

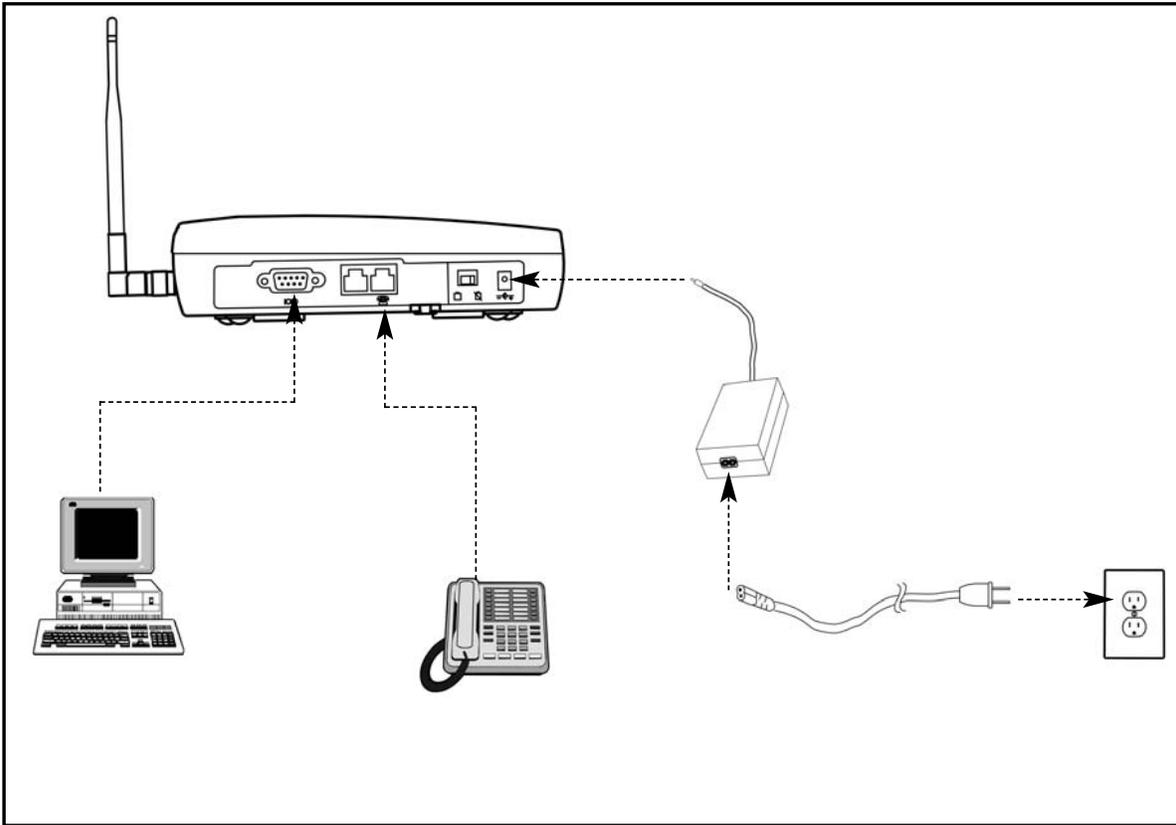
PHONECELL® SX5e GSM

- **Fixed Wireless Terminal**
- **Fixed Wireless Terminal with Fax**
- **Fixed Wireless PBX Terminal**
- **Fixed Wireless Modem**

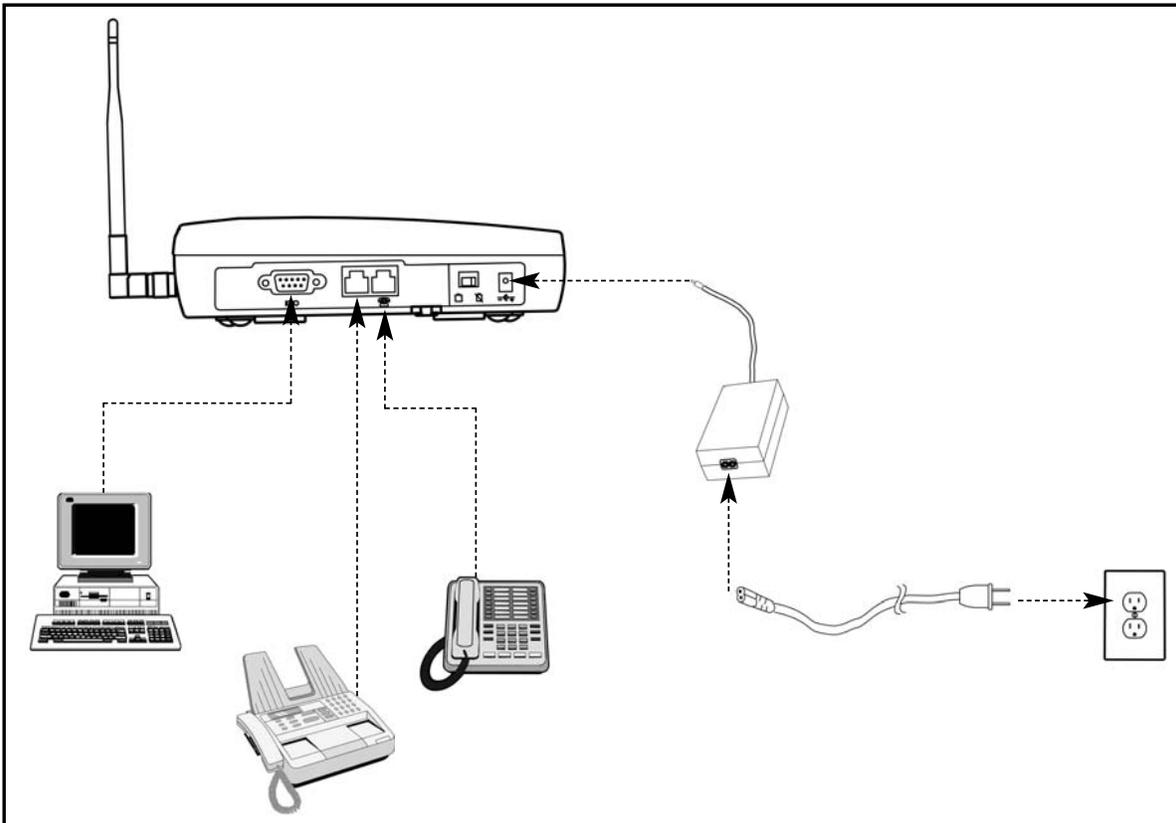
850/1900 MHz GSM (DUAL BAND)

USER MANUAL

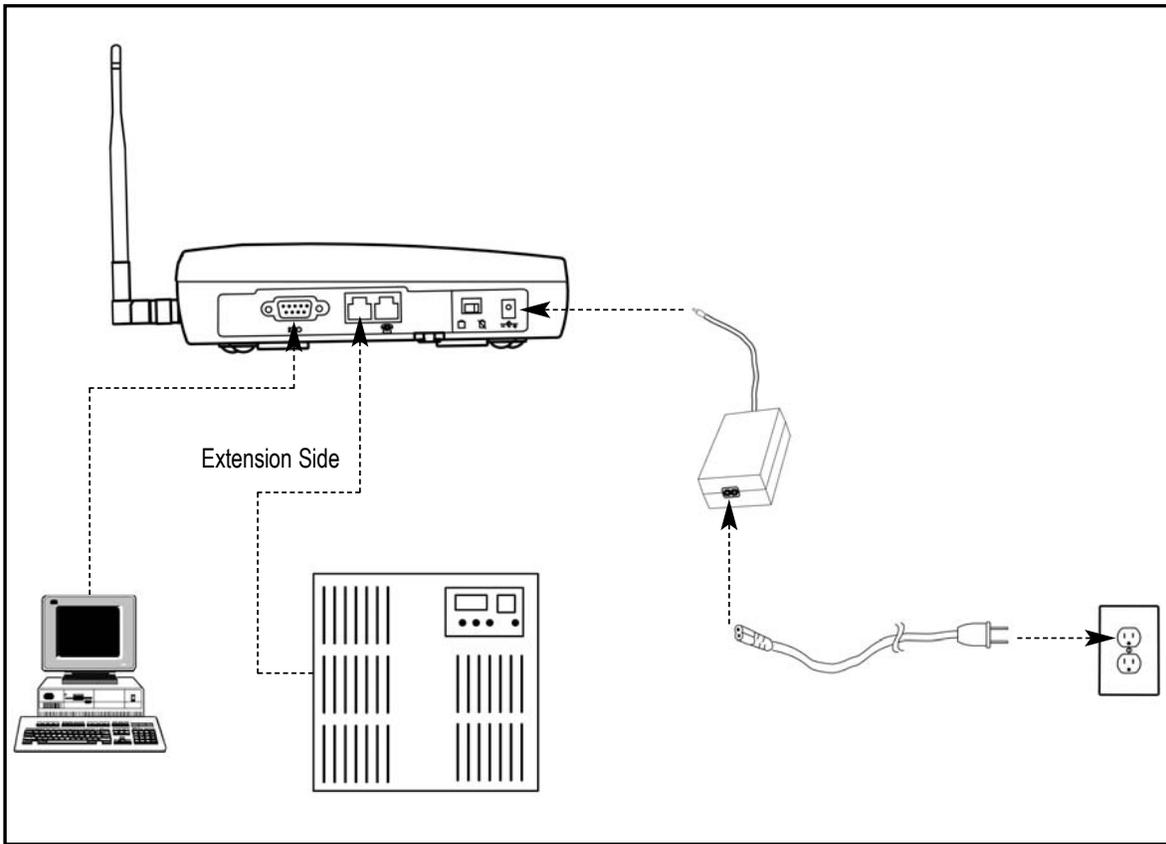
QUICK CONNECTION GUIDE



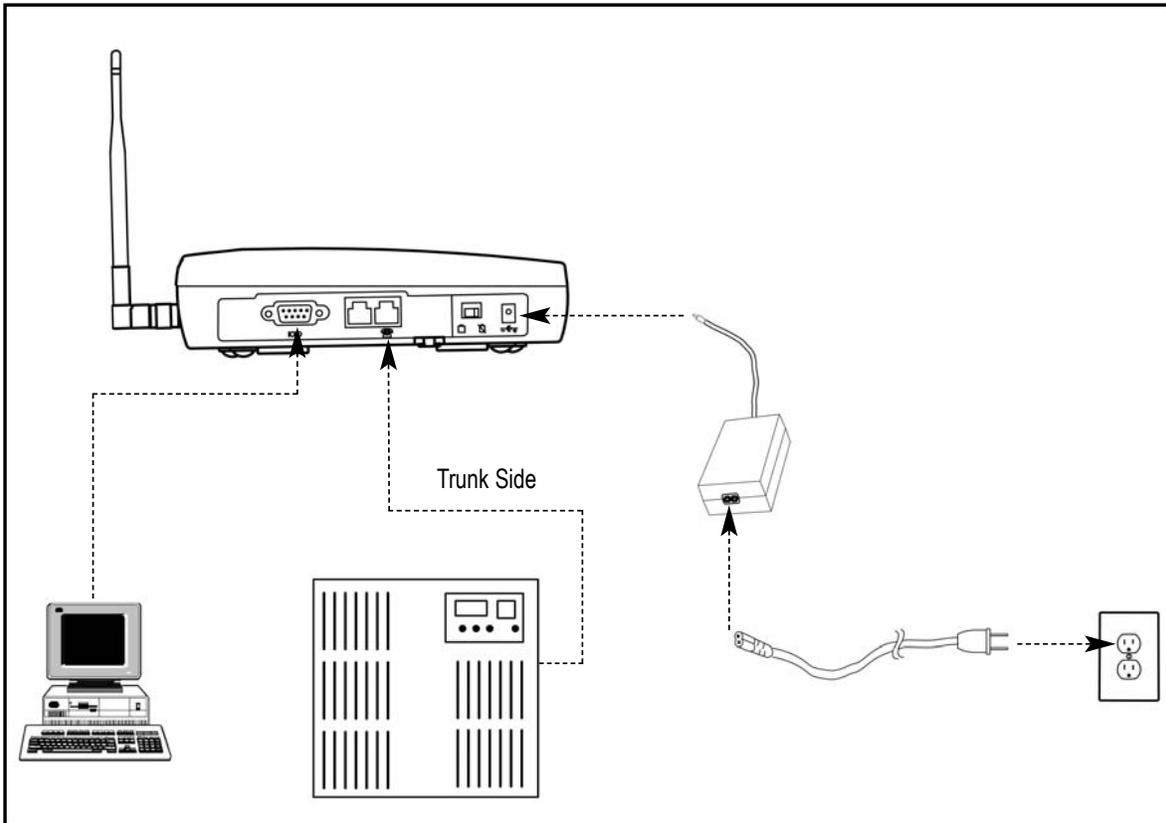
SX5e Fixed Wireless Terminal



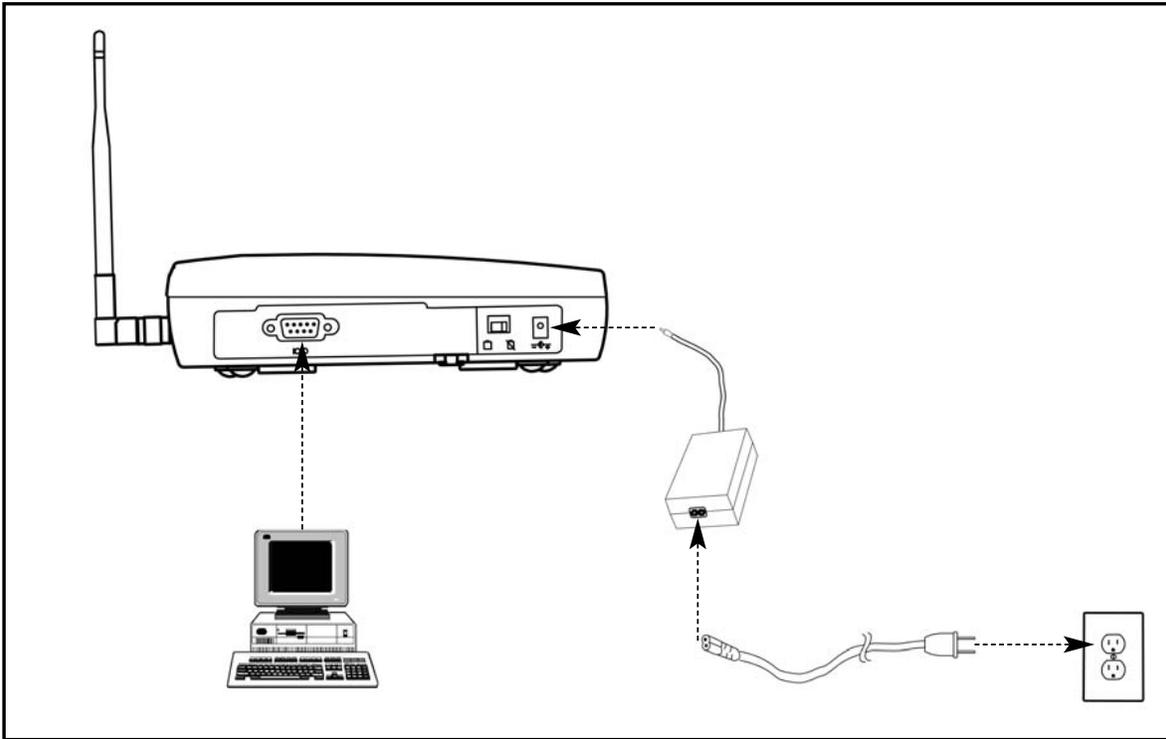
SX5e Fixed Wireless Terminal with Optional Analog Fax



SX5e Fixed Wireless PBX Terminal (attached to Extension side of PBX)

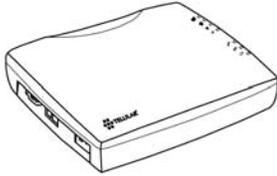


SX5e Fixed Wireless PBX Terminal (attached to Trunk side of PBX)



SX5e Fixed Wireless Modem

CONTENTS



Phonocell® SX5e GSM FWT



Spike Antenna



Power Supply



AC Power Cord

Before installing the **Phonocell® SX5e**, carefully remove the contents from the shipping carton and check for evidence of shipping damage. **If damage is found, contact your Authorized Telular Distributor or shipping agent immediately.**

SAFE OPERATION INSTRUCTIONS

IMPORTANT! Before installing or operating this product, read the **SAFETY INFORMATION** section of this manual.

- Install the unit indoors.
- Install the unit on a hard, flat surface for proper ventilation.
- Do not expose the unit to rain or moisture.
- Do not place the unit on or close to sources of heat.

PLEASE SEE THE *IMPORTANT NOTICES* SECTION OF THIS MANUAL FOR IMPORTANT INFORMATION ON USE, WARRANTY AND INDEMNIFICATION

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SETUP

Install the SIM Card

The SX5e requires a Subscriber Identity Module (SIM) for normal operation. The service provider supplies the SIM card, which carries the account information needed to operate the SX5e. If you don't have a SIM card, contact your service provider. The SIM compartment is on the back of the SX5e - *see Figure 1*.

HINT: Make sure your carrier disables SIM PIN1 or you will have to enter the PIN every time the unit powers on. See the *SX5e User Features* section of this manual for more information.

1. Disconnect the power supply. The power supply must be disconnected whenever a SIM Card is installed.
2. Remove the SIM compartment cover by removing the screw - *see Figures 1 and 2*.
3. Open the SIM compartment holder.
4. Line up the SIM card with the arrow on the SIM card holder - *see Figure 2*.
5. Gently insert the SIM card in the slot of the SIM card holder.
6. Close the SIM card holder.

NOTE: Do not force the SIM card holder shut. Make sure the SIM card is aligned properly with the directional arrow on the holder.

7. Reattach the SIM compartment cover with the screw.

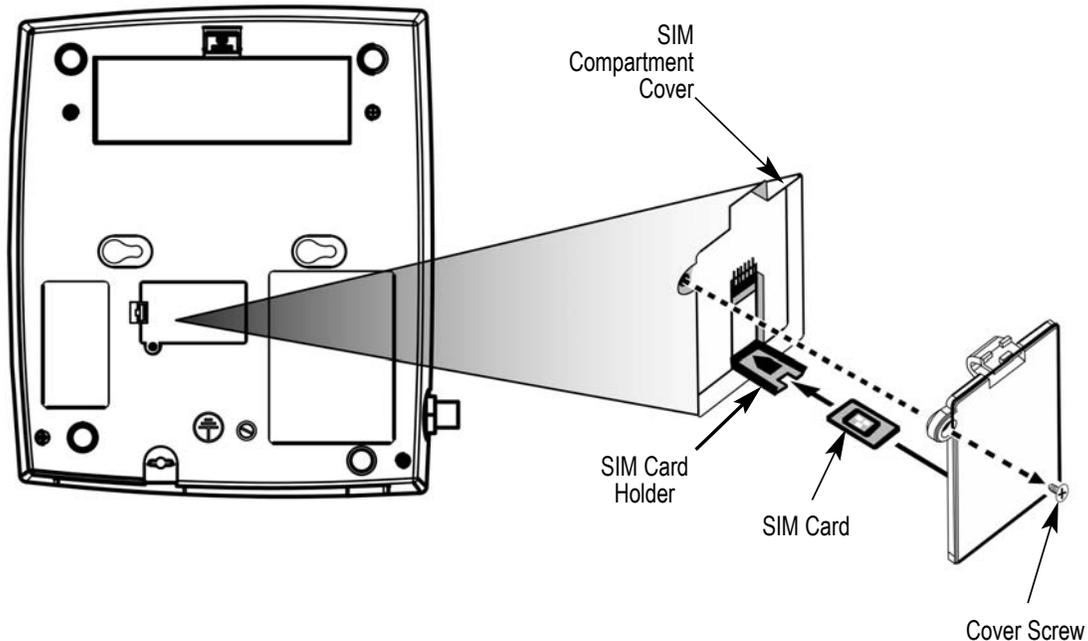


Figure 1 - SIM compartment.

Figure 2 - Install the SIM Card.

Emergency Batteries

Install Batteries

1. Remove the battery access door screw located on the bottom of the unit - *see Figure 3*.
2. Press the battery access door tabs and remove the battery access door.
3. Install 4 “AA” alkaline batteries (not supplied) - *see Figure 3*.
4. Reinstall the battery access door using the screw.
5. Turn the AC/Battery switch to battery operation - *see Figure 4*.

NOTE: The SX5e does not support rechargeable batteries.



WARNING!

Only “AA” alkaline batteries are to be used with the Phonecell® SX5. Use of any other batteries may result in fire and/or other damage to the unit.

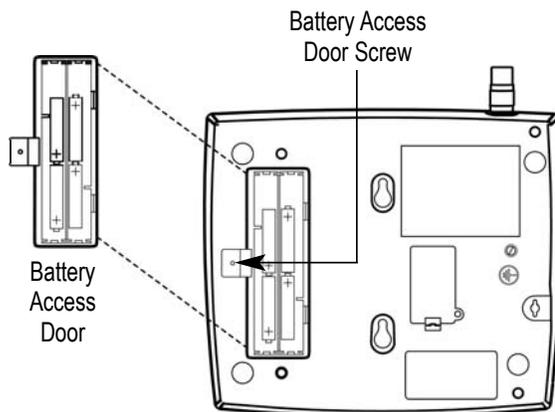


Figure 3 – SX5e battery installation.

Battery Operation

The unit will not automatically switch from AC to battery upon loss of AC power. The AC/Battery switch must be changed manually - *see Figure 4*. Battery power will provide up to three hours of standby and 90 minutes of talk time, depending on the SX5e model.

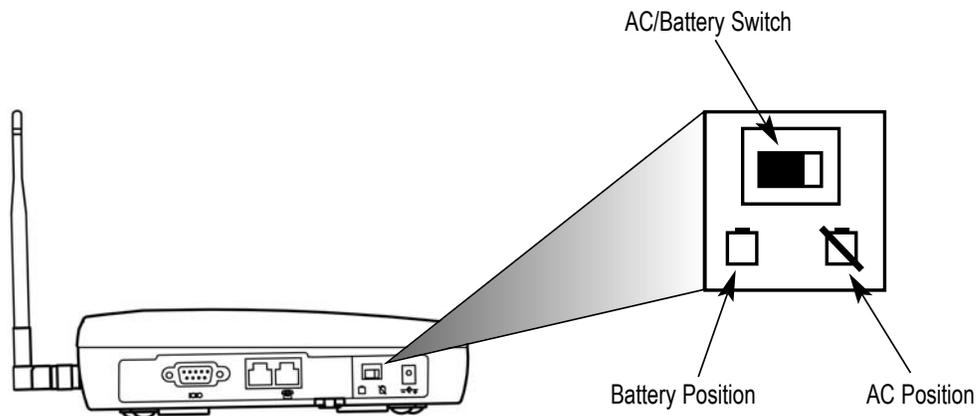


Figure 4 – SX5e AC/Battery switch.

SX5e Location and Installation

The SX5e comes with a standard spike antenna (TNC) - **see Figure 5**. For optimal signal strength, choose a location that is above ground and as close to windows (or exterior walls) as possible - **see Figure 6**. Cellular signal strength is displayed by the Received Signal Strength Indicator (RSSI) LED on the unit - See the *How to Use the LED Status Indicators* section of this manual.

1. Connect the antenna to the terminal - **see Figure 5**.
2. Finger-tighten the antenna. Do not over-tighten the antenna.

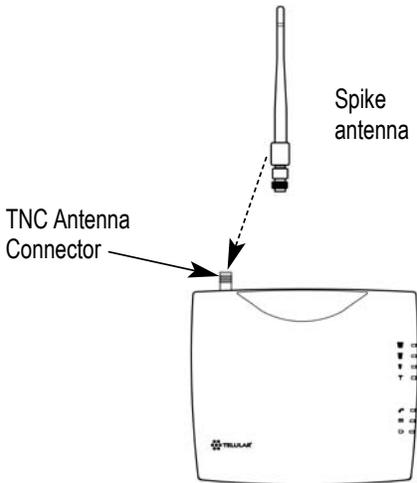


Figure 5 – SX5e antenna connection.

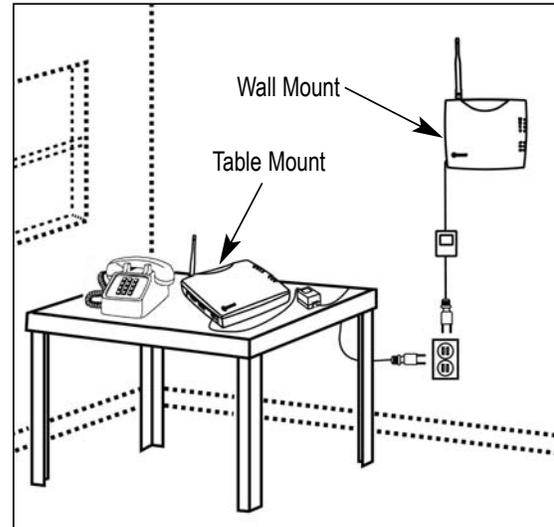


Figure 6 – Typical SX5e installation.

Wall Mounting

1. Mark two hole locations 98,5 mm (3-7/8 inches) vertically apart and drill two holes into the wall.
2. Install the screws (not supplied) into the wall, leaving a gap (approximately 3 mm (1/8 inch)) between screw head and wall.
3. Align the mounting holes with the screws and mount the SX5e onto the screws - **see Figures 7 and 8**.

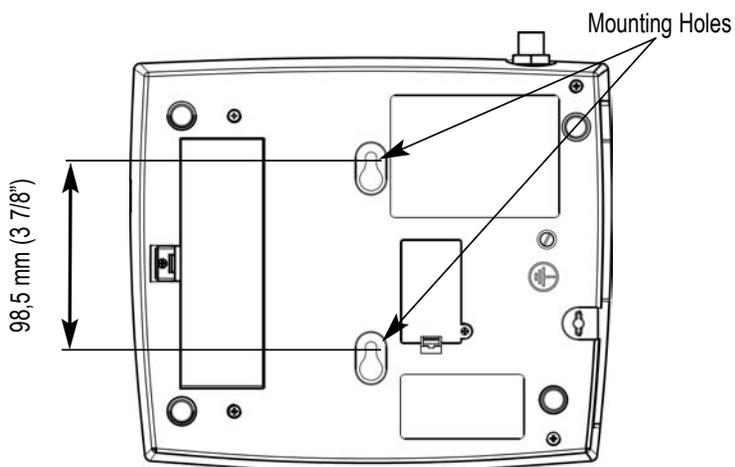


Figure 7 – SX5e mounting holes.

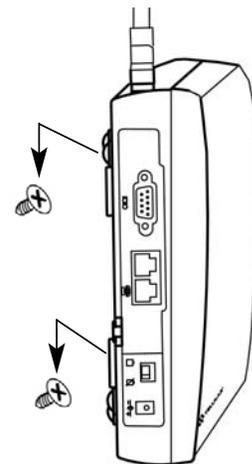


Figure 8 – Mount the SX5e onto the screws.

Connect the SX5e to AC Power

1. A protective earth (safety ground) terminal (screw) marked with a protective earth symbol is provided on the back of the SX5e - **see Figure 9a**. Connect this terminal to a good earth ground (i.e., a cold water pipe) by means of an 18 gauge or heavier insulated wire. The wire insulation should be green with a yellow stripe to indicate that this is a protective earth (safety ground) connection.

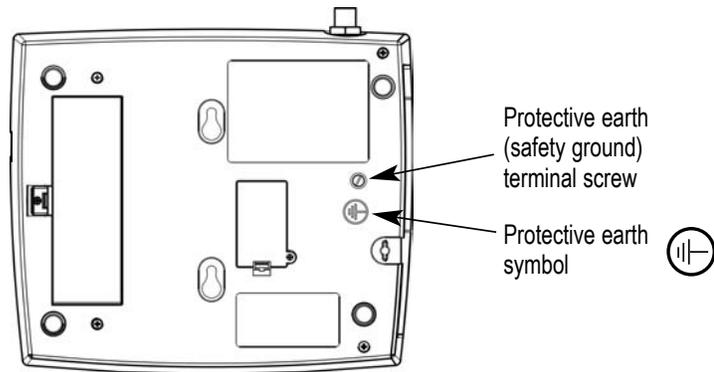


Figure 9a – Earth ground terminal screw.

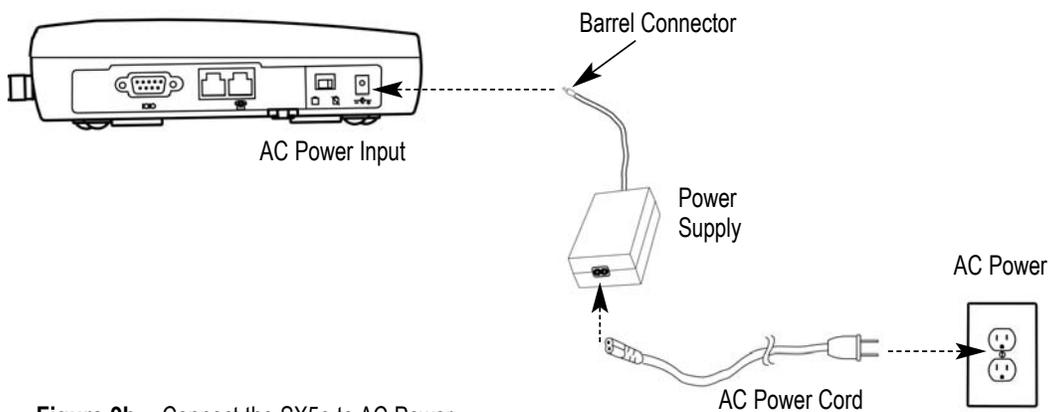


Figure 9b – Connect the SX5e to AC Power.

2. Connect the barrel connector of the power supply to the AC power input receptacle of the SX5e - **see Figure 9b**.
3. Plug the AC power cord into the power supply.
4. Plug the AC power cord into the AC Power outlet.

HINT: If there are no batteries in the SX5e, it will only power on if the AC/Battery switch is in the AC position - **see Figure 4**.

5. Check the cellular signal strength and move the unit until you achieve the best signal possible - see the *LED Status Indicators* section of this manual.

Attach a Telephone to the SX5e

1. Plug one end of a standard phone cord into a phone- **see Figure 10**.
2. Connect the other end of the phone cord to the telephone port on the side of the SX5e (marked with a phone icon) - **see Figure 10**.

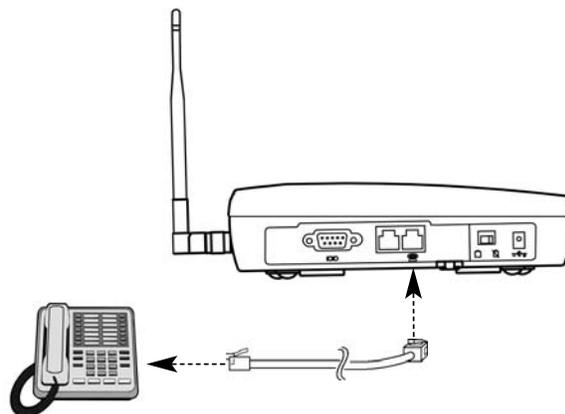


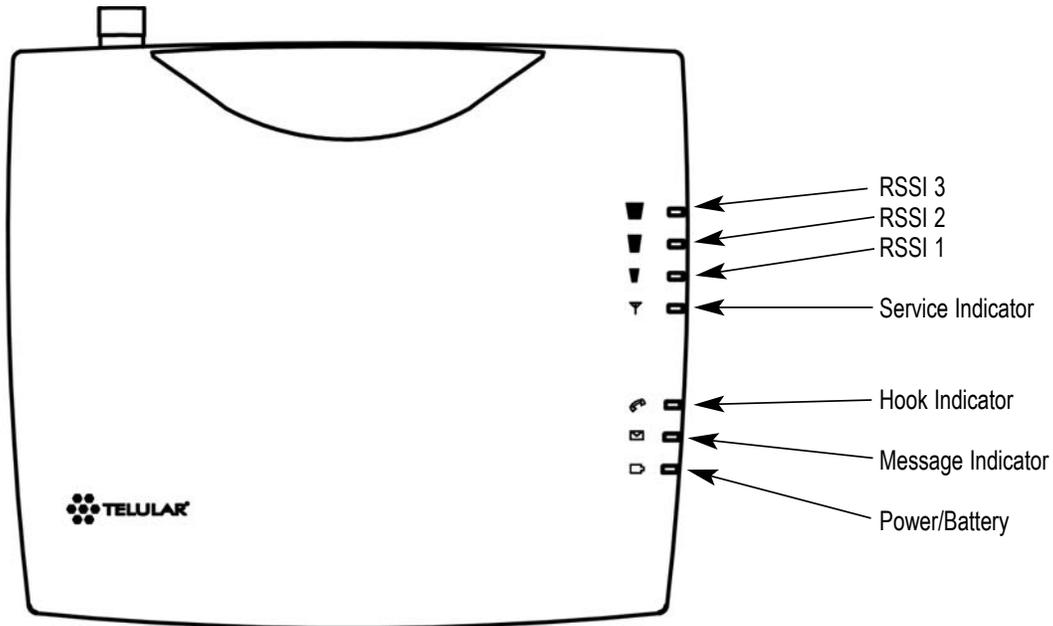
Figure 10 - Connect SX5e to Telephone.

GETTING TO KNOW YOUR SX5e

LED Status Indicators

The LED indicators are activated when the SX5e is powered on. The following tables describe the modes and operation of the indicators.

NOTE: If you are getting no service or limited service, contact your service provider for more information.



Service Indicator

LED Color	Activity	Description
Green	Continuous	Full Service
Amber	Continuous	Limited Service
Red	Continuous	No Service*
Red	Flashing	SIM Error**

* Contact your service provider to verify that service has been activated.

** Indicates that the SIM card is missing or has been improperly installed. If the SIM card is properly installed and the error continues, contact your service provider.

Received Signal Strength Indicator (RSSI)

RSSI LED's	Activity	Cellular Signal Strength
RSSI 1	Flashing	Lowest
	Continuous	Poor
RSSI 2	Flashing	Fair
	Continuous	Good
RSSI 3	Flashing	Very Good
	Continuous	Best

Hook Indicator

LED Color	Activity	Description
Green	Flashing (with ringer)	Incoming call
Green	Continuous	FWT is off hook
Green	Fast Flashing	Processing data call
Green	Slow Flashing	Call on hold

Message Indicator

LED Color	Activity	Description
Green	Slow Flashing	New voice mail or text message

AC Power/Battery Indicator

LED Color	Activity	Description
Green	Continuous	AC power applied
Amber	Continuous	Battery level good (battery switch on)
Amber/Green	Alternating	Battery level poor (battery switch on)

Important Dial Tones

Service - Indicates that phone is ready for use (steady tone).

No Service - Indicates that there is no service available (fast beeping tone).

Roam - Indicates service in a roam area.

Not Registered - Indicates inactive or missing SIM card, or need to enter PIN (fast stutter tone).

Supplementary Service - Indicates that supplementary services have been activated.

CALL FUNCTIONS¹

Making Calls

1. Pick up the telephone handset (the phone is now “off-hook”).
2. Listen for dial tone. If service is not available, a No-Service tone is produced. Hang-up the phone and try again. If the No-Service tone continues, contact your service provider to verify that cellular service is available.
3. Dial the phone number. The call will be sent automatically.

HINT: Pressing the Flash key or pressing and releasing the switch-hook after dialing a number will send the call immediately.

Receiving Calls

When the telephone rings, pick up the handset and begin talking.

Ending Calls

Hang-up the phone (place the handset back onto the telephone cradle).

In-Call Features

Place a Call on Hold^{2,3}

To place a call on hold, press the *Flash* key on your phone. If your phone does not have a *Flash* key, press and release the *Switch-Hook*. When the call is on hold, the Hook Indicator LED  will flash and you will hear a dial tone on your phone. If you hang-up your phone when a call is on hold, the call will be disconnected.

Retrieve a Call on Hold

Press the Flash key or press and release the switch-hook to go back to your held call.

Make a New Call with a Call on Hold (Two-Line Calling)^{2,3}

If you want to make another call when the first call is placed on hold, dial the number when you hear a dial tone after the call has been placed on hold. See *Place a Call on Hold* above. You cannot go back and forth between calls. If you hang-up the phone all calls will be disconnected.

Answer Call Waiting^{2,3}

When you're on an active call, you will hear a beep tone on your phone when a new call is incoming. To answer the new call and place the first call on hold, press *Flash* or press and release the *Switch-Hook*.

Answer a Call when Dialing or Off Hook with Dial Tone

Sometimes you may receive a call as you are dialing or when your just about to dial a number. If this happens, you will hear a call waiting tone (beep tone) on your phone. Press *Flash* or press and release the *Switch-Hook* to answer the call.

Adjust the Volume Level

If the volume level on the phone is too high or too low, adjust the levels using the keypad on the telephone. The telephone must be in Tone-Dial (DTMF) mode to adjust the levels.

- To Increase Volume press: # * 8 #
- To Decrease Volume press: # * 3 #

NOTE: The default setting allows adjustment of the volume three (3) steps from the default in either direction (Up or Down). The volume setting remains in effect for future calls until changed manually. When power to the SX5e is cycled (powered OFF/ON), the default mid-range volume setting will be restored.

¹ Not available on Fixed Wireless Modem models

² Not available on Fixed Wireless PBX Terminal models

³ Call Hold, Call Waiting, and Two-Line Calling are all network dependent features. Contact your service provider for information on activating these features.

SX5e USER FEATURES

The SX5e has many user features and setup options that can be accessed using a telephone connected to the SX5e. To access these features, press the key sequence for the option at any time. Some options are not available while in a call. See the *Call Functions* section of this manual for functions that are allowed while in an active call (In-Call Functions).

All user options have a sequence of digits entered from the telephone keypad. For example, to change to a UK ringer style, press **# * 100 * 2 #**. After the key sequence is entered, the dial tone will be heard to confirm that the option has been changed or set. If there is an error, three tones will be heard before the dial tone.

HINT: Make sure to use a tone-dial (DTMF) type telephone when accessing any user feature or option that requires a key sequence. Pulse dial or rotary dial telephones will not allow key (DTMF) sequences.

Messages (Voice Mail and Text Messages)

The SX5e is capable of receiving both text and voice mail messages. The Message LED will flash once a message is received indicating that a text or voice message waiting.

Voice Mail Access

To check for voice mail, dial your voice mail access number and follow the prompts. Contact your service provider for more information.

Text Messaging (SMS)

The SX5e allows you to send and receive text messages using a Personal Computer (PC). To do this, you need a PC connected to the SX5e serial port (see the *Connecting to a Computer* section of this manual). The SX5e supports the GSM AT command set defined in GSM 07.05 for Short Message Service (SMS).

Message Indication Clearing

The Message LED will flash until you remove the message notification from the SX5e. After you have heard or read your messages, you can clear the notification by pressing **# * 112 #** on your phone.

NOTE: All text messages will be erased when you clear the notification.

Audio Settings

Line Level

The Line Level option controls the handset volume for any telephones connected to the SX5e.

Press: **# * 69 * <output level> #**

0 = Low

1 = Normal (default)

2 = High

Ringer Styles

The SX5e can be set to use one of three different ringer styles (US, UK, or European). Any phone connected to the SX5e will ring according to the alert type selected. If the Ringer Style is set to Off, there will be no audible alert.

Press: **# * 100 * <line alert option> #**

1 = US (default for 1900 MHz model)

2 = UK (default for dual-band model)

3 = European

0 = Off

Dial Settings

Dial Delay

The Dial Delay is the time that the SX5e waits after a number is dialed before automatically sending the number.

Press: **# * 11 * <delay> #**

The delay must be between 2 and 20 seconds. The default delay time is 3 seconds.

Pulse Dial Option

Press: # * 12 * <pulse-dial> #

0 = disable Pulse Dialing capability (default)

1 = enable Pulse Dialing capability

Auto Dial

The SX5e will recognize frequently called phone numbers and send them without waiting for the Dial Delay. Up to 50 numbers that have been successfully called at least twice will be stored when this feature is enabled. Any loss of power to the SX5e will clear this list.

Press: # * 21 * <auto dial> #

0 = disable Auto Dial option (default)

1 = enable Auto Dial option

On-Hook Idle Voltage

This feature has been added to the SX5e and allows control of the on-hook idle voltage at the RJ-11. It is recommended that only a qualified technician for PBX or payphone environments should only change this parameter. Contact your installer for more information.

Press: # * 134 * <mode> #

0 = Low battery mode and forward active when on-hook (default).

1 = High battery mode and low power standby when on-hook

SIM Settings

The SIM card used in the SX5e allows a PIN to be used to protect the unit from unauthorized use. The PIN can be between 4 and 8 digits in length and any combination of digits 0 through 9. If you are concerned about your SIM card being used in other devices without your knowledge, you may use one of the Mobile Equipment Personalization (MEP) locks of the SX5e. Ask your service provider about for more information

SIM PIN 1 Setup

When enabled, a PIN must be entered every time the SX5e is powered on. The SX5e will not operate until the PIN is entered. To avoid having to enter the PIN each time the SX5e is powered on (including after power interruptions or power outages), be sure to disable the SIM PIN when the SIM card is installed.

• To **enable** SIM PIN 1, pick up the telephone handset and press: # * 104 * 1 * <PIN 1> #

• To **disable** SIM PIN 1, pick up the telephone handset and press: # * 104 * 0 * <PIN 1> #

HINT: It is recommended that SIM PIN 1 be **disabled** so that it is not required to enter the PIN each time the SX5e is powered on. Enable SIM PIN 1 only if it is certain that no one else should use the SX5e to make calls. Be sure to inform your service provider if you do **not** want SIM PIN 1 enabled when you get your SIM card.

Auto SIM PIN Entry (PIN 1 Only)

When SIM PIN 1 is enabled and the SX5e is powered on, entry of the PIN will be required. To by-pass the requirement to always enter the PIN every time power is cycled (power outages, relocation of the unit, etc.), enable Auto SIM PIN Entry. If SIM PIN 1 is not enabled, enabling this feature has no effect. **Enable** Auto SIM Pin Entry is the factory default.

• To **enable** Auto SIM PIN Entry, pick up the telephone handset and press: # * 65 * 1 * <PIN 1> #

• To **disable** Auto SIM PIN Entry, pick up the telephone handset and press: # * 65 * 0 * <PIN 1> #

NOTE: If you enable this feature and change the SIM card in the unit, you will have to enter the SIM PIN of the new card before the SX5e will be operational.

Caller ID

The SX5e will support Caller ID device operation. The default format setting is designed to work for most Caller ID devices.

Change Caller ID Format

The following key sequence is used to select the Caller ID (CID) format:

Press: # * 84 * <CID format> # <Flash>

1 = MD MF (Multiple Data Message Format) (default)

2 = SD MF (Single Data Message Format)

3 = OFF

Set Date and Time

Allows for a set time and date to be displayed on a connected caler ID device.

Set Date

Press: # * 131 * <month> * <day> * <year>

<month> = 1-12

<day> = 1-31

<year> = 2000-2999

Set Time

Press: # * 130 * <hours> * <minutes> #

<hours> = 0 - 23

<minutes> = 0 - 59

Reset User Factory Defaults

Reset all user programmable options back to the factory defaults.

Press: # * 107 * 1 #

Dialing Prefix Setup

The SX5e allows for a prefix to be setup that will be added to the dial string of every outbound call. A maximum of 10 digits can be added to the dial string.

Enable/Disable Dialing Prefix

To **enable** press: # * 119 * 1 #

To **disable** press: # * 119 * 0 #

Setup the Dialing Prefix

The dial prefix can be up to 10 digits of 0 - 9, #, or *.

Press: # * 120 * <prefix> #

SUPPLEMENTARY SERVICE FEATURES (NETWORK DEPENDENT)

The SX5e is compatible with a variety of supplementary services. Contact your service provider for availability and dialing instructions.

Different commands and information may be necessary to set up supplementary services.

Commands

- Register: Input information necessary for the operation of a service. In the case of call forwarding, for example, this will include the number to which incoming calls will be forwarded.
- Erase: Clear information stored for a particular service by a previous registration.
- Activate: Enable the operation of a service that has been registered.
- Deactivate: Stop the operation of a service that has been activated.

Information

- Teleservice: Voice = 11
Data = 12
Fax = 13
SMS = 16
All Teleservices = 10
All Teleservices except SMS = 19
- Delay: 5-30 seconds.
- Ph No: Phone number (up to 20 numerical digits).

NOTE: The <Flash> function is used to send a command string. To use the <Flash> function, press the Flash key, or press and release the switch-hook on the telephone.

Call Waiting

Enables notification of an incoming call when the phone is off-hook, whether on another call or while dialing a call.

Activate: * 43 # <Flash>

Deactivate: # 43 # <Flash>

Calling Line Identification Presentation (CLIP)

Allows you to view the identification information (name and number) of the person calling you.

Register: * * 30 # <Flash>

Activate: * 30 # <Flash>

Deactivate: # 30 # <Flash>

Erase: # # 30 # <Flash>

Calling Line Identification Restriction (CLIR)

Prevents the display of your identification information (name and number) to the person you call. If you subscribe to this option in permanent mode, the network will prevent the display of your identity for every outgoing call. If you subscribe with temporary mode, you can set a default option, then manually hide or display or information for the next call you make.

Register: * * 31 # <Flash>

Activate: * 31 # <Flash>

Deactivate: # 31 # <Flash>

Erase: # # 31 # <Flash>

For temporary mode only:

- If the default is "presentation restricted." To display your information for the next call only:

Press: * 31 # Ph No <Flash>

- If the default is "presentation not restricted," To hide your information for the next call only:

Press: # 31 # Ph No <Flash>

Connected Line Identification Presentation (COLP)

Allows you to view the identification information for the number you call.

Register: * * 76 # <Flash>

Activate: * 76 # <Flash>

Deactivate: # 76 # <Flash>

Erase: # # 76 # <Flash>

Connected Line Identification Restriction (COLR)

Prevents the display of your identification information to the person calling you.

Register: * * 77 # <Flash>

Activate: * 77 # <Flash>

Deactivate: # 77 # <Flash>

Erase: # # 77 # <Flash>

Call Forwarding

Call Forward Unconditional

Send all incoming calls, or just those associated with a specific teleservice, to a different number.

Register: * * 21 * Ph No * Teleservice # <Flash>

Erase: # # 21 * Teleservice # <Flash>

Activate: * 21 * Teleservice # <Flash>

Deactivate: # 21 * Teleservice # <Flash>

Call Forward on Mobile Subscriber Busy

Send all incoming calls, or just those associated with a specific teleservice, to a different number when your account is "busy."

Register: * * 67 * Ph No * Teleservice # <Flash>

Erase: # # 67 * Teleservice # <Flash>

Activate: * 67 * Teleservice # <Flash>

Deactivate: # 67 * Teleservice # <Flash>

Call Forward on No Reply

Forward all calls made to your number, or just those associated with a specific teleservice, on to a different number if your phone is not answered after a certain amount of time.

Register: * * 61 * Ph No * Teleservice * Delay # <Flash>

Erase: # # 61 * Teleservice # <Flash>

Activate: * 61 * Teleservice # <Flash>

Deactivate: # 61 * Teleservice # <Flash>

Call Forward on Mobile Subscriber Not Reachable

Send all incoming calls, or just those associated with a specific teleservice, to a different number when your account is "not reachable."

Register: * * 62 * Ph No * Teleservice # <Flash>

Erase: # # 62 * Teleservice # <Flash>

Activate: * 62 * Teleservice # <Flash>

Deactivate: # 62 * Teleservice # <Flash>

Call Barring

Bar All Outgoing Calls

Does not allow any outgoing calls, or just those associated with a specific teleservice, from the SX5e.

Activate: * * 33 * Password * TeleService # <Flash>

Deactivate: # 33 * Password * TeleService # <Flash>

Bar Outgoing International Calls

Does not allow any outgoing calls, or just those associated with a specific teleservice, to subscribers of networks outside of the country you are in when you make the calls. You will only be able to make calls to subscribers of networks in the same country that you are in when you attempt to make the calls.

Activate: * 331 * Password * TeleService # <Flash>

Deactivate: # 331 * Password * TeleService # <Flash>

Bar Outgoing International Calls Except Those Directed to the Home PLMN Country

Does not allow any outgoing calls, or just those associated with a specific teleservice, to countries other than the one where your home network is located. This does not bar outgoing calls to other subscribers to your network, even if you make the calls from outside the country.

Activate: * 332 * Password * TeleService # <Flash>

Deactivate: # 332 * Password * TeleService # <Flash>

Bar All Incoming Calls

Allows you to bar certain categories of incoming calls according to a barring program which is selected from a set of one or more barring programs chosen when you activate your account. This is valid for all incoming calls, or just those associated with a specific teleservice.

Activate: * 35 * Password * TeleService # <Flash>

Deactivate: # 35 * Password * TeleService # <Flash>

Bar Incoming Calls when Roaming Outside the Home Network Country

Does not allow any incoming calls, or just those associated with a specific teleservice, if you are roaming outside the country where your home network is located.

Activate: * 351 * Password * TeleService # <Flash>

Deactivate: # 351 * Password * TeleService # <Flash>

Bar All Calls

Does not allow any incoming or outgoing calls, or just those of a specific teleservice.

Activate: * 330 * Password * TeleService # <Flash>

Deactivate: # 330 * Password * TeleService # <Flash>

Bar All Outgoing Calls

Does not allow any outgoing calls, or just those associated with a specific teleservice.

Activate: * 333 * Password * TeleService # <Flash>

Deactivate: # 333 * Password * TeleService # <Flash>

Bar All Incoming Calls

Does not allow any incoming calls, or just those associated with a specific teleservice.

Activate: * 353 * Password * TeleService # <Flash>

Deactivate: # 353 * Password * TeleService # <Flash>

Multiparty Call Features *

Multiparty call features are handled within an active call. These features are network-dependent. Contact your service provider for availability.

- To release all held calls or set User Determined User Busy for a waiting call, press: **0 <Flash>**
- To release all Active Calls and accept the held/waiting call, press: **1 <Flash>**
- To release a specific active call x, press: **1 x <Flash>** (x represents the call ID 1-7)
- To place all active calls on hold and accept the held/waiting call, press: **2 <Flash>**
- To place all active calls on hold except call x, press: **2 x <Flash>** (x represents the call ID 1-7)
- To add a held call to the conversation, press: **3 <Flash>**
- To place all active calls on hold and make a call to a specified number, press: **PhoneNo <Flash>**

NOTE: When both a held and a waiting call exist in a conflicting situation, the above procedures apply to the waiting call.

** Not available with the Phonecell® SX5e PBX Terminal.*

DATA FEATURES

The SX5e features a DB-9 digital computer fax/data port for connection to a personal computer (PC) - *not supplied*. When connected to a PC, the SX5e is capable of sending and receiving digital fax and data, sending and receiving e-mail communications, and browsing the Internet. Data speeds may vary depending upon your cellular network.

Connecting to a Computer

A data cable - *not supplied* - is required for data transmission. To determine the necessary cable, count the number of PIN connections in the serial port of your PC (see below). If there are 9 PIN connections in the PC serial port, a DB-9 (female) to DB-9 (male) cable is required. If there are 25 PIN connections in the PC serial port, a DB-25 (female) to DB-9 (male) cable is required - **see Figure 11**.

NOTE: The SX5e does not support direct computer modem (data) operation through the phone or fax ports.

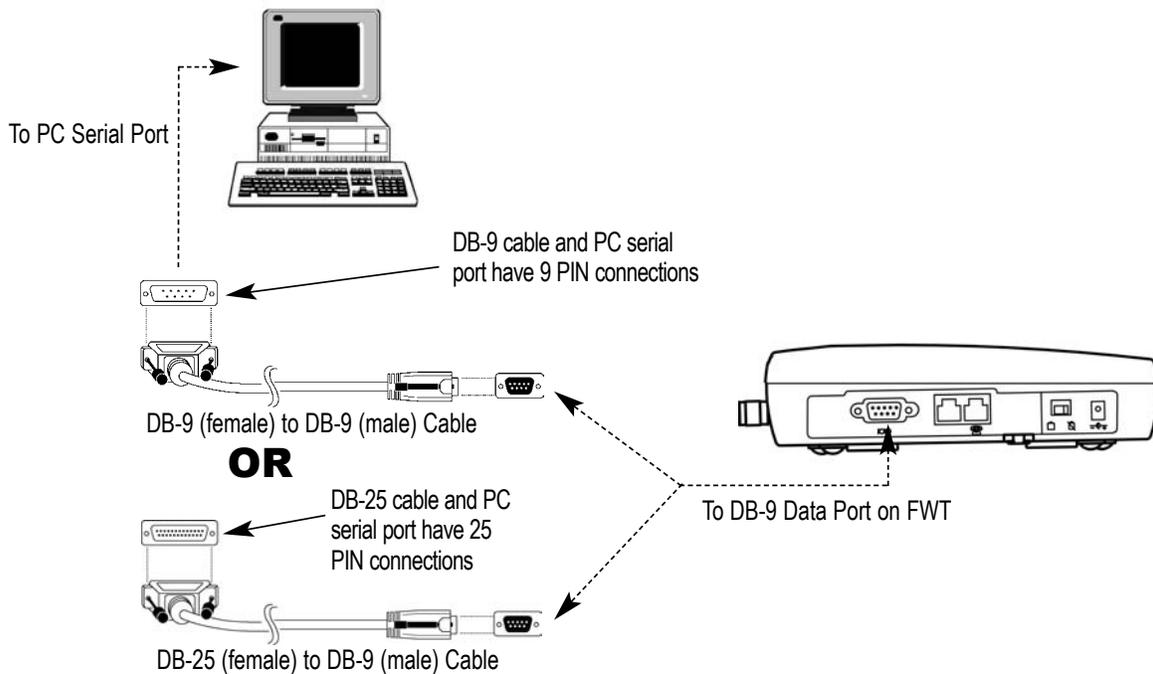


Figure 11 - PC data connection.

Dial-Up Connections

The SX5e allows for traditional dial-up type connections using the serial port of a computer. To use a dial-up connection (circuit switched connection), setup your PC serial port as defined in *Appendix A - How to Setup PC Serial Ports for Your Phonecell®*. Then setup a dial-up networking connection (see your PC's operating systems manual for more information).

Internet, E-mail, and Other Data Applications

Once you connect to your Internet service provider using dial-up networking through the serial port connection with the SX5e, you can run your favorite application to check email, browse the web, or send and receive data with other applications that require a data connection.

Digital Fax Setup

The SX5e is capable of receiving and sending faxes via a personal computer using a standard RS232 serial port. The PC application and modem setup must be able to support software flow control. To setup flow control properly, follow the instructions for setting up a standard modem connection in Appendix A of this manual with the following changes.

HINT>: Setup a separate modem for PC fax and a separate modem for PC circuit switched data connections. This way you will not have to make changes to the modem settings everytime you want to use fax or data.

1. Change the flow control of the standard modem to enable software flow control.
 2. Change Extra Settings from AT&DI to AT+IFC=1,1 &d1. This enabled software to flow control on the SX5e.
 3. To be able to receive faxes to the serial port (on your computer) select the serial port for your data connections by entering # * 67 * 3 #.
 4. Run your PC fax application using this new modem connection for receiving and sending faxes.
- HINT:** To change the SX5e to receive fax calls through the RJ-11, press # * 67 * 1 #.

GPRS (Packet Data) Connections

The SX5e will allow GPRS connectivity if your network service provider has this feature available. GPRS allows a packet data connection at higher rates than conventional circuit switched (dial-up) connections. A GPRS kit can be used when trying to connect with GPRS service. This kit contains a serial cable and a setup CD for installation on a standard personal computer. Contact your service provider or nearest dealer for more information.

Analog Modem Support

The SX5e FAX and standard FWT models support connectivity with an analog modem. A PC with a modem or other devices that use a modem, like a credit card swipe Point Of Sale (POS) machine, can be connected to the RJ-11 jack (marked with a telephone icon) and used seamlessly.

Data Port Setup

The RJ-11 voice jack on the SX5e (the jack marked with a phone icon) can be configured for voice or analog data. When in either mode, a bypass string must be entered to use the opposite mode. For example, if the jack is configured for analog data, the bypass string for voice calls must be entered before a voice call can be made. In voice mode, data transmissions are routed through the DB-9 port. To send data via an analog modem while in voice mode, use the analog bypass string.

Press: # * 113 * <mode> #

0 = Voice (default)

1 = Analog Data

Fax Timing Adjustments

Phase D adjustments can be made to analog faxing. If you experience faxing issues try adjusting this setting.

Press: # * 133 * <control> * <time out> #

Parameter	Values
<control>	0 = Disable 1 = Enable
<time out>	1 - 255 in 15ms steps

Bypass String

The bypass string will bypass the current mode to send a call in the desired mode. After the call, the SX5e will return to the mode that was active before the call.

Press: # * 19 * <bypass code> #

0 = Voice

1 = Fax

2 = Analog Modem

Modulation

The analog modem interface can be configured to specific modulations or set to automatic modulation adjustment.

NOTE: This modulation is only for the connection between the modem and the SX5e.

Press: **# * 114 * <modulation> #**

Modulation

(see *Supported Modulations* below)

Supported Modulations

Modulation	Baud Rates (bps)	<modulation>
V.8	Auto	0 (default)
V.32bis TCM	14,400	1
V.32bis TCM	12,000	2
V.32bis TCM	9600	3
V.32	9600	4
V.32bis TCM	7200	5
V.32	4800	6
V.22bis	2400	7
V.22bis	1200	8
V.22	1200	9
V.22	600	10

Example: To set the modulation between the modem and the SX53 to V.22bis @ 24, enter **# * 114 * 7 #**

Air Interface Data Rates and Error Correction

The SX5e supports both transparent (no error correction) and non-transparent (error correction) data connectivity along with different air interface data rates. Check with your carrier to determine which is right for your application. If you are not sure what your carrier supports, use the default setting of non-transparent

Press: **# * 115 * <error correction> * <air interface modulation> #**

Error Correction

0 = transparent (no error correction) (default)

1 = non-transparent (error correction)

Air Interface Modulation

(see Supported *Air Interface Data Rates* below)

Supported Air Interface Data Rates

Modulation	Over the Air Data Rate (bps)	<air Interface modulation>
Automatically Selected	Auto	0 (default)
V.21	300	1
V.22	1200	2
V.23	1200 (uplink) 75 (downlink)	3
V.22bis	2400	4
V.26ter	2400	5
V.32	4800	6
V.32	9600	7
V.34	9600	12
V.34	14,400	14
V.110	300	65
V.110	1200	66
V.110	2400	68
V.110	4800	70
V.110	9600	71
V.110	14,400	75

Example: To set the air interface rate to V.32 @ 9600 bps with no error correction, enter **# * 115 * 0 * 7 #**

SX5e GSM FWT WITH FAX

The SX5e GSM FWT with Fax allows connection to a fax machine and additional telephones. The SX5e can be set up to use one or both of its phone jacks. In Single Jack mode, only the jack designated with a telephone icon is operational. You can connect a fax machine or an additional telephone into that jack, but to receive faxes you must have a fax machine connected. In Dual Jack mode, the unmarked jack is used for fax, and the jack marked with the telephone icon is used for any additional phones.

Set SX5e for Analog Fax

Set In-Bound Fax Port Option

Press: # * 67 * <fax_port> #

- 1 = send incoming fax calls to RJ-11 jack (default).
- 3 = send incoming fax calls to the serial port.

Set Single/Dual Jack Mode

Press: # * 63 * <single jack> #

- 0 = single jack
- 1 = dual jack (default)

Connect SX5e for Dual Jack Mode

1. Connect a fax machine to the unmarked phone jack on the SX5e - *see Figure 12*.
2. Connect a regular phone to the phone jack that is marked with a telephone icon.

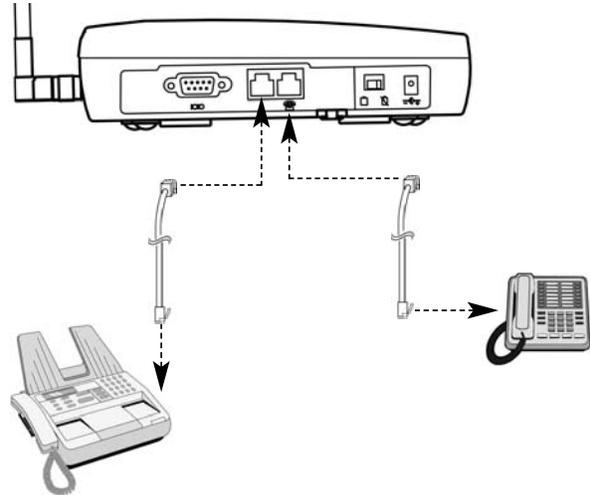


Figure 12 - Dual Jack mode connections.

Connect SX5e for Single Jack Mode

1. Connect a fax machine to the phone jack on the SX5e that is marked with a telephone icon - *see Figure 13*.

NOTE: The fax by-pass must be entered to send a fax in single jack mode because the SX5e default setting is for voice calls.

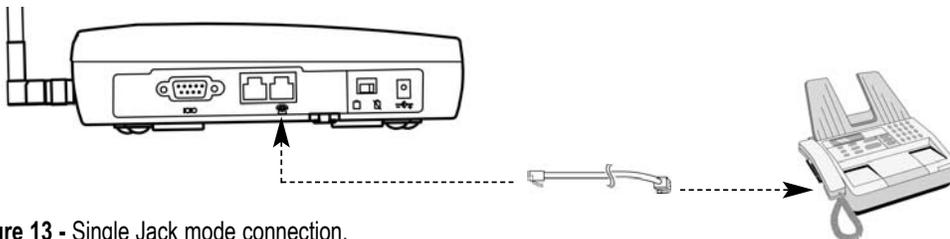


Figure 13 - Single Jack mode connection.

Analog Fax Bypass

This feature allows the phone jack to process the next outgoing call as an analog fax call. After this call, the phone jack automatically returns to the default voice protocol. The user enters this key sequence prior to dialing the telephone number. The terminal interprets the string and properly sets up the call. Refer to the following examples.

NOTE: The analog fax bypass string can only be used in single jack operation.

Use the Fax Bypass

1. Lift up the handset (take off-hook).
2. Press: # * 19 * 1 #, then dial the fax number to be called.
3. Press START on the fax machine.

HINT: If the fax machine does not have a handset, enter # * 19 * 1 #, followed by the remote fax number to be called. Press START.

HINT: If the fax machine has the capability to store telephone numbers for speed dialing, the # * 19 * 1 # command string may be programmed into the machine as a prefix to the telephone number. With some machines, it may also be possible to store the command string as a speed dial number and dial the remote fax machine telephone number manually.

SX5e GSM PBX FWT

The SX5e GSM PBX FWT allows for enterprise On-Premise Equipment or PBX operation when the SX5e is connected to the trunk or extension side of a PBX.



WARNING!

The trunk side of the PBX must only be connected to the trunk side of the SX5e (marked with a telephone icon) - see Figure 14. An extension of the PBX must only be connected to the extension side of the SX5e (unmarked) - see Figure 15. Improper connections could damage the SX5e.

Trunk Side PBX Connection (Trunk Mode)

When the SX5e is connected to the trunk side of a PBX, it allows users within the enterprise to take advantage of potentially lower cellular/PCS rates by routing outgoing calls to the GSM network. Incoming calls to the SX5e from outside the enterprise can be routed to the PBX. Depending on the PBX setup, these incoming calls could also be routed to a specific extension.

Trunk Side Setup (Trunk Mode)

To use the SX5e Trunk Mode, connect an analog trunk from the PBX into the trunk connector of the SX5e (marked with telephone icon) - see Figure 14.

HINT: If the SX5e has been changed to Extension Mode, be sure to change it back to Trunk Mode. To do this, connect a tone-dial (DTMF) telephone to the trunk side jack on the SX5e and press: **# * 108 * 2 #**.

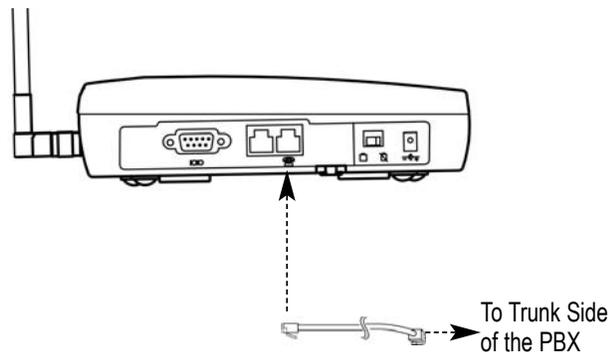


Figure 14 - Connect to trunk side of PBX.

Extension Side PBX Connection (Extension Mode)

When the SX5e is connected to the extension side of a PBX, it allows users to call into the enterprise via the SX5e, dial an extension, be routed to an extension automatically, or connect back out to the PBX trunk.

Extension Side Setup

To use the SX5e in Extension Mode, connect an analog extension from the PBX to the extension connector of the SX5 (RJ-11 with no markings) - see Figure 15. Then connect a DTMF phone to the trunk side (RJ-11 marked with a telephone icon) and set the SX5e to Extension Mode by pressing: **# * 108 * 1 #** on the DTMF phone. The SX5e is now in Extension Mode.

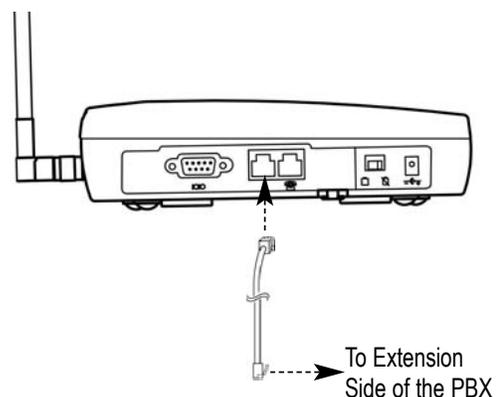


Figure 15 - Connect to extension side of PBX.

Disconnect Detect Setup

The SX5e is able to detect both a PBX disconnect tone and an analog disconnect pulse. When a PBX detects a hang-up, the SX5e must be told to also release the line. This is typically done by either a disconnect pulse or disconnect tone, but it is PBX specific. To find out what your PBX does, contact your PBX manufacturer or refer to your PBX technical manual.

Disconnect Tone Setup

The SX5e can be configured to detect a single PBX disconnect tone. Tone options include sixteen standard DTMF tones (0-9, *, #, A, B, C, D), 400Hz (silence (no tone), or not disconnect tone (off)). The SX5e PBX FWT defaults to not detect a tone (off). In addition to different tone options, thresholds and tone durations can be set. To configure the SX5e to detect a tone enter the following command sequence.

For tones 0 - 16

Press: # * 111 * <tone> #

For tones 17, 18, 19, and 20

Press: # * 111 * <tone> * <rx threshold> * <tone duration> * <silence duration> #

Parameter	Values
<tone>	0 = off 1 - 10 = DTMF 0 - 9 11 = DTMF * 12 = DTMF # 13 = DTMF A 14 = DTMF B 15 = DTMF C 16 = DTMF D 17 = 400 Hz 18 = 440 Hz 19 = Silence (disconnect on silence) 20 = 480 Hz + 620 Hz 21 = 400 Hz with a 250ms on/off/on/off one time cadence
<rx threshold> Applies only for <tone> parameters 17, 18, and 20	
<tone duration> For Silence (19) each stem is 1ms For tones 17, 18, and 20 each step is 20ms No other tones affected by this parameter	1 to 65535
<silence duration> Connecting Sequence	1 to 65535

HINT: When configuring the SX5e for DTMF Detection, try using DTMF D (16) first, then test the configuration with your PBX. If that does not work, try DTMF C (15), then DTMF B (14), etc., until you find the correct tone that your PBX sends on a disconnect.

NOTE: Your PBX must support a DTMF disconnect tone for this feature to work.

Disconnect Pulse

The SX5e will automatically detect this type of disconnection from the PBX. There is nothing you need to do on the SX5e to enable this. A disconnect pulse from the PBX of at least 200ms is required for proper disconnect detection.

Two-Stage Dialing Setup (GSM to Extension)

When in Extension Mode, the SX5e allows two-stage dialing so incoming GSM callers can connect to an extension on the PBX. In this mode, if you call the SX5e via GSM, the SX5e will automatically answer the call and present a dial tone. Since the SX5e would be connected to an extension on a PBX, you can access any other extension on the PBX as though you were in your office. Dial the extension number and the SX5e will connect you to that extension through the PBX. Once in extension mode, press # * 109 * 1 # from a DTMF phone connected to the trunk connector of the SX5e - **see Figure 15**. The SX5e is now configured for Two-Stage Dialing.

Example: Assume that your SX5e is connected to a PBX on extension 123. Now assume that you want to be able to connect to any extension (i.e. 858) when you call the SX5e on the GSM network.

1. *Make sure you are in Extension Mode by entering # * 108 * 1 # from a DTMF phone connected to the trunk side connector.*
2. *Enable Two-Stage Dialing by pressing # * 109 * 1 # from the same DTMF phone connected to the trunk side connector.*
3. *When the SX5e receives a call, it will automatically answer the call, then present a dial tone.*
4. *When you hear a dial tone, enter the extension you wish to call (858).*
5. *The far end caller (the person who called the SX5e) will hear whatever the PBX presents after you dialed the extension number.*

PBX Command Summary

Mode/Option	Command	Result
Change to Trunk Mode	# * 108 * 2 #	Enables the SX5e Trunk Mode. Note: This is the default mode for the SX5e PBX option.
Change to Extension Mode	# * 108 * 1 #	Enables the SX5e Extension Mode.
Enable Auto-Route	# * 109 * 0 #	Enables the SX5e to Auto-Route to an extension when in Extension Mode. Incoming calls to the SX5e will be routed to the Auto-Route Extension Number automatically. This setting disables two-stage dialing.
Auto-Route Extension Number	# * 110 * <extension> #	Sets the extension number that will be called when Auto-Route is enabled.
Enable Two-Stage Dialing	# * 109 * 1 #	Disables Auto-Route and enables two-stage dialing. Callers will be able to dial any extension within the PBX. This is the default mode.
Enable Disconnect Tone Detection	# * 111 * <dtmf> # DTMF 0 through 9 = 1 through 10 DTMF * = 11 DTMF # = 12 DTMF A = 13 DTMF B = 14 DTMF C = 15 DTMF D = 16	Enables the detection of <dtmf> for disconnection by the PBX.
Disable Disconnect Tone Detection	# * 111 * 0 #	Disables the detection of a DTMF tone for disconnection by the PBX. This is the default mode

Auto-Routing Setup (GSM to Extension)

The SX5e can be configured to automatically route an incoming call from the GSM network to an extension in the PBX when in Extension Mode. Two steps are required to set this up after you connect a DTMF telephone to the trunk side of the SX5e (marked with a telephone icon).

1. Enable auto-routing by pressing: **# * 109 * 0 #**
2. Configure the extension to route to by pressing: **# * 110 * <extension number> #**

NOTE: The extension number can be up to 8 digits, between 0 through 9.

Example: Assume that the SX5e is connected to extension 123 of your PBX. To enable the SX5e to automatically route all its GSM calls to another extension that goes to a specific person or operator at extension 999, follow these instructions.

1. *Make sure you are in Extension Mode by entering # * 108 * 1 # from a DTMF phone connected to the trunk side connector.*
2. *Enable Auto-Routing by pressing # * 109 * 0 # from the same DTMF phone connected to the trunk side connector.*
3. *Configure the auto-route extension (in this example, 999) by pressing # * 110 * 999 #.*
4. *When the SX5e receives a call, it will automatically answer the call, then dial 999 on the extension line. This means extension 123 is calling 999.*
5. *The far end caller (the person who called the SX5e) will hear the line answered, then will hear whatever the PBX presents when calling an extension.*

Two-Stage Extension Side Dialing (Extension to GSM)

When connected to a PBX extension, any other extension on the PBX can access the SX5e. The SX5e will always present two-stage dialing where another extension can access the GSM network (extension side least cost routing). Only Extension Mode setup is required. No other settings need changing.

Example: The SX5e is connected to extension 123 on the PBX. To allow extension side dialing, setup the unit for Extension Mode and call the unit.

1. *Make sure you are in Extension Mode by entering # * 108 * 1 # from a DTMF phone connected to the trunk side connector.*
2. *Call extension 123 from another PBX extension (or from the trunk side of the PBX).*
3. *When called, the SX5e will automatically answer, then present a dial tone.*
4. *Once a dial tone is heard, you may dial a number. The connection will be over the GSM network.*

SX5D TROUBLESHOOTING

Telephone Service is Not Working (Cannot make or receive calls)

- Make sure the SX5D powered on properly.
- Make sure any equipment that is externally connected to the SX5D is correctly connected.
- Test any externally connected equipment on a known system to verify operation.
- Do you have the antenna connected? If not, connect the antenna.
- Is service established with a service provider? If so, is there any service provider issue. Your service may be disconnected or not functioning properly. Contact your service provider if you think this is the problem.

Unable to Receive Calls

- Is the handset on the cradle? If not, place the handset on the cradle and try again.
- Is the SX5D making a loud repetitive tone (ROH)? Then either speakerphone or the handset is off hook. Hang-up and try again.

Unable to Make Calls

- If you do not hear standard dial tone when off hook, then your service has a problem. Contact your service provider if you think this is the problem.
- Do you have telephone extensions connected to the SX5D? If so, one of those may be off hook (the display will show this information).

Unable to Send or Receive Analog Fax Calls

- Is your fax machine connected properly? You may have the fax machine connected to the wrong RJ-11 jack of the SX5D. Make sure it is connected to the jack with no symbol (no phone icon). If you want to use the SX5D in single jack mode, please refer to the fax section of this manual for proper setup.
- Do you have fax service on your wireless account? Contact your service provider for information.
- Do you have good signal strength? If your signal is low it may affect faxing. Try repositioning the unit or obtaining a direction high gain external antenna.

Unable to Send or Receive Circuit Switched Data (CSD) Calls

- Is your computer connected to the serial port of the SX5D? If not, connect the computer with an appropriate RS232 DB-9 cable.
- Do you have CSD service on your wireless account? Contact your service provider for information.
- Is your computer configured properly to access data service with the SX5D? Please reference the data sections of this manual for proper setup.

Unable to Connect to GPRS Service

- Is your computer connected to the serial port of the SX5D? If not, connect the computer with an appropriate RS232 DB-9 cable.
- Do you have GPRS service on your account? Contact your service provider for information.
- Is your computer configured properly to access GPRS with the SX5D? Please reference the data sections of this manual for proper setup or your GPRS setup wizard help file for more information.
- You cannot pass the dialing sequence of the connection. Make sure that DTE Fallback is disabled. See the data section of the manual for more information.
- You can dial the connection but cannot authenticate with the network. There may be a network or account setup problem. Contact your service provider for more information.

Moisture or Ventilation Problems

- Is moisture forming on or around the SX5D? Remove any moisture with a clean dry towel and move the unit to a well ventilated area. Review the Temperature and Environment section of this manual for more information.

No Power

- Is the power supply connected to the unit? Make sure power is available and that the power supply is properly connected to the SX5D.
- The power supply is connected but the unit still has no power. Make sure the circuit is functioning to the power supply. Check breakers & contact your power company. Power may be off at location.

CONFORMANCE STATEMENTS



The SX5e 850/1900 MHz (Dual Band) models are in conformance with the requirements of the applicable EU CE Council Directives.



The SX5e 850/1900 MHz (Dual Band) models are in conformance with all applicable FCC requirements.

FCC Part 15 Class B Compliance

This Phonedcell® SX5 model has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. Changes or modifications not expressly approved by Telular Corporation will void your authority to operate the equipment per FCC part 15 paragraph 15.21. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the antenna.
- Increase the separation between the equipment and the terminal.
- Connect the equipment into an outlet on a circuit different from that to which the terminal is connected.
- Consult your Authorized Telular Distributor or an experienced radio/TV technician for help.



All SX5e 850/1900 MHz (Dual Band) models are in conformance with all applicable Australian government telecommunications requirements.



All SX5e 850/1900 MHz (Dual Band) models have hygienic conclusion of GOSSANEPID-NADZO and conform to GOSSTANDARD of Russia.



All SX5e 850/1900 MHz (Dual Band) models are in conformance with all applicable South African government telecommunications requirements.

SAFETY INFORMATION

The Phonedcell® SX5 functions as both a radio transmitter and receiver. When it is ON, the SX5 receives and sends out radio frequency (RF) energy. The SX5 GSM 850/1900 MHz (Dual Band) unit operates in the frequency ranges of 824 MHz to 849 MHz and 1850 MHz to 1910 MHz. This unit employ commonly used phase/frequency modulation techniques. When you use the SX5, the cellular system handling your call controls the power level at which the unit transmits.

Exposure to RF (Radio Frequency) Energy

In 1991, the Institute of Electrical and Electronics Engineers (IEEE), and in 1992, the American National Standards Institute (ANSI), updated the 1982 ANSI Standard for safety levels with respect to human exposure to RF energy. After reviewing the available body of research, more than 120 scientists, engineers and physicians from universities, government health agencies and industry developed this updated Standard. In March, 1993, the U.S. Federal Communications Commission (FCC) proposed the adoption of this updated Standard.

The design of the Telular Phonedcell® SX5 complies with this updated Standard. Of course, if you want to limit RF exposure even further than the updated ANSI Standard, you may choose to control the duration of your calls and operate your phone in the most power-efficient manner.

Safe Operation Requirement

The Phonedcell® SX5 must be either wall mounted or desk mounted and should not be operated when any person is within 203 mm (8 inches) of the antenna.



WARNING!

The Phonecell® SX5 is intended either to be wall mounted or mounted on a flat surface to allow proper ventilation. Do not block the space beneath the Phonecell® SX5 as this could cause the unit to overheat and fail.

Temperature Environment

Operating Temperature: From -10°C to +50°C ; Up to 95% relative humidity (non-condensing).

Storage Temperature: From -40°C to +60°C; Up to 95% relative humidity (non-condensing).

Antenna Care and Replacement

Do not use the Phonecell® SX5 with a damaged antenna. If a damaged antenna comes into contact with the skin, a minor burn may result. Have the antenna replaced by a qualified technician immediately. Use only a manufacturer-approved antenna. Unauthorized antennas, modifications, or attachments could damage the Phonecell® SX5.

Driving

Check the laws and regulations on the use of cellular products in the areas where you drive. Some jurisdictions prohibit use of a cellular device while driving a vehicle. Even if your jurisdiction does not have such a law, we strongly suggest that, for safety reasons, the driver use extreme caution when operating the cellular device while the vehicle is in motion. Always obey the law.

Exposure to electronic Devices

Most modern electronic equipment is shielded from RF energy. However, RF energy from cellular devices may affect inadequately shielded electronic equipment.

RF energy may affect improperly installed or inadequately shielded electronic operating and entertainment systems in motor vehicles. Check with the manufacturer or its representative to determine if these systems are adequately shielded from external RF energy. You should also check with the manufacturer of any equipment that has been added to your vehicle.

Consult the manufacturer of any personal medical devices (such as pacemakers, hearing aids, etc.) to determine if they are adequately shielded from external RF energy.

Turn the Phonecell® SX5 OFF in health care facilities when any regulations posted in the areas instruct you to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF energy.

Aircraft

Turn OFF the Phonecell® SX5 before boarding any aircraft.

- Use it on the ground only with crew permission.
- Do not use it in the air.

To prevent possible interference with aircraft systems, U.S. Federal Aviation Administration (FAA) regulations require you to have permission from a crew member to use your cellular phone (or any other cellular product) while the plane is on the ground. To prevent interference with aircraft systems, FCC regulations prohibit using your cellular device while the plane is in the air.

Children

Do not allow children to play with the Phonecell® SX5 to prevent damage to the unit.

Blasting Areas

Construction crews often use remote control RF devices to set off explosives. Therefore, to avoid interfering with blasting operations, turn the Phonecell® SX5 OFF when in a "blasting area" or in areas posted: "Turn off two-way radio."

Potentially Explosive Atmospheres

Turn the Phonecell® SX5 OFF when in any area with a potentially explosive atmosphere. It is rare, but the Phonecell® SX5 or its accessories could generate sparks. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.

Areas with a potentially explosive atmosphere are often, but not always, clearly marked. They include fueling areas such as gas stations; below deck on boats; fuel or chemical transfer or storage facilities; areas where the air contains chemicals or particles, such as grain, dust, or metal

powders; and any other area where you would normally be advised to turn off your vehicle engine.

Do not transport or store flammable gas, liquid or explosives in the area of the Phonecell® SX5 or accessories.

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (FPA-58). For a copy of this standard, contact the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269, Attn: Publications Sales Division.

WARRANTY

I. WHAT THIS WARRANTY COVERS AND FOR HOW LONG:

TELULAR CORPORATION ("Telular") warrants to a distributor Buyer, or to a customer only if the customer is a Buyer directly from Telular, that the Products (including accessories) shall comply with the applicable Specifications and shall be free from defects in material and workmanship under normal use and service for a period of fifteen (15) months from date of shipment from Telular. Telular, at its option, shall at no charge either repair, replace or refund the purchase price of the Product during the warranty period, provided it is returned by Buyer in accordance with the terms of this warranty to the Telular designated repair center. Repair or replacement, at Telular's option, may include the replacement of parts, boards or Products with functionally equivalent reconditioned items. Repaired and replacement items are warranted for the balance of the original warranty period. All replaced items shall become the property of Telular. **SUCH ACTION ON THE PART OF TELULAR SHALL BE THE FULL EXTENT OF TELULAR'S LIABILITY HEREUNDER, AND BUYERS EXCLUSIVE REMEDY.** Buyer shall be responsible for all costs and expenses incurred by Buyer including without limitation any handling, labor or transportation charges. **OTHER THAN AFORESAID, THIS EXPRESS WARRANTY IS EXTENDED BY TELULAR TO BUYER ONLY AND NOT TO BUYER'S CUSTOMERS OR USERS OF BUYER'S PRODUCTS.**

II. HOW TO OBTAIN WARRANTY SERVICE

Product covered under this warranty shall only be accepted from and returned to Buyer's designated repair center. Buyer's dealers, distributors, agents, and end users cannot submit items to Telular under this warranty. To receive warranty service an RMA number must first be obtained from Telular Technical Support. The defective or non-compliant Product should be sent by Buyer freight pre-paid to: Telular Corporation, 647 North Lakeview Parkway, Vernon Hills, IL 60061, USA or other designated location. The product must be packaged in the original carton and packing material or an equivalent package and must have the assigned RMA number clearly marked on the carton. Returned Product received without an RMA number will be returned to the sender.

III. WARRANTY CONDITIONS:

This is the complete warranty for the Products manufactured by Telular and sold to Buyer. Telular assumes no obligation or liability for additions or modifications to this warranty unless made in writing and signed by an officer of Telular. Unless made in separate written agreement between Telular and Buyer, Telular does not warrant the installation, field maintenance or service of the Products or parts.

TELULAR CANNOT BE RESPONSIBLE IN ANY WAY FOR ANY ANCILLARY EQUIPMENT NOT FURNISHED BY TELULAR WHICH IS ATTACHED TO OR USED IN CONNECTION WITH THE PRODUCTS OR FOR OPERATION OF THE PRODUCTS WITH ANY ANCILLARY EQUIPMENT AND ALL SUCH EQUIPMENT IS EXPRESSLY EXCLUDED FROM THIS WARRANTY. FURTHERMORE, TELULAR CANNOT BE RESPONSIBLE FOR ANY DAMAGE TO THE PRODUCTS RESULTING FROM THE USE OF ANCILLARY EQUIPMENT NOT FURNISHED BY TELULAR FOR USE WITH THE PRODUCTS.

WHEN THE PRODUCT IS USED IN CONJUNCTION WITH ANCILLARY OR PERIPHERAL EQUIPMENT NOT MANUFACTURED BY TELULAR, TELULAR DOES NOT WARRANT THE OPERATION OF THE PRODUCT/PERIPHERAL COMBINATION, AND TELULAR SHALL HONOR NO WARRANTY CLAIM WHERE THE PRODUCT IS USED IN SUCH A COMBINATION AND IT IS DETERMINED BY TELULAR THAT THERE IS NO FAULT WITH THE PRODUCT. TELULAR DISCLAIMS LIABILITY FOR RANGE, COVERAGE, AVAILABILITY, OR OPERATION OF THE CELLULAR SYSTEM WHICH IS PROVIDED BY THE CARRIER.

IV. WHAT THIS WARRANTY DOES NOT COVER:

(a) Subsequent upgrades and enhancements to the Product. (b) Defects, non-compliance or damage resulting from use of the Product in other than its normal and customary manner or environment. (c) Defects, noncompliance or damage from misuse, lightening, accident or neglect. (d) Defects, noncompliance or damage from improper testing, operation, maintenance, installation, adjustment, or any alteration or modification of any kind. (e) Product disassembled or repaired in such a manner as to adversely affect performance or prevent adequate inspection and testing to verify any warranty claim. (f) Product which has had the serial number removed or made illegible. (g) Defects, non-compliance or damage due to spills of food or liquid. (h) All plastic surfaces and all other externally exposed parts that are scratched or damaged due to customer normal use. (i) Costs and expenses, including without limitation handling, labor and transportation, incurred in returning Product for warranty service to Telular's Repair Center. (j) Repair, programming or servicing by someone other than Telular.

V. GENERAL PROVISIONS:

THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER EXPRESS OR STATUTORY WARRANTIES. IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, INFRINGEMENT, DELIVERY, NEGLIGENCE AND PERSONAL INJURY, ARE DISCLAIMED. FURTHER, AS THE CELLULAR CARRIER IS NOT CONTROLLED BY TELULAR, NO WARRANTY IS MADE AS TO COVERAGE, AVAILABILITY OR GRADE OF SERVICE PROVIDED BY THE CELLULAR CARRIER. IN NO EVENT SHALL TELULAR BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT, FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS.

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Trademarks:

Telular Corporation owns the following registered trademarks: TELULAR and design, TELULAR, CELJACK, MAXJACK, TELCEL, HEXAGON LOGO, PHONECELL, CELSERV, TELGUARD, CPX, and AXCELL.

APPENDIX A:

PC SERIAL PORT SETUP FOR CIRCUIT SWITCHED DIGITAL FAX AND DATA (not for use with GPRS)

Requirements

- GSM account with your network service provider including circuit switched data and fax facility.
- PC/Laptop/ Notebook with RS232 serial port
- Windows 98 or better

NOTE: When all of the above have been satisfied, you may proceed.

Modem Setup

1. Power on your PC or device that is connected to the SX5e.
2. Click the “Start” button (if using a Windows operating system), select “Settings...”

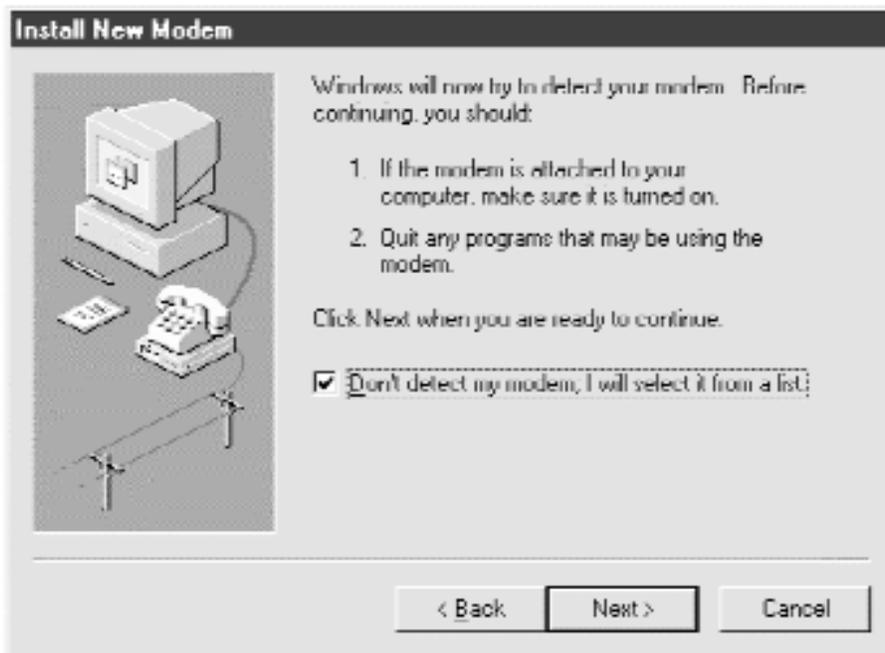
NOTE: Other modems may appear in the list of installed modems.



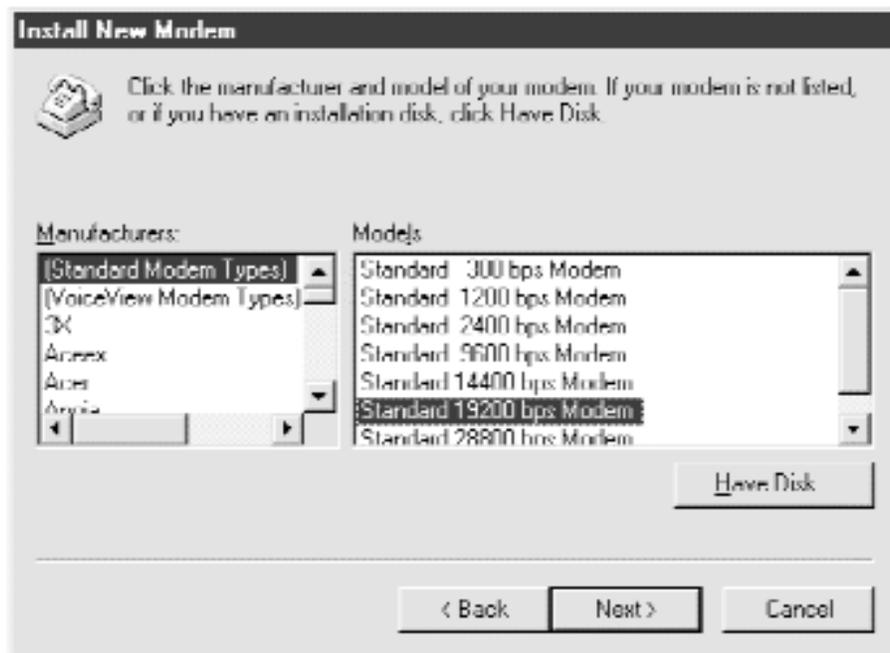
3. Click the ADD button to install a new modem device for the SX5e.



4. The Install New Modem window may appear asking for the type of modem to install. Select "Other," then click on the NEXT button. If this window does not appear, go to Step 5.
5. The Install New Modem window will appear. Select the "Don't detect my modem option," then click on the NEXT button.

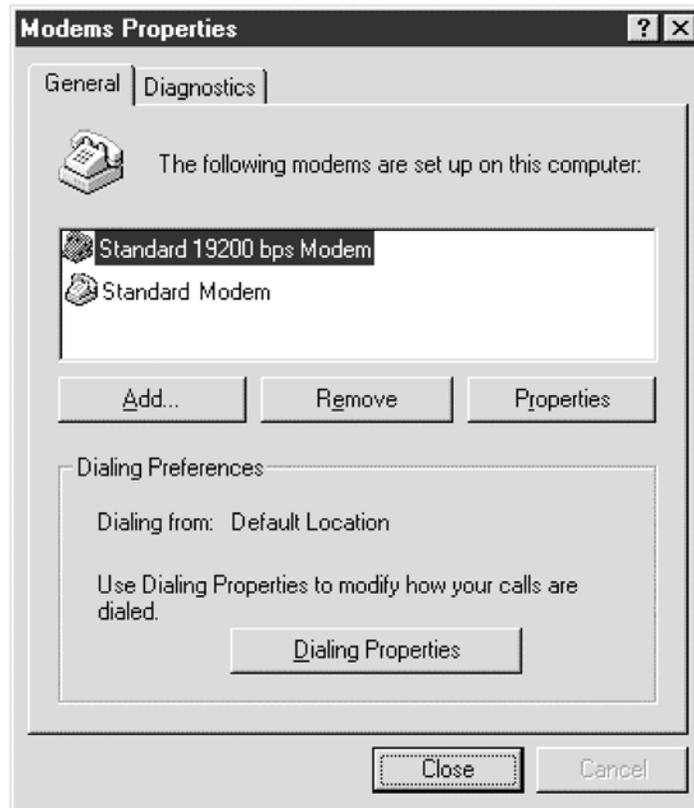


6. The install new modem will update again to select the manufacture and modem model. Select "Standard Modem Types" from the Manufacturers list, then select "Standard 19200 bps Modem" from the Models list then click Next.



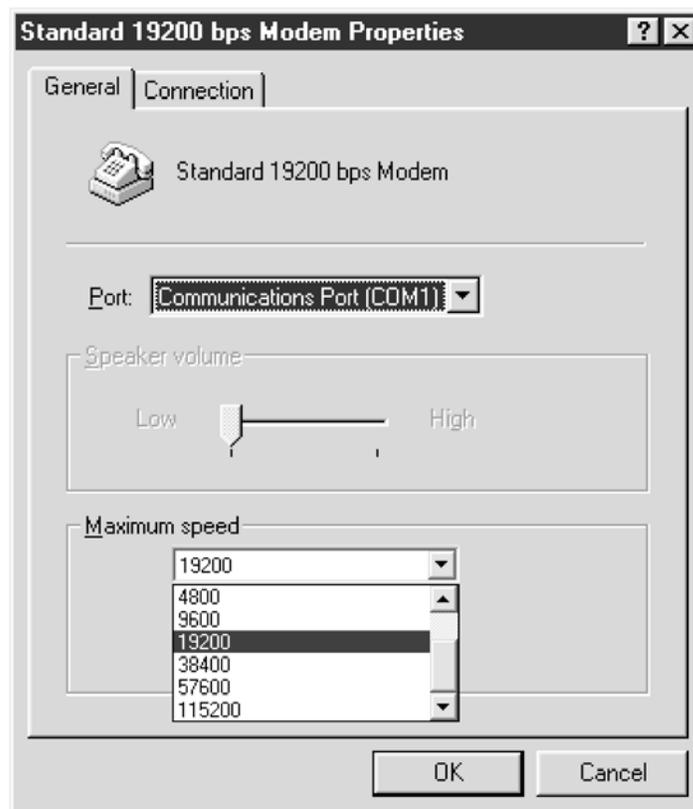
7. The install new modem will update to select the COM port. Select the COM port that will be connected to the SX5e then click Next. Windows will now create a modem configuration file for the Phonecell © SX5. This may take several minutes.

8. The Modems Properties window should appear. Click on the Properties button.

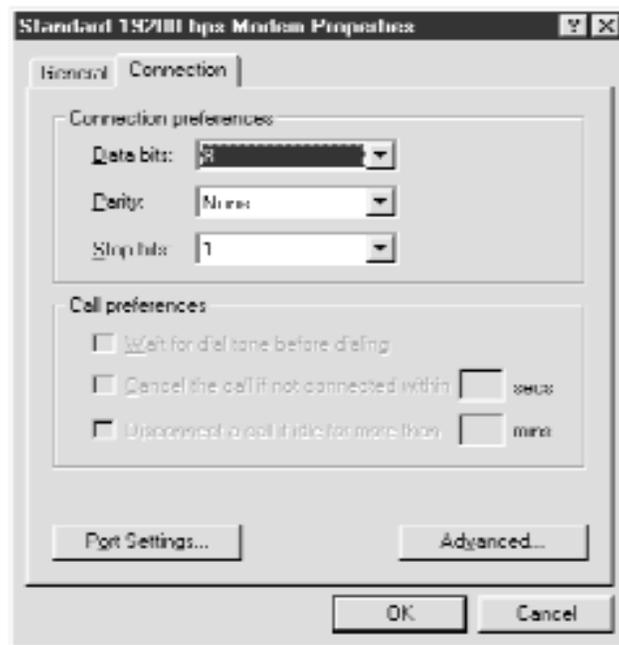


9. Select the Properties button for the selected modem and change your serial port speed as required.

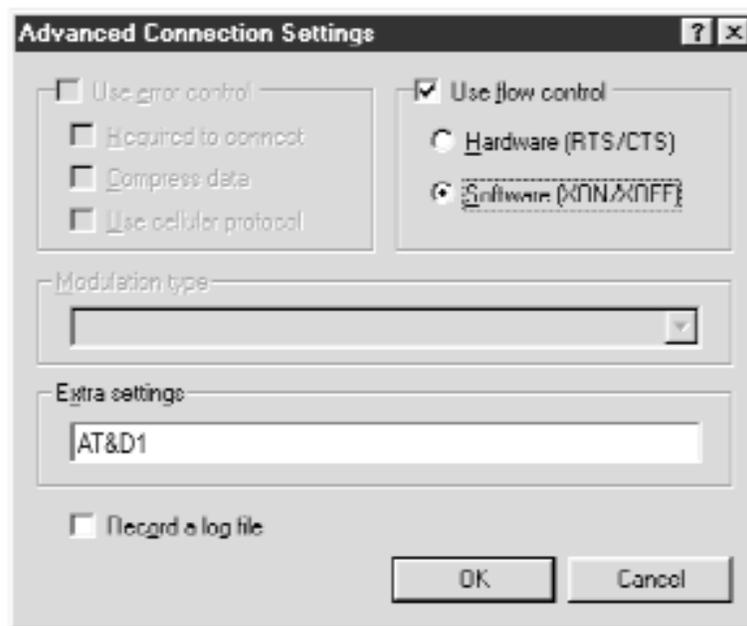
- GPRS Connections: Use 115,200
- Fax and Circuit Switched Data: Use 19,200



10. Then click on the Connection tab. Set as shown below.



11. Click on the Advanced button. Set as shown.



12. Click on OK and Close to back out of each window. Your modem is now set up.

NOTE: When using the SX5D for PC fax operation, make sure the modem connection uses software flow control. When using PC data, either hardware or software flow control can be used, as long as the PC application (and modem) match the SX5D's configuration. The SX5D defaults to hardware flow control. The following AT commands are used to change the SX5D's flow control.

Enable Software Flow Control:	AT+IFC=1,1
Enable Hardware Flow Control:	AT+IFC=2,2
Disable Flow Control:	AT+IFC=0,0

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