

Sierra Wireless SB300 Series OEM Modems

User's Guide



Important Notice

Because of the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless, Inc., accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

Safety and Hazards

Do not operate the Sierra Wireless modem in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the Sierra Wireless modem **MUST BE TURNED OFF**. The Sierra Wireless modem can transmit signals that could interfere with this equipment.

Do not operate the Sierra Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless modem **MUST BE TURNED OFF**. When operating, the Sierra Wireless modem can transmit signals that could interfere with various onboard systems.

The driver or operator of any vehicle should not operate the Sierra Wireless modem while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

Patents

Portions of this product are covered by some or all of the following US patents: D367062, D372248, D372701, 5515013, 5617106, 5629960, 5682602, 5748449, and other patents pending.

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Regulatory Information

The equipment certifications appropriate to your device are marked on the device and the accompanying product specific information. Where appropriate, the use of the equipment is subject to the following conditions:



CAUTION

Unauthorized modifications or changes not expressly approved by Sierra Wireless, Inc. could void compliance with regulatory rules, and thereby your authority to use this equipment.



WARNING (EMI) - United States FCC Information

This equipment has been tested and found to comply with the Class B limits pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in an appropriate 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 communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna*
- *Increase the separation between the equipment and receiver*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected*
- *Consult the dealer or an experienced radio/TV technician for help*



WARNING – FCC RF Exposure Guidelines

While this device is in operation, a separation distance of at least 20cm must be maintained between the radiating antenna and the body of all persons exposed by the transmitter to meet FCC exposure guidelines.

This transmitter is only approved to operate with an antenna not exceeding 1.5 watts total system ERP (effective radiated power) for operations with the antenna located at more than 20 cm from all persons. The warning label must be displayed at the base of the antenna (if stand-alone) or attached to the final product (if the antenna is integral with the product), clearly visible to all persons exposed to the transmitter.

For Final Product Regulatory Approvals in the USA

To use the modems in the United States of America without additional FCC certifications you must:

1. Use an antenna providing a total system ERP (effective radiated power) not exceeding 1.5 watts for operations with the antenna located at more than 20 cm from all persons. If the system exceeds 1.5 watts ERP then separate submissions to the FCC are required.
2. Place a warning label on the antenna (if stand-alone) or attached to the final product visible to all persons exposed to the transmitter (if the antenna is integral with the final product). This label must state:

“WARNING:

While this device is in operation, a separation distance of at least 20cm must be maintained between the radiating antenna and the body of all persons exposed to the transmitter to meet FCC exposure guidelines.”

3. The word “WARNING” should be placed in front of or above the warning statement included in documentation and also in the actual warning label on the antenna or final product.

This warning label is not required when Specific Absorption Rate (SAR) compliance of a final product configuration is approved through a separate FCC equipment authorization approval. Otherwise, the warning label is required on the antenna or final product in order to meet separating distance requirements to satisfy the FCC RF exposure requirements.

**WARNING (EMI) – Canada**

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference causing equipment standard entitled 'Digital Apparatus', ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: 'Appareils Numériques', NHB-003 édictée par le ministre des Communications.

RSA Licensee

If you have purchased this product under a United States Government contract, it shall be subject to restrictions as set forth in subparagraph (c)(1)(ii) of Defense Federal Acquisitions Regulations (DFARs) Section 252.227-7013 for Department of Defense contracts, and as set forth in Federal Acquisitions Regulations (FARs) Section 52.227-19 for civilian agency contracts or any successor regulations. If further government regulations apply, it is your responsibility to ensure compliance with such regulations.



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Web

Consult our webpage for
up-to-date product descriptions, documentation,
application notes, firmware upgrades,
troubleshooting tips, and press releases:

www.sierrawireless.com

Contents

Getting Started

1. About this Guide	1
1.1. Introduction	1
1.1.1. Getting Started.....	1
1.1.2. Operational View.....	1
1.1.3. Hardware View.....	1
1.1.4. OEM Developer's Toolkit Checklist	2
1.2. References.....	2
1.3. Currency.....	2
1.4. Document Structure.....	3
1.4.1. Modem Operations	3
1.5. Conventions Used in this Reference	3
2. Getting Started	5
2.1. Introduction	5
2.2. Registration.....	5
2.2.1. CDPD.....	5
2.2.2. CSC (AMPS).....	6
2.2.3. Wireline	6
2.3. Setup Considerations	6
2.3.1. Host Computer Terminal.....	6
2.3.2. Physical considerations	7
2.3.3. Antenna considerations	7
2.4. MIB Presets	7
2.5. Connections.....	7

The Operational View

3. Software Installation	11
3.1. Introduction	11
3.2. Installing Software on the Host	11
3.3. Configuration using WirelessExpert	12
3.4. About Watcher	13

3.5. Using Watcher for Modem Setup.....	13
3.5.1. Configuring Watcher	13
3.5.2. Configuring Cellular Settings using Watcher.....	14
3.6. Monitoring CDPD With Watcher	15
3.7. About the Watcher Program Window	16
3.7.1. Icon Status	16
3.7.2. Watcher Menus and Commands.....	16
3.7.3. Toolbar Buttons.....	18
3.7.4. Status Indicators.....	18
3.7.5. Updating Status Indicators.....	18
3.7.6. Quitting Watcher	18
3.8. Updating Modem Firmware.....	19
 4. Basic Modem Operation.....	 21
4.1. Introduction.....	21
4.2. Modem Modes and States	21
4.2.1. Modes	21
4.2.2. States	21
4.2.3. Conditions.....	22
4.3. Modem Communications with the Host (DTE)	22
4.3.1. DTE Communication Options.....	22
4.3.2. DTR Signal Handling	22
4.3.3. DSR Signal Control.....	23
4.3.4. Local Flow Control	23
4.3.5. Result Code Formats	23
4.4. Communication Protocols and Stacks	24
4.4.1. SB300 Series Internal Protocol Stacks	24
4.5. Modem Handshaking (SB320)	25
4.5.1. Modem Protocol Layers.....	25
4.5.2. CSC vs. Wireline.....	26
 5. CDPD Operation.....	 29
5.1. Cellular Digital Packet Data (CDPD) Introduction	29
5.1.1. Security.....	29
5.1.2. Architecture	30
5.1.3. Modem Registration	30
5.1.4. CDPD Radio Coverage.....	31
5.1.5. CDPD and the SB300 Series Modems.....	31

5.2. Configuring NEI Entries	32
5.2.1. NEI Table.....	32
5.2.2. SPNI Matching.....	33
5.3. CDPD Network Registration	33
5.3.1. Active and Auto-register NEI Indices	34
5.3.2. Manual Registration.....	34
5.3.3. Automatic Registration	35
5.3.4. De-registration.....	35
5.4. Monitoring the Network Connection.....	36
5.4.1. Radio Signal Monitors	36
5.4.2. Registration Status.....	36
5.5. Sleep Mode.....	37
5.5.1. CDPD Sleep	37
5.5.2. Logic Sleep.....	37
5.6. Friends Only	38
5.7. Packet Services	38
5.7.1. Serial Line Interface Protocol (SLIP).....	38
5.7.2. User Datagram Protocol (UDP).....	40
5.7.3. Transmission Control Protocol (TCP).....	46
5.8. Packet Assembly Management.....	51
5.9. Data and Telemetry Applications.....	52
 6. CSC Operation.....	 53
6.1. Introduction	53
6.1.1. Modem Registration	53
6.1.2. CSC Radio Coverage	53
6.1.3. Modem Pools.....	54
6.2. Configuring the Modem for CSC	54
6.2.1. Setting the NAM.....	54
6.2.2. Confirm CSC Service.....	55
6.3. Originate a CSC Connection	55
6.4. Auto-answer a Cellular Call.....	56
6.5. Optimizing Data Performance.....	56
6.5.1. Factory Default for ETC	56
6.5.2. Connections to ETC Enabled Modems	58
6.5.3. Connections to Non-ETC Compatible Modems	58
6.5.4. Connections to Modem Pools.....	59

7. Wireline Operation	61
7.1. Introduction.....	61
7.1.1. Hardware	61
7.2. Configuring the Modem for Wireline	61
7.2.1. Connecting to another Wireline Modem or Modem Pool	61
7.2.2. Connecting to a Cellular Modem	61
7.3. Originate a Wireline Connection	62
7.4. Auto-answer a Wireline Call.....	63
 8. Troubleshooting	 65
8.1. Introduction.....	65
8.2. General Modem Problems.....	65
8.3. General Communication Problems.....	66
8.4. CDPD Problems.....	66
8.5. CSC Problems	67
8.6. Wireline Problems.....	67

The Hardware View

9. Product Descriptions.....	69
9.1. Hardware Integration Considerations	69
9.2. Specifications Common to All Modems	71
9.2.1. Application Interface Specifications.....	71
9.2.2. RF Features	71
9.2.3. Special Features	71
9.2.4. Environmental Specifications	72
9.2.5. Connector Part Numbers.....	72
9.3. SB300 CDPD Modem	75
9.3.1. Mechanical.....	75
9.3.2. Connectors	76
9.3.3. Power Specifications	76
9.3.4. Electrical.....	76

The Hardware View

9. Product Descriptions

The SB300 Series modems are designed for integration into devices that require wireless communications such as PC's, portable and handheld devices, metering and monitoring equipment, and point of sale terminals.

All models provide CDPD V1.1 19.2 kbps communication. The SB320 also supports Circuit Switched Cellular (CSC-AMPS) V.34 data rates to 16.8 kbps, and wireline (PSTN) V.34 data rates to 33.6 kbps.

Packet Assembly / Disassembly (PAD) services are available in the modem for TCP and UDP communications. SLIP and PPP are also supported for host based protocol stacks.

This chapter provides descriptions and specifications for the family. Individual modems are described in separate sections below. All connector parts described are tabulated with mating part numbers and supplier contact information in Section 9.2.5 below.

The SB300 and SB320 share common physical and interface characteristics. The SB300 and 302 share common functional characteristics.

9.1. Hardware Integration Considerations

When integrating one of the SB300 Series modems, read Sections 9.2 Specifications Common to All Modems, and then the specific section for the model being integrated.

In addition, the following items need to be addressed by the integrator:

Mounting

- Effects of shock and vibration.
- Protection from dust and dirt in connections.
- Heat dissipation.

RF

- Shielding and filtering, and impacts on interference and sensitivity.
- Antenna location and type, and impacts on RF performance.

Regulatory Approvals

Although the modems were tested on their own to be compliant with FCC Parts 15 and 22, your completed installation must be certified to meet regulatory requirements in your area.

In the USA

To use the modems in the United States of America without additional FCC certifications you must:

1. Use an antenna providing a total system ERP (effective radiated power) not exceeding 1.5 watts for operations with the antenna located at more than 20 cm from all persons. If the system exceeds 1.5 watts ERP then separate submissions to the FCC are required.
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Product documentation should include warnings and disclaimers. Sierra Wireless strongly recommends including warnings similar to those found on pages i and ii of this Guide. The following warnings must appear in a prominent location:

The equipment certifications appropriate to your device are marked on the device and the accompanying product specific information. Where appropriate, the use of the equipment is subject to the following conditions:

**CAUTION**

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9.2. Specifications Common to All Modems

The following specifications provide information on all SB300 Series modems.

9.2.1. Application Interface Specifications

Serial Interface (DTE)	19200 bps (current firmware R1.0.1) 110 – 115,200 bps (future auto-baud firmware)
SLIP Interface	RFC1055
PPP Interface (future firmware)	RFC1661, RFC1662, RFC1332 (not yet implemented)
AT-Command Interface	Hayes Compatible with PCCA Wireless Extensions
UDP PAD Interface	PCCA STD-101 Compliant
TCP PAD Interface	PCCA STD-101 Compliant
Object Management Interface	Sierra Wireless Inc. Proprietary

9.2.2. RF Features

Transmitter Power	600 mW
Transmitter Performance	Meets or exceeds CDPD V1.1 Section 405 FCC, Industry Canada, IS19B/C
Receiver Sensitivity	-108dBm 5% BLER

9.2.3. Special Features

Feature	Benefit
Sleep Mode	Reduces current drain for improved battery life.
TCP and UDP PAD Ping Reply	Confirm network connectivity to the modem.
Broadcast Message Support	Broadcast to all modems in geographic area.
TCP Session Time-out	Permits reconnection of failed TCP session.
“Friends-only” modem access	Provides device security.
AutoDial at Startup	Modem automatically establishes communications.
Software-controlled Reboot	Quick problem recovery.
Autobaud	Flexible interface
MultiCast	Broadcast to defined subset of all modems.
Configurable Listening Port	Modem can listen on any port the host prefers.
Escape from PAD modes	Non-DTR controlled Escape.