reset is necessary, RESET flashes on the LCD screen. Press the F6 RESET soft key to reset the APC400.

You can view/configure the following general parameters:

Note: On the LCD, *(absent)* is displayed next to optional features that are not available with your APC400.

1. [System Time \(UTC\)](#)
2. [System Name](#)
3. [Network Address](#)
4. [Network Mask](#)
5. [Gateway Address](#)
6. [SNMP](#)
7. [Serial Protocol](#)
8. [Display Precision](#)
9. [CPU Serial Number](#) (view only)
10. [Software Key](#)
11. Norad tracking option (absent)
12. Step tracking option (absent)
13. Smart tracking option (absent)
14. Intelsat tracking option (absent)
15. Beacon option (absent)
16. [MAC](#) (view only)
17. [Polarization Configured](#)
18. [Azimuth Direction Wiring](#) (view only)
19. [Motor Operation](#)
20. [Motor Speed](#)

The general parameters appear on the EDIT CONFIG screen in the order listed above.

System Time (UTC)

Note: System time must be set in UTC (GMT) for correct astronomical calculations.

To configure the system time, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMs**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2**, **F3**) to select the **UTC** field (if not already selected).
4. Press **F4 EDIT**. The EDIT TIME screen displays:

```

EDIT TIME FIELD-----LCL
1 UTC                2007/08/13 16:01:58
-----
Enter new value for GMT
  █/█/█ █:█:█
(enter . to move to next field)
CANCEL          BACKSP          SAVE
  
```

5. Using the alphanumeric keypad, enter the date and time in the following format: **Year (YYYY)/Month (MM)/Day (DD), Hour (HH-24 hour clock): Minutes (mm): Seconds (ss)**. When editing the time, enter a value slightly ahead of the current time to accurately synchronize your system.
6. If you make a mistake, press **F3 BACKSP** to erase the last entry. Or, press **F1 CANCEL** to clear all of the fields.
7. Once you have entered the correct date and time, press **F6 SAVE**.

PROCEDURE END

System Name

To configure the system name, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **System Name** field.
4. Press **F4 EDIT**. The System name field on the EDIT PARAMS screen displays.
5. Using the alphanumeric keypad, enter a system name.
6. If you make a mistake, press **F3 BACKSP** to erase the last entry. Or, press **F1 CLEAR** to clear the entire field.
7. Once you have entered a system name, press **F6 SAVE**.

PROCEDURE END

Network Address

To configure the network address, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Net Address** field.
4. Press **F4 EDIT**. The Net address field on the EDIT IP ADDR screen displays.
5. Use the alphanumeric keypad to enter the network's IP address.
6. If you make a mistake, press the **F3 BACKSP** key to erase the last entry. Or, press the **F1 CLEAR** key to clear the entire field.
7. Once you have entered the network address, press **F6 SAVE**.

PROCEDURE END

Network Mask

To configure the network mask IP address, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Network Mask** field.
4. Press **F4 EDIT**. The Net mask field on the EDIT IP ADDRESS screen displays.
5. Use the alphanumeric keypad to enter the network mask IP address.
6. If you make a mistake, press the **F3 BACKSP** key to erase the last entry. Or, press the **F1 CLEAR** key to clear the entire field.
7. Once you have entered the network mask IP address, press **F6 SAVE**.

PROCEDURE END

Gateway Address

To configure the gateway IP address, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display:
3. Use the arrow keys (**F2, F3**) to select the **Gateway Address** field.
4. Press **F4 EDIT**. The Gateway add field on the EDIT IP ADDRESS screen displays.
5. Use the alphanumeric keypad to enter the gateway IP address.
6. If you make a mistake, press the **F3 BACKSP** key to erase the last entry. Or, press the **F1 CLEAR** key to clear the entire field.
7. Once you have entered the gateway IP address, press **F6 SAVE**.

PROCEDURE END

SNMP

To enable or disable SNMP, perform the following steps (SNMP is enabled by default):

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **SNMP** field.
4. Press **F4 EDIT**. The SNMP enable field on the EDIT PARAMS screen displays.
5. Use the arrow keys (**F2, F3**) to select **YES** to enable SNMP, or select **NO** to disable SNMP.
6. Press **F6 SAVE**.

PROCEDURE END

Serial Protocol

The APC400 can emulate the APC100 serial protocol. For more detailed information on emulation, refer to the [Interfacing](#) chapter in this manual.

To enable this feature, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Serial Protocol** field.
4. Press **F4 EDIT**. The Serial Protocol field on the EDIT PARAMS screen displays.
5. Use the arrow keys (**F2, F3**) to select **APC100**.
6. Press **F6 SAVE**.

PROCEDURE END

Display Precision

The display precision feature allows you to view AZ, EL, and Pol Skew angles in tenths (0.0), hundredths (0.00), or thousandths (0.000) of degrees on the LCD.

To configure the display precision, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Display Precision** field.
4. Press **F4 EDIT**. The Display precision on the EDIT PARAMS screen displays.
5. Use the arrow keys (**F2, F3**) to select a display value (**000.0, 000.00, or 000.000**).
6. Press **F6 SAVE**.

PROCEDURE END

CPU Serial Number

When ordering optional features from ASC Signal Corp., you need to reference your APC400's serial number. To view your APC400's serial number, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **CPU serial number** field to view the serial number.

PROCEDURE END

Software Key

Note: To obtain a new software key, please contact your ASC Signal Corporation salesperson. You need to have your APC400's serial number for reference. See [CPU Serial Number](#) instructions in this chapter to locate the serial number.

A software license key is only valid for the specific serial number to which it was assigned. Each individual APC400 requires a unique software license key.

A software license key is not needed for APC100 functionality.

By changing the software license key, you can field install certain optional features as they are purchased. When you enter and save the software key, the software downloads to the APC400.

To enter the software license key, perform the following steps:

Note: ASC Signal Corporation recommends you save and/or record any previous software license keys. If necessary, you can re-enter a software license key.

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMs**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the Software Key (**SW Key**) field.
4. Press **F4 EDIT**. The SW Key field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter the software license key. If you make a mistake, press the **F3 BACKSP** key to erase the last entry. Or, press **F1 CANCEL** to clear the entire field.
6. Once you have entered the software key, press **F6 SAVE**.
7. At the EDIT CONFIG screen, press **F6 RESET** to reset the APC400. New features should install once the APC400 reboots.
8. Once you have completed the steps listed above, go to the GEN PARMs screen and review the features to ensure that your system has the feature set you purchased with your software license key. Features are listed as “installed” if they are available with your APC400. Features listed as “absent” are not currently available with your APC400’s software set.

PROCEDURE END

MAC

To view the current MAC, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMs**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **MAC** field to view the MAC.

PROCEDURE END

Polarization Configured

To edit the polarization configured feature, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Polarization configured** field.
4. Press **F4 EDIT**. The Polarization configured field on the EDIT PARAMS screen displays.
5. Use the arrow keys (**F2, F3**) to select **yes** or **no**.
6. Press **F6 SAVE**.

PROCEDURE END

Azimuth Direction Wiring

AZ direction wiring is viewable, but not configurable. To view the setting of AZ direction wiring, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **AZ Direction Wiring** field to view the setting.

PROCEDURE END

Motor Operation

You can configure the antenna's motors to operate in concurrent or serial mode from the APC400.

In concurrent mode, the AZ and EL motors can run at the same time. In serial mode, only one motor can operate at any given time.

To configure motor operation, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Motor Operation** field.
4. Press **F4 EDIT**. The Motor Operation field on the EDIT PARAMS screen displays.
5. Use the arrow keys (**F2, F3**) to select **concurrent** or **serial**.
6. Press **F6 SAVE**.

PROCEDURE END

Motor Speed

To configure motor speed, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F4 GEN PARMS**. The general parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Motor Speed** field.
4. Press **F4 EDIT**. The Motor Speed field on the EDIT PARAMS screen displays.
5. Use the arrow keys (**F2, F3**) to select **dual** or **single**.
6. Press **F6 SAVE**.

PROCEDURE END

Antenna Control Parameters

This subsection details how to configure the APC400's antenna control parameters (ANTCTL PARMS).

You can view/configure the following antenna control parameters:

1. [Site Latitude](#)
2. [Site Longitude](#)

3. Site Altitude
4. Site Name
5. Antenna Size
6. East Azimuth SW Limit
7. West Azimuth SW Limit
8. Up Elevation SW Limit
9. Down Elevation SW Limit
10. CW Polarization SW Limit
11. CCW Polarization SW Limit
12. Azimuth Offset
13. Elevation Offset
14. Polarization Offset

Site Latitude

Note: It is not necessary to enter a site's exact latitude and longitude. However, the APC400 will automatically calculate many satellite look angles if you enter a site's exact latitude and longitude.

The APC400 is configurable for operation in both the Northern and Southern Hemispheres. The following functions are hemisphere dependent:

- “East” is a counter-clockwise direction in the Northern Hemisphere and a clockwise direction in the Southern Hemisphere.
- “West” is a clockwise direction in the Northern Hemisphere and a counter-clockwise direction in the Southern Hemisphere.
- Azimuth travel limits are centered on a range from 90 to 270 degrees in the Northern Hemisphere and from 270 to 90 degrees in the Southern Hemisphere.

The APC400 automatically determines the site's hemisphere once you enter the latitude and longitude.

To configure site latitude, perform the following steps:



WARNING! IF YOU CHANGE LATITUDE AND LONGITUDE BY IMPORTING VALUES USING APCEDIT, LOOK ANGLES AND POLARIZATIONS ARE RE-CALCULATED!

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Site Latitude** field.
4. Press **F4 EDIT**. The Site Latitude field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter the site latitude. The +/- key changes the hemisphere (Northern or Southern). If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Site Longitude

To configure the site longitude, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Site Longitude** field.
4. Press **F4 EDIT**. The Site Longitude field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter the site longitude. The +/- key changes the hemisphere (eastern or western). If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Site Altitude

Note: Entering the altitude is optional, but may be necessary for precise antenna systems.

To configure the site altitude, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Site Altitude** field.
4. Press **F4 EDIT**. The Site Altitude field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter the site altitude. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Site Name

To configure a site name, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Site Name** field.
4. Press **F4 EDIT**. The Site Name field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a Site Name. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Antenna Size

To configure the antenna size, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Antenna Size** field.
4. Press **F4 EDIT**. The Antenna Size field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter the antenna size. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

East Azimuth SW Limit

Note: Before configuring travel limits, you should first configure AZ, EL, and Pol angular offsets, if necessary.

Configuring the APC400's travel limits specifies the maximum normal travel range of the antenna.

Set the East AZ, West AZ, EL Up, and EL Down limits. You should set these limits at least two degrees inside the maximum physical travel limits. If your antenna has motorized polarization (CW Pol, CCW Pol), set those travel limits, also.

To configure the East AZ SW limit, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **East Az SW Limit** field.
4. Press **F4 EDIT**. The East Az SW Limit field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the East AZ SW limit. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

West Azimuth SW Limit

To configure the West AZ SW limit, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **West Az SW Limit** field.
4. Press **F4 EDIT**. The West Az SW Limit field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the West AZ SW limit. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Up Elevation SW Limit

To configure the Up EL SW limit, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Up El SW Limit** field.
4. Press **F4 EDIT**. The Up El SW Limit field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the Up EL SW limit. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Down Elevation SW Limit

To configure the Down EL SW limit, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Down El SW Limit** field.
4. Press **F4 EDIT**. The Down El SW Limit field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the Down EL SW limit. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

CW Polarization SW Limit

To configure the CW POL SW limit, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **CW Pol SW Limit** field.
4. Press **F4 EDIT**. The CW Pol Limit field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the CW POL SW limit. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

CCW Polarization SW Limit

To configure the CCW POL SW limit, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **CCW Pol SW Limit** field.
4. Press **F4 EDIT**. The CCW Pol SW Limit field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the CCW POL SW limit. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Azimuth Offset

You can correct any resolver angular offsets by configuring the AZ, EL, and Pol offsets.

To configure the AZ Offset, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Azimuth Offset** field.
4. Press **F4 EDIT**. The Azimuth Offset field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the AZ offset. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Elevation Offset

To configure the EL Offset, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Elevation Offset** field.
4. Press **F4 EDIT**. The Elevation Offset field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the EL offset. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Polarization Offset

To configure the POL Offset, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F1 ANTCTL PARMS**. The antenna control parameters on the EDIT CONFIG screen display.
3. Use the arrow keys (**F2, F3**) to select the **Polarization Offset** field.
4. Press **F4 EDIT**. The Polarization Offset field on the EDIT PARAMS screen displays.
5. Use the alphanumeric keypad to enter a value for the POL offset. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
6. Press **F6 SAVE**.

PROCEDURE END

Loop Closure Control Parameters

The loop closure control parameters are viewable, but not editable.

To view loop closure control parameters, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F2 LOOP PARMS**. The EDIT LOOP screen displays.
3. Use the arrow keys (**F2, F3**) to scroll through the loop parameters to view the values.

PROCEDURE END

Configuring Satellites

The APC400 supports storage of up to 64 satellites in the system. The APC400 can store a variety of satellite information, including pre-programmed, fixed azimuth, elevation, and polarization values. Additionally, you can store more sophisticated information, such as a full set of orbital tracking parameters used with the tracking option.

The APC400's SATs menu allows you to configure satellite information. This subsection details how to configure satellite information through the SATs menu and GO TO POSITION screen.

Note: In reference to Peak Values, if you change the antenna’s latitude or longitude, Peak Values for ALL satellites stored in the APC400 are reset to zero (0).

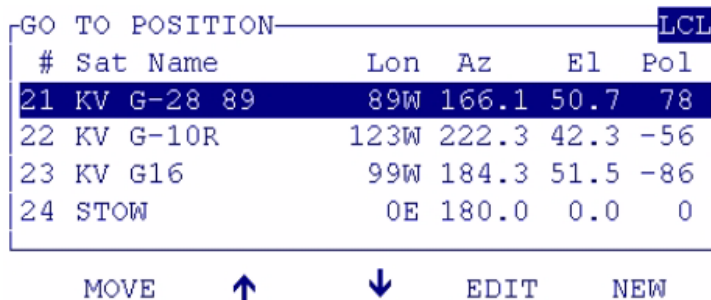
If you change the AZ, EL and/or Pol, Peak Values are reset to zero (0) only for the specific satellite you are configuring.

GO TO POSITION Screen

From the GO TO POSITION screen, you can add a new satellite, delete an existing satellite, edit an existing satellite’s parameters, and command the antenna to go to a satellite’s position.

At the HOME screen, press the **F1 SATs** soft key to access the GO TO POSITION screen.

Figure 3 provides an illustration of the SATs/GO TO POSITION screen.



#	Sat Name	Lon	Az	El	Pol
21	KV G-28 89	89W	166.1	50.7	78
22	KV G-10R	123W	222.3	42.3	-56
23	KV G16	99W	184.3	51.5	-86
24	STOW	0E	180.0	0.0	0

MOVE ↑ ↓ EDIT NEW

Figure 3: SATs/GO TO POSITION Screen—example

The following soft key functions/menus are available from the GO TO POSITION screen:

- F1 GOTO—Press to [Move the Antenna](#).
- F2—Up arrow key
- F3—Down arrow key
- F4 EDIT—Press to [Edit a Satellite](#).
- F5 NEW—Press to [Add a New Satellite](#).
- F6 DELETE—Press to [Delete a Satellite](#).

Selecting a Satellite

To select a satellite, press the **SATs** soft key from the HOME screen. The Satellite Selection screen (SATs) displays a list of all the defined satellites stored in the system.

For each individual satellite, the screen displays the following information:

- User assigned satellite name
- Orbital longitude (Lon)
- Azimuth (Az)
- Elevation (El)
- Polarization (Pol)

To scroll through the satellites, press the up or down arrow soft keys (**F2**, **F3**).

You can edit a selected satellite by pressing the **EDIT** soft key.

You can add a new satellite by pressing the **NEW** soft key.

Once you have selected the appropriate satellite, press the **MOVE** soft key. The system seeks the selected satellite. The APC400 automatically returns to the HOME screen.

Move the Antenna

To move the antenna to a specific satellite, perform the following steps:

Note: If the selected satellite has previously peaked, the antenna moves to the peaked position. If the satellite has not peaked, the antenna moves to the satellite's nominal position.

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. Available satellites on the GO TO POS screen display.
2. Use the arrow keys (**F2**, **F3**) to select a satellite.
3. Press **F1 GOTO**. The MOVE ANTENNA? confirmation screen displays.
4. Press **F1 YES** to move the antenna to the selected satellite. Press **F6 NO** to cancel and return to the GO TO POS screen.
5. The antenna moves to the selected satellite and the APC400 automatically returns to the HOME screen.

PROCEDURE END

Edit a Satellite

Note: When you edit any system information, create a new backup of the system.

You can edit a satellite's parameters from the EDIT SATELLITE screen. [Figure 4](#) provides an example of the EDIT SATELLITE screen.

```
SATELLITE EDIT—LCL
 9 Peak Elevation          0.000
10 Peak Polarization      0.000
 1 Sat Name                KV G-28 89
 2 Longitude               89.000W
 3 Polarization            90.000

  ↑      ↓      EDIT
```

Figure 4: EDIT SATELLITE Screen—example

You can configure/view the following satellite parameters:

1. [Satellite/Position Name](#)
2. [Longitude](#)
3. [Polarization](#)
4. [Azimuth](#)
5. [Elevation](#)
6. [Polarization Skew](#)
7. [Peak Azimuth](#)
8. [Peak Elevation](#)
9. [Peak Polarization](#)

Satellite/Position Name

To edit the Satellite/Position Name, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Sat/Pos Name** field.
5. Press **F4 EDIT**. The Sat/Pos Name field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter a satellite name and/or position. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Once you have entered a name/position, press **F6 SAVE**.

PROCEDURE END

Longitude

To configure a satellite's longitude, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Longitude** field.
5. Press **F4 EDIT**. The Longitude field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter a longitude value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Polarization

To configure a satellite's POL, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Polarization (Sat)** field.
5. Press **F4 EDIT**. The Polarization field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter a polarization value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Azimuth

To configure a satellite's AZ, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Azimuth** field.
5. Press **F4 EDIT**. The Azimuth field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter an azimuth value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Elevation

To configure a satellite's EL, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Elevation** field.
5. Press **F4 EDIT**. The Elevation field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter an elevation value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Polarization Skew

To configure a satellite's POL Skew, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Polarization Skew** field.
5. Press **F4 EDIT**. The Polarization Skew field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter a polarization skew value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Peak Azimuth

To configure a satellite's peak azimuth, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Peak Azimuth** field.
5. Press **F4 EDIT**. The Peak Azimuth field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter a peak azimuth value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Peak Elevation

To configure a satellite's peak elevation, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Peak Elevation** field.
5. Press **F4 EDIT**. The Peak Elevation field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter a peak elevation value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Peak Polarization

To configure a satellite's peak polarization, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to edit.
3. Press **F4 EDIT**. The EDIT SATELLITE screen displays.
4. Use the arrow keys (**F2, F3**) to select the **Peak Polarization** field.
5. Press **F4 EDIT**. The Peak Polarization field on the EDIT PARAMS screen displays.
6. Use the alphanumeric keypad to enter a peak polarization value. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
7. Press **F6 SAVE**.

PROCEDURE END

Add a New Satellite

To add a new satellite, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Press **F5 NEW**. A list of satellite parameters on the EDIT SATELLITE screen displays.
3. Enter all of the new satellite's parameters as described in the [Edit a Satellite](#) section of this chapter.

PROCEDURE END

Delete a Satellite

To delete an existing satellite from the APC400, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F1 SATs**. The GO TO POS screen displays.
2. Use the arrow keys (**F2, F3**) to select the satellite you want to delete.
3. Press **F6 DELETE**. The DELETE SATELLITE? confirmation screen displays.

4. Press **F1 YES** to delete the selected satellite. Press **F6 NO** to cancel the request and return to the GO TO POS screen.

PROCEDURE END

Manually Adjust the Positioner

You can manually adjust the positioner by jogging or peaking the antenna with the APC400.

MOVE ANTENNA Screen

From the MOVE ANTENNA screen, you can either manually jog the antenna, or manually designate a position for the antenna to move to.

To access the MOVE ANTENNA screen, press **F2 MOVE** from the HOME screen.

The following soft key functions/menus are available from the MOVE ANTENNA screen:

- F2 JOG—Press to [Jog the Antenna](#).
- F5 POS DESIG—Press to [Designate Antenna Position](#).

Jog the Antenna

To manually jog the antenna, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F2 MOVE**. The MOVE ANTENNA screen displays.
2. Press **F2 JOG**. The JOG screen displays.
3. Press the corresponding function soft key for the direction you want to move the antenna:
 - **F1 AZ EAST**
 - **F2 AZ WEST**
 - **F3 EL UP**
 - **F4 EL DOWN**
 - **F5 POL CCW**
 - **F6 POL CW**
4. You can change the speed at which the antenna moves. To toggle the antenna speed between fast and slow, press **1** on the alphanumeric keypad.

5. After you have jogged the antenna to the desired position, you can press **9** on the alphanumeric keypad to save the peak. (See [Peak the Antenna](#) for more information.)

PROCEDURE END

Designate Antenna Position

You can designate a position for the antenna to move to by manually entering the AZ, EL, and Pol values. To manually designate the antenna's position, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F2 MOVE**. The MOVE ANTENNA screen displays.
2. Press **F5 POS DESIG**. The POSITION DESIGNATE screen displays.
3. To configure the AZ value, use the arrow keys (**F2, F3**) to select the **Azimuth** field. Press **F5 EDIT**. The Azimuth field on the EDIT PARAMS screen displays.
4. Enter a value for the Azimuth. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
5. Press **F6 SAVE**. The POSITION DESIGNATE screen displays.
6. To configure the EL value, use the arrow keys (**F2, F3**) to select the **Elevation** field. Press **F5 EDIT**. The Elevation field on the EDIT PARAMS screen displays.
7. Enter a value for the Elevation. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
8. Press **F6 SAVE**. The POSITION DESIGNATE screen displays.
9. To configure the Pol value, use the arrow keys (**F2, F3**) to select the **Polarization** field. Press **F5 EDIT**. The Polarization field on the EDIT PARAMS screen displays.
10. Enter a value for the Polarization. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
11. Press **F6 SAVE**. The POSITION DESIGNATE screen displays.
12. Press **F6 GOTO**. The antenna moves to the AZ, EL, and Pol locations you manually designated.

PROCEDURE END

Peak the Antenna

Note: Manually peaking the antenna requires you to have a spectrum analyzer (or other equipment) not supplied with the APC400.

To manually peak the antenna, use the APC400's JOG functions. Once the desired peak is reached, press the **9** key on the alphanumeric keypad to save the peak angle. The peak angle is then used as a starting point for the antenna when locating a satellite.

Clear Faults

FAULT STATUS Screen

The APC400 has a fault/alarm recording system that latches faults and allows for user acknowledgement of faults. A latched fault is a fault that has occurred one or more times, but is not currently an active fault.

When the APC400 detects a fault, the Date and Time display on the HOME screen is replaced with a display of an abbreviated list of detected faults. If multiple faults are detected, the system slowly scrolls a text list of faults across the LCD. The APC400 displays only active, unacknowledged faults.

You can acknowledge a fault using the FAULT screen. Once a fault is acknowledged, it no longer triggers a summary alarm, and it no longer displays on the HOME screen. If the same fault clears and then reoccurs, a new summary alarm is triggered and the fault displays on the HOME screen.

Clear Latched Faults

To clear latched faults, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F3 FAULT**. The FAULT STATUS screen displays.
2. Press **F2 CLRLAT** to acknowledge and clear latched faults.

PROCEDURE END

Clear Summary Faults

To clear summary faults and turn off summary fault relay until a fault reoccurs or a new fault occurs, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F3 FAULT**. The FAULT STATUS screen displays.
2. Press **F4 CLRSUM** to acknowledge and clear summary faults.

PROCEDURE END

Interfacing

This chapter details communication interfaces with the APC400 and includes the following sections:

- [Legacy Serial Interface](#) on page 1
- [SNMP Interface](#) on page 2

Legacy Serial Interface

The APC400 can emulate an APC100 antenna controller. To configure the APC400 for APC100 serial protocol emulation, see “[Serial Protocol](#)” on page 8 of *Configuration and Operation*.

APCEDIT Utility

The APC400 is compatible with the APCEDIT Utility. APCEDIT allows you to upload APC100 parameters to a PC, then transfer and save them to the APC400. For detailed instructions on using APCEDIT, refer to the [APCEDIT Utility](#) chapter.

APC100 Serial Communication Emulation

When the APC400 emulates an APC100, it implements the serial protocol described in Chapter 7 of the *APC100 Operation and Maintenance Manual*. However, the APC400 does operate differently during APC100 emulation in the following ways:

- The APC100 uses “resolver units” (also known as binary angular measurements) throughout the protocol. The APC400 simulates these resolver units during APC100 emulation, as resolver units are not a part of the APC400’s internal architecture. As a result, there are some small rounding-off errors (+/- 1 bit) in values echoed back to the controller after a save is performed.
- The MOTION bit (7.E.2) is emulated approximately. The timing given in the *APC100 Operation and Maintenance Manual* is not applicable for APC400 emulation of an APC100.
- The MOTION INHIBIT bit (7.E.10) is not applicable when the APC400 emulates an APC100, as the feature is not part of the APC400 hardware.

- SETUP DATA UPDATE REQUIRED and POSITION DATA UPDATE REQUIRED are emulated and are not persistent across APC400 restarts.
- DOWNLOAD SETUP may trigger the SETUP DATA UPDATE REQUIRED flag. Since data is converted between unit systems during emulation, it is recommended that you re-upload the parameters if the flag is triggered to resolve any issues.
- Emulation follows APC100 v2.11, even if the device is not running v2.11. Specifically, the SWITCH STATUS message format varies the byte order so that instead of being sent as bytes {0, 1, 2, 3, 4, 5, 6}, the actual order is sent {0, 1, 3, 4, 5, 2, 6}.

SNMP Interface

The APC400 includes an implementation of the Simple Network Management Protocol (SNMP), versions 1 and 2c.

Note: The APC400 does not support SNMP v3.

The SNMP agent does not start unless the SNMP parameters are configured.

Note: You MUST restart the APC400 for SNMP parameter changes to take effect.

Prior to setting up SNMP parameters, you must have the following information:

- SNMP Manager Address
- SNMP Trap Address
- SNMP System Location
- SNMP System Contact

ASC Signal recommends you obtain the information listed above from your network administrator before attempting to set up SNMP.

For detailed instructions on setting SNMP parameters through the APC400 front panel, refer to the “[Set SNMP Parameters](#)” on page 6 of *Administration*.

Administration

This chapter details common administrative tasks for the APC400 and includes the following sections:

- [Perform Administrative Tasks](#) on page 1
 - [Backup System Configuration](#)
 - [Restore System Configuration](#)
 - [Restore System Defaults](#)
 - [Update Software \(Ethernet Port–J1\)](#)
 - [Set SNMP Parameters](#)
 - [Show Statistics for Serial Port](#)
 - [Show Statistics for RDC Port](#)
 - [Reset System](#)
- [Update Software via Serial Port \(J3\)](#) on page 9

Perform Administrative Tasks

APC400 administrative tasks are performed from the ADMIN TASKS menu. To access this screen, perform the following steps:

PROCEDURE BEGIN

1. From the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.

PROCEDURE END

You can perform/view the following admin tasks from the ADMIN TASKS menu:

1. [Backup System Configuration](#)
2. [Restore System Configuration](#)
 - [Restore a System Configuration](#)
 - [Delete a System Configuration](#)

3. [Restore System Defaults](#)
4. [Update Software \(Ethernet Port–J1\)](#)
5. [Set SNMP Parameters](#)
6. [Show Statistics for Serial Port](#)
7. [Show Statistics for RDC Port](#)
8. [Reset System](#)

Backup System Configuration

The APC400 allows you to save multiple backup system configurations. ASC Signal Corp. recommends you save a backup system configuration any time you make changes to the system/parameters.

You can restore a backup system configuration when necessary.

To create and save a backup system configuration, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Backup System Configuration** field.
4. Press **F4 SELECT**. The CREATE BACKUP screen displays.
5. Use the alphanumeric keypad to enter a configuration name your system backup file. If you make a mistake, press the **F3 BACKSP** key to erase the last entry, or the **F1 CLEAR** key to clear the entire field.
6. Once you have entered a configuration name, press **F6 SAVE**.

PROCEDURE END

Restore System Configuration

You can restore a saved system configuration if the need arises. Additionally, you can delete backup system configurations that are no longer needed.

Restore a System Configuration

To restore a saved system configuration, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Restore System Configurations** field.
4. Press **F4 SELECT**. The RESTORE CONFIG menu displays.
5. Use the arrow keys (**F2, F3**) to select the **Configuration Name** you want to restore.
6. Press **F1 LOAD**. A confirmation screen displays.
7. Press **F1 YES** to restore the requested configuration. Press **F6 NO** to cancel the request and return to the RESTORE CONFIG screen.
8. The APC400 resets and restores the saved configuration you requested.

PROCEDURE END

Delete a System Configuration

To delete a backup system configuration you no longer need, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Restore System Configurations** field.
4. Press **F4 SELECT**. The RESTORE CONFIG menu displays.
5. Use the arrow keys (**F2, F3**) to select the **Configuration Name** you want to delete.
6. Press **F4 DELETE**. The DELETE ARCHIVE confirmation screen displays.
7. Press **F1 YES** to delete the backup system configuration. Press **F6 NO** to cancel the delete request and return to the RESTORE CONFIG screen.

PROCEDURE END

Restore System Defaults

To restore factory defaults, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Restore System to Defaults** field.
4. Press **F4 SELECT**. The RESET TO FACTORY confirmation screen displays.
5. Press **F1 YES** to restore factory defaults. Press **F6 NO** to cancel the request and return to the ADMIN TASKS screen.

PROCEDURE END

Update Software (Ethernet Port–J1)

From time to time, you may find it necessary to download software updates to your APC400. You can download software using the APC400's ethernet port.

The APC400 supports several methods by which you can download software through the ethernet port. The simplest method is by using Trivial File Transfer Protocol (TFTP), and this is the method of software download documented in this section.

You can also download software through the serial port. Refer to [Update Software via Serial Port \(J3\)](#) in this chapter for details.

To update software from the APC400 front panel, perform the following steps:

Note: **Downloading new software causes the APC400 to reboot. Ensure that the APC400 is in Standby mode before you proceed to download software.**

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Update Software (Ethernet)** field.
4. Press **F4 SELECT**. The UPDATE FIRMWARE screen displays.
5. Use the arrow keys (**F2, F3**) to select the **Image Name** field.
6. Press **F4 EDIT**. The Image Name field on the EDIT PARAMS screen displays.
7. Use the alphanumeric keypad to enter the new software file name to download. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
8. Once you have entered the software file name, press **F6 SAVE**. The UPDATE FIRMWARE screen displays.
9. Confirm the TFTP server address is correct. If the TFTP server address is correct, proceed to Step 14. If the address needs to be changed, go to the next step.
10. Use the arrow keys (**F2, F3**) to select the **TFTP server addr** field.
11. Press **F4 EDIT**. The TFTP server addr field on the EDIT IP ADDR screen displays.
12. Use the alphanumeric keypad to enter the **TFTP server address**. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
13. Press **F6 SAVE**. The UPDATE FIRMWARE screen displays.
14. Press **F6 UPDATE** to download the new software to the APC400.

PROCEDURE END

The APC400's ethernet port connectivity allows you to telnet to the ADMIN TASKS menu.

To access the ADMIN TASKS menu and download software via telnet, perform the following steps:

PROCEDURE BEGIN

1. Login to the admin shell via serial port or telnet.
2. Confirm the TFTP server address that contains the new software is displayed on the menu.
3. Enter the new *software file name* onto the TFTP server.
4. Press <RETURN> (Download a New Image).
5. If you are sure you want to continue, enter **a y**, then press <RETURN>.
6. At this point, the APC400 reboot process logs you out. If the TFTP server is on the local network, the download and reboot process takes 1–3 minutes, depending on network traffic.

PROCEDURE END

Set SNMP Parameters

To enable the SNMP agent, you must configure SNMP parameters.

Prior to setting up SNMP parameters, you must have the following information:

- SNMP Manager Address
- SNMP Trap Address
- SNMP System Location
- SNMP System Contact

To configure the SNMP parameters, perform the following steps:

Note: You must restart the APC400 for SNMP parameter changes to take effect.

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Set SNMP Parameters** field.
4. Press **F4 SELECT**. The SNMP parameters field on the EDIT CONFIG screen displays.
5. To set the location address, use the arrow keys (**F2, F3**) to select the **Location** field.
6. Press **F4 EDIT**. The Location field on the EDIT PARAMS screen displays.
7. Use the alphanumeric keypad to enter the SNMP system location. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
8. Press **F6 SAVE**. The SNMP parameters field on the EDIT CONFIG screen displays.
9. Use the arrow keys (**F2, F3**) to select the **Contact** field.
10. Press **F4 EDIT**. The Contact field on the EDIT PARAMS screen displays.
11. Use the alphanumeric keypad to enter the SNMP system contact. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
12. Press **F6 SAVE**. The SNMP parameters field on the EDIT CONFIG screen displays.
13. Use the arrow keys (**F2, F3**) to select the **SysName** field.
14. Press **F4 EDIT**. The SysName field on the EDIT PARAMS screen displays.
15. Use the alphanumeric keypad to enter the SNMP system name. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
16. Press **F6 SAVE**. The SNMP Parameters field on the EDIT CONFIG screen displays.
17. Use the arrow keys (**F2, F3**) to select the **TrapCS** field.
18. Press **F4 EDIT**. The TrapCS field on the EDIT PARAMS screen displays.
19. Use the alphanumeric keypad to enter a value for the SNMP trap address. If you make a mistake, press **F3 BACKSP** to erase the last entry, or press **F1 CLEAR** to clear the entire field.
20. Press **F6 SAVE**.

21. Execute a system reset. The SNMP parameters should take effect once the APC400 reboots.

PROCEDURE END

Show Statistics for Serial Port

You can view (not edit) serial port statistics. To view the statistics, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Show Statistics for Serial Port** field.
4. Press **F4 SELECT**. The Serial Counts screen displays.
5. To clear the statistics, press **F2 CLEAR**.

PROCEDURE END

Show Statistics for RDC Port

You can view (not edit) RDC port statistics. To view the statistics, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **Show Statistics for Serial Port** field.
4. Press **F4 SELECT**. The **RDC Counts** screen displays.
5. To clear the statistics, press **F2 CLEAR**.

PROCEDURE END

Reset System

You can reset the APC400 from the ADMIN TASKS screen. To reset the system, perform the following steps:

PROCEDURE BEGIN

1. At the HOME screen, press **F4 CONFIG**. The EDIT CONFIG screen displays.
2. Press **F5 ADMIN TASKS**. The ADMIN TASKS menu displays.
3. Use the arrow keys (**F2, F3**) to select the **RESET SYSTEM** field.
4. Press **F4 SELECT**. The RESET? confirmation screen appears.
5. Press **F1 YES** to reset the system. Press **F6 NO** to cancel the request and return to the ADMIN TASKS screen.

PROCEDURE END

Update Software via Serial Port (J3)

Note: You will need to contact ASC Signal Corp. to obtain the APC400 software and download utility before you perform the procedure detailed in this section.

If the ethernet port is unavailable, a network host computer is offline, or the APC400's software is compromised, you can download software via the APC400's console serial port (J3).

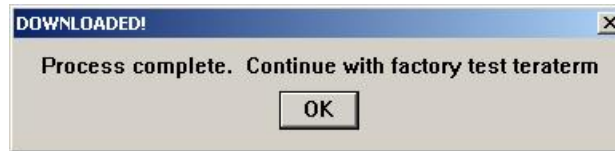
To download software, perform the following procedure:

Note: Downloading new software causes the APC400 to reboot. Ensure that the APC400 is in Standby mode before you proceed to download software.

PROCEDURE BEGIN

1. Connect a straight-through serial cable between the PC's Com port and the APC400's Serial port (J3).
2. Power off the APC400.
3. Start the APC400 software and download utility by double-clicking the **7575170_REV_x_REZAP** icon on your PC. (The x in the icon name refers to the software revision.)
4. Power on the APC400.
5. Allow the "zapper" utility to run. The program automatically loads the software and makes basic checks. Note that the download program does NOT configure the system to

run. The process may take up to seven minutes. When the process is complete, the following pop-up window displays on the PC:



6. Disconnect the serial cable.
7. Cycle power on the APC400.

PROCEDURE END

APCEDIT Utility

This chapter details the APCEDIT Utility and includes the following sections:

- [APCEDIT Utility Overview](#) on page 1
- [Installing the APCEDIT Utility](#) on page 2
- [APC400 Setup](#) on page 2
- [APC100 Setup](#) on page 2
- [Starting the APCEDIT Utility Program](#) on page 3
- [APCEDIT Menus](#) on page 4
- [Error Messages](#) on page 9

APCEDIT Utility Overview

APCEDIT is a software product of ASC Signal Corporation that was originally developed for use with the APC100 antenna controller. The APC400 antenna controller has been designed to support the use of the APCEDIT utility. This utility provides a user-friendly interface between a personal computer (PC) and the APC100 or APC400 controller.

APCEDIT is included on the support CD provided with the APC400. APCEDIT works with most Windows Operating Systems including 98 and XP. A DOS version is also available which can be obtained from ASC Signal. APCEDIT provides the following functions:

- View and modify satellite information
 - Modify—Allows you to edit satellite names, longitudes, and pointing angles.
 - Save—Allows you to write modified data to diskette.
 - Upload—Allows you to retrieve satellite information from the antenna controller.
 - Download—Allows you to send saved satellite information to the antenna controller.
- View Setup Parameters
 - Upload—Allows you to retrieve setup parameters from the antenna controller.
 - Save—Allows you to save setup parameters to disk.
 - Display—Allows you to display setup parameters.

- Download—Allows you to send the saved setup parameters to the antenna controller.
- View only—Allows you to read and display setup parameters from a disk.

Setup parameters are automatically saved to disk when uploaded. Satellite position data can also be saved to disk via a menu option on the VIEW & MODIFY SAT NAMES submenu (Figure 2). All data files are written to the data storage media where the APCEDIT.EXE file resides. The APCEDIT.EXE file could reside on the hard drive, a floppy disk, or other memory storage device. This allows you to easily remove the APC400 setup data and store the information off-site.

Installing the APCEDIT Utility

To install the APCEDIT utility on a PC, simply copy the APCEDIT.EXE file from the APC400 support CD to a directory on the PC hard drive.

APC400 Setup



WARNING! REMOVE PRIMARY AC POWER BEFORE ATTEMPTING MAINTENANCE.

If connecting to an APC400, follow the instructions below.

PROCEDURE BEGIN

1. Connect the DB25 Male to DB9 Female serial cable between the J5 serial port on the APC400 and the PC serial port. This cable is supplied with the APC400 antenna controller.
2. Power on the APC400.

PROCEDURE END

APC100 Setup



WARNING! REMOVE PRIMARY AC POWER BEFORE ATTEMPTING MAINTENANCE.

If connecting to an APC100, follow the instructions below.

PROCEDURE BEGIN

1. Turn off the APC100 power and disconnect the rear panel cables.
2. Remove the APC100 from the equipment rack and open the top cover.
3. Verify the APC100 jumper/switch settings enable RS232 communications and set the address to 50H.

JU3	1-2	Sets RS232
JU4	1-2	Sets RS232
JU11	1-2	Comm port enable
S2	1, 2, 3, 4 = 0 5, 6, 7, 8 = 1	ON OFF

4. Replace the APC100 cover. Reinstall the unit into the equipment rack. Re-cable the rear panel.
5. Connect the DB25 Male to DB9 Female serial cable between the J3 serial port on the APC100 and the PC serial port. This cable is supplied with the APC400 antenna controller.
6. Power on the APC100.

PROCEDURE END

Starting the APCEDIT Utility Program

To start up the APCEDIT program, follow the instructions below.

PROCEDURE BEGIN

1. Double-click the APCEDIT.EXE file on your PC to start the utility.
2. From the Main Menu on the APCEDIT Utility, press F3 to modify program parameters. Configure the parameters as follows:

APC100 Software Version:	2.11 or less (see Note below)
APC100 Address:	50
Comm Port:	Select PC port (i.e. "COM1")
Baud Rate:	9600
Parity:	Even
Data Bits:	8
Note: When connecting to an APC400, you must select 2.11 or less in the APC100 Software Version field. If connecting to an APC100, select the appropriate version that corresponds to the APC100.	

3. For the initial run, it is necessary to first upload SETUP and POSITION data from the antenna controller. The uploaded data may then be modified, stored, and downloaded from disk media where the APCEDIT.EXE program resides.

Note: The antenna controller does not accept satellite position data for a position containing out-of-range coordinates. An undefined position has out-of-range coordinates (zeros). Therefore, the antenna controller will only accept name and longitude changes from the PC for defined positions.

4. The APCEDIT program does **NOT** automatically save POS information. It is necessary for the operator to select the menu option, and then SAVE to save. Changes should be made, saved to disk, then downloaded to the antenna controller.

PROCEDURE END

APCEDIT Menus

Figures 1–6 below illustrate how the APCEDIT menus are structured and provide examples of the data screens available with the APCEDIT program.

APC100 REMOTE MAIN MENU COPYRIGHT (C) ANDREW CORP. VERSION 2.1	
F1:	VIEW SETUP PARAMETERS
F2:	VIEW & MODIFY SAT NAMES & POSITIONS
F3:	VIEW & MODIFY PROGRAM PARAMETERS
F4:	EXIT

Figure 1: Main Menu Display

VIEW & MODIFY SAT NAMES	
F1: Upload	Upload and save present pos. and Sat Names from APC100
F2: Download	Downloads SAVED positions and Sat Names to APC100
F3: Modify	Allows Sat Names, Longitudes, & Angles to be modified
F4: Save	Save modified Names, etc. to Disk
F5: M_MENU	Return to Remote Main Menu
F6: Exit	Exit Program
F1:Upload F2:Download F3:Modify F4:Save F5:M_MENU F6:Exit	

Figure 2: View and Modify Satellite Names Screen

POS #	SAT NAME	LONGITUDE	AZ	EL	POL
01	GSTAR IV	89 W	180.0	45.0	180.0
02	SatCom GE K2	81 W	178.7	45.0	180.0
03	SatCom GE K1	85 W	174.8	45.0	179.9
04	SPACENET III	87 W	172.6	45.0	179.9
05	SBS 4	97 W	170.8	45.0	180.0
06	GStar	93 W	168.8	45.0	180.0
07	SBS 3	95 W	168.4	44.9	179.8
08	Telstar 401	97 W	160.5	94.0	225.4
09	GALAXY VI	99 W	157.2	80.9	190.6
10	SPACENET 1	101W	154.0	98.4	233.1
11	GStar 1	103W	150.4	100.6	236.9
12	GStar 2	105W	180.0	90.0	180.0
13	SPACENET 2	120W	185.4	45.0	179.9
14	SBS 5	123W	150.3	100.2	210.8
15	GStar 4	125W	157.3	89.0	178.9
16	ASC 1	128W	180.1	46.0	180.4
17	SBS 2	97 W	150.4	100.6	237.0
18	WESTAR 5	99 W	180.0	45.0	180.0
19	SBS 1	99 W	180.0	45.0	180.0
20	GStar 1	103W	180.0	45.0	180.0
F2:Next_Page		F3:Mod_Menu	F9:Tab_L	F10:Tab-R	
Arrows:Move_Cursor					

Figure 3: Satellite Position Table—example

SETUP DATA	
F1: Upload, Save & View	Uploads Setup Parameters from APC100 Saves to Disk Displays Setup Table for Viewing
F2: Download	Downloads Setup Parameters to APC100
F3: View Only	Retrieves Setup Parameters from Disk
F5: M_MENU	Return to Main Menu
F6: Exit	Exit Program
F1:Upload, Save & View F2:Download F3:View Only F5:M_MENU F6:EXIT	

Figure 4: View Setup Parameters Menu

SETUP DATA		
AZ_LO_COAST	=	0050
AZ_HI_COAST	=	0600
EL_LO_COAST	=	0650
EL_HI_COAST	=	0600
POL_COAST	=	0050
AZ_CAL	=	00992
EL_CAL	=	24261
POL_CAL	=	17939
AZ_SL_TIMEOUT	=	0100
AZ_FS_TIMEOUT	=	0050
EL_SL_TIMEOUT	=	0100
EL_FS_TIMEOUT	=	0050
POL_TIMEOUT	=	0050
AZ_LO_LIMIT	=	01820
AZ_HI_LIMIT	=	45511
EL_LO_LIMIT	=	01820
EL_HI_LIMIT	=	16384
POL_LO_LIMIT	=	01820
POL_HI_LIMIT	=	32768
PRESS ENTER		

Figure 5: Setup Data Screen—example

PROGRAM PARAMETERS SCREEN		
APC100	Software Version:	2.11 or less
APC100	Address:	50
Comm. Port		COM 1
Baud Rate:		9600
Parity:		EVEN
Data Bits:		8
Use up and down arrow keys to select fields and the left and right arrow keys to change the selected fields.		

Figure 6: Program Parameters Screen

Error Messages

The following error messages may appear while the APCEDIT utility is in use. Perform the detailed corrective action to clear the error messages.

- **APC100 IN LOCAL**—The antenna controller must be in Remote mode to allow communications with the PC.
Corrective Action: Place the antenna controller in Remote mode (Press the LCL/REM switch for an APC400 or toggle the Local/Remote switch for an APC100).
- **NO RESPONSE FROM APC100**—The antenna controller did not respond to a request or command sent from the PC.
Corrective Action:
 - Verify the cable between the antenna controller and the PC is firmly attached at both ends.
 - Verify the cable is attached to the correct antenna controller and PC ports.
 - Verify the PC Com1 port is serial, not parallel.
 - Verify the proper PC Com port is selected, Com1 or Com2.
 - Verify the setup parameters are properly configured as explained in the [APC400 Setup](#) and [APC100 Setup](#) sections of this document.

APC400 Specifications

This chapter provides physical, electrical, environmental, and RF performance specifications for the APC400.

The APC400's construction materials comply with European Union (EU) Directive No. 2002/95/EC (RoHS).

Note: All designs, specifications and availability of the products and services presented in this section are subject to change without notice.

Physical Specifications

Table 1 provides physical specifications for the APC400.

Table 1: Physical Specifications

Chassis	19 inch, rack mountable; Chemical Conversion Coated per MIL-C-5541 Class 1A (Clear)
Height	3.47 inch (Two rack units high per ANSI/EIA-310-D-1992)
Depth	10.75 inch (not including front panel handle or power cord)
Weight	6 lbs (with power cord)
Front Panel Handle Protrusion	1.0 inch
Power Cord Protrusion	3.0 inch
Faceplate	Rough texture, semi-gloss black paint with white silkscreen legend
Display	240(W) x 64(H) dot matrix LCD STN Transmissive type per NTD-7446

Environmental Specifications

Note: The APC400 is designed for indoor installation and use only.

Table 2 provides environmental specifications for the APC400. The APC400 fully complies with NEMA 1.

Table 2: Environmental Specifications

Operational Temperature	0° to 50°C
Operational Humidity	5–95%, non-condensing IEC 60068-2-56 (40°C +/-2°C @ 93% +/-3% Relative Humidity for 2 Days)–Indoor Equipment
Storage Temperature	-20° to 60°C
Storage Humidity	5–95%, non-condensing IEC 60068-2-56 (40°C +/-2°C @ 93% +/-3% Relative Humidity for 2 Days)–Indoor Equipment
Vibration	ASTM D 4169–Truck Level 2 (3 HRS–X, Y, Z axes)
Shock	ISTA Test Procedure 1A

Electrical Specifications

Table 3 provides electrical specifications for the APC400.

Table 3: Electrical Specifications

AC Input Power	Single phase, 100–250-V AC, 50/60 Hz @ 1.5 amps (maximum)
Power Supply	40W high efficiency universal power input, switching type
Fuse	1.6 amp slow blow (Little Fuse P/N 31301.6 or equivalent)

Table 3: Electrical Specifications

Microcontroller	Arcturus Coldfire 5272EXT Industrial SBC – Motorola RISC Core – 32 bit core (16 bit mode utilized) – 66 MHz clock – 32 MB dynamic RAM/8MB flash (-NOR) onboard memory – Onboard watchdog timer
Ethernet Ports	IEEE 802.3 10 Mbps IEEE 802.3u 100 Mbps
Outdoor Motor Controller Drive Output	12-V DC (30-V DC max) @ 25 mA (30 mA max.)
Summary Alarm Contact Relay	110-V AC @ 0.5 amps (max. load rating)
Summary Auxiliary Contact Relay	24-V DC @ 1.0 amps (max. load rating)
Non-volatile SRAM/RTC	10 year life @ no power & +/- 1 minute clock accuracy per month @ 25° C
Console/Programming/Debug Ports	RS-232 (3-wire only, no handshaking)
Non-volatile Mass Storage	1 GB SD card
Display Backlight	Yellow-green LED
Keyboard Data Entry Switches	Momentary with tactile feedback

Table 4 provides specifications for the APC400’s Resolver to Digital Converter (RDC-1).

Table 4: Resolver to Digital Converter Specifications

Resolver Input (S1–S4)	Differential 2.0 V RMS +/-15% (+/-25V max.)
Impedance	10M Ohm minimum @ 10PF loading
Resolver Reference Output (R1, R2)	Single ended 2 V or 4 V RMS (+/-25 V continuous or +/-100 V transient)
Resolver Input/Output Frequency	2 kHz (40 kHz max.)
Conversion Accuracy	4 arc minutes +/- 1 LSB
Repeatability	1 LSB max.
Differential Linearity	1 LSB max.
Conversion Resolution	16 bits (0.0055 degrees)
Antenna Axis to Resolver Axis Ratios	1:1 or 2:1 (Software provisionable)

Table 4: Resolver to Digital Converter Specifications (Continued)

Resolver Input (S1–S4)	Differential 2.0 V RMS +/-15% (+/-25V max.)
Resolver Transformation Ratios	1:1 or 2:1 (PWA jumper provisionable–Default setting 2:1)