LIMITED WARRANTY

Spectracom warrants each new product manufactured and sold by it to be free from defects in software, material, workmanship, and construction, except for batteries, fuses, or other material normally consumed in operation that may be contained therein AND AS NOTED BELOW, for five years after shipment to the original purchaser (which period is referred to as the “warranty period”). This warranty shall not apply if the product is used contrary to the instructions in its manual or is otherwise subjected to misuse, abnormal operations, accident, lightning or transient surge, repairs or modifications not performed by Spectracom.

The GPS receiver is warranted for one year from date of shipment and subject to the exceptions listed above. The power adaptor, if supplied, is warranted for one year from date of shipment and subject to the exceptions listed above.

THE ANALOG CLOCKS ARE WARRANTED FOR ONE YEAR FROM DATE OF SHIPMENT AND SUBJECT TO THE EXCEPTIONS LISTED ABOVE.

THE TIMECODE READER/GENERATORS ARE WARRANTED FOR ONE YEAR FROM DATE OF SHIPMENT AND SUBJECT TO THE EXCEPTIONS LISTED ABOVE.

The Rubidium oscillator, if supplied, is warranted for two years from date of shipment and subject to the exceptions listed above.

All other items and pieces of equipment not specified above, including the antenna unit, antenna surge suppressor and antenna pre-amplifier are warranted for 5 years, subject to the exceptions listed above.

WARRANTY CLAIMS

Spectracom’s obligation under this warranty is limited to in-factory service and repair, at Spectracom’s option, of the product or the component thereof, which is found to be defective. If in Spectracom’s judgment the defective condition in a Spectracom product is for a cause listed above for which Spectracom is not responsible, Spectracom will make the repairs or replacement of components and charge its then current price, which buyer agrees to pay.

Spectracom shall not have any warranty obligations if the procedure for warranty claims is not followed. Users must notify Spectracom of the claim with full information as to the claimed defect. Spectracom products shall not be returned unless a return authorization number is issued by Spectracom.

Spectracom products must be returned with the description of the claimed defect and identification of the individual to be contacted if additional information is needed. Spectracom products must be returned properly packed with transportation charges prepaid.

Shipping expense: Expenses incurred for shipping Spectracom products to and from Spectracom (including international customs fees) shall be paid for by the customer, with the following exception. For customers located within the United States, any product repaired by Spectracom under a “warranty repair” will be shipped back to the customer at Spectracom’s expense unless special/faster delivery is requested by customer.

Spectracom highly recommends that prior to returning equipment for service work, our technical support department be contacted to provide troubleshooting assistance while the equipment is still installed. If equipment is returned without first contacting the support department and “no problems are found” during the repair work, an evaluation fee may be charged.

EXCEPT FOR THE LIMITED WARRANTY STATED ABOVE, SPECTRACOM DISCLAIMS ALL WARRANTIES OF ANY KIND WITH REGARD TO SPECTRACOM PRODUCTS OR OTHER MATERIALS PROVIDED BY SPECTRACOM, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Spectracom shall have no liability or responsibility to the original customer or any other party with respect to any liability, loss, or damage caused directly or indirectly by an Spectracom product, material, or software sold or provided by Spectracom, replacement parts or units, or services provided, including but not limited to any interruption of service, excess charges resulting from malfunctions of hardware or software, loss of business or anticipatory profits resulting from the use or operation of the Spectracom product or software, whatsoever or howsoever caused. In no event shall Spectracom be liable for any direct, indirect, special or consequential damages whether the claims are grounded in contract, tort (including negligence), or strict liability.

EXTENDED WARRANTY COVERAGE

Extended warranties can be purchased for additional periods beyond the standard five-year warranty. Contact Spectracom no later than the last year of the standard five-year warranty for extended coverage.
# Table of Contents

1. **CHANGES FOR V2.3.0 TO V2.3.1** ......................................................... 1-1  
2. **NETWORK AND WEB USER INTERFACE CHANGES** .......................... 2-1  
   2.1 Command Line Changes ........................................................................... 2-2  
      2.1.1 net telnet ............................................................................................... 2-2  
      2.1.2 net ftp ..................................................................................................... 2-2  
      2.1.3 net https .................................................................................................. 2-2  
      2.1.4 net sshd (Includes SSH, SCP, and SFTP) .................................................. 2-2  
   2.2 Web Server Timeout ..................................................................................... 2-2  
      2.2.1 web exit ................................................................................................. 2-2  
      2.2.2 web timeout ............................................................................................ 2-2  
   2.3 HTTPS Certificate 20-Year Life ................................................................. 2-4  
   2.4 Modem ........................................................................................................ 2-5  
      2.4.1 Baud Rate .............................................................................................. 2-5  
      2.4.2 Setup Serial Port Mode .......................................................................... 2-6  
      2.4.3 Modem Command Line Commands ....................................................... 2-8  
   2.5 NTP ............................................................................................................. 2-10  
      2.5.1 NTP Command Line .............................................................................. 2-11  
   2.6 System Time ............................................................................................... 2-11  
   2.7 Further Assistance ..................................................................................... 2-12

# List of Figures

Figure 2-1: Enabling and Disabling Network Interfaces ................................... 2-1  
Figure 2-2: HTTPS Certificate Creation Web UI Page ....................................... 2-4  
Figure 2-3: Baud Rate Support ......................................................................... 2-5  
Figure 2-4: Switching from Console Mode to Modem Mode ............................ 2-6  
Figure 2-5: Caption ......................................................................................... 2-7  
Figure 2-6: Reference Identifier Field ............................................................... 2-10  
Figure 2-7: Setting System Time Options ....................................................... 2-12
1 Changes for v2.3.0 to v2.3.1

This addendum to the operations and maintenance manual for the Spectracom NetClock® Model 9189 (current to software version 2.3.0) describes the changes made to software features for version 2.3.1. These changes include additions and enhancements to the Web User Interface (Web UI), to the command line, and in SNMP.

2 Network and Web User Interface Changes

The user may now enable and disable all network interfaces. The HTTPS port has been added to the Web UI and may be controlled on the System Setup web page on the Network tab.

![Figure 2-1: Enabling and Disabling Network Interfaces](image)

Allowing the user to enable and disable at will all network interfaces provides greater security and stability of the NetClock in hostile network environments. It also allows users to comply with corporate security policies regarding network access.
2.1 Command Line Changes

The network interface command line now allows the user to enable and disable all ports for Telnet, FTP, HTTP, HTTPS and SSH.

The new commands for the network interface are:

- `telnet` net telnet [yes,no] – Enable or disable telnet on port 23
- `ftp` net ftp [yes,no] – Enable or disable ftp on port 21
- `https` net https [yes,no] – Enable or disable https on port 443
- `sshd` net sshd [yes,no] – Enable or disable ssh on port 22

2.1.1 net telnet

This command allows user to enable or disable the telnet port. Input yes to enable no to disable. Input `net telnet yes` to enable and `net telnet no` to disable.

2.1.2 net ftp

This command allows user to enable or disable FTP the port. Input `net ftp yes` to enable and `net ftp no` to disable.

2.1.3 net https

This command allows the user to enable or disable the HTTPS port controlling access to the secure web server. Enter `net https yes` to enable and `net https no` to disable.

2.1.4 net sshd (Includes SSH, SCP, and SFTP)

This command allows the user to enable or disable the SSH port controlling access to secure SSH protocols SSH secure shell, SCP secure copy, and SFTP secure file transfer. Input `net sshd yes` to enable and `net sshd no` to disable.

2.2 Web Server Timeout

The manner in which the GoAhead Web Server functions requires users to terminate Web UI sessions by clicking “Exit Connection to the Product”. Clicking the “X” button on the browser does not end the session, but closes the window – which means the user cannot log in again until the session expires. In some versions of the software, this is 15 to 30 minutes, which some users find inconvenient.

Version 2.3.1 software includes new console commands that allow administrator-level to users to exit the current locked Web UI session using telnet or ssh. Also added is a command to set the timeout to a user-defined value, which means users may now dictate the length of time it takes for the session to expire.
Use the ‘web help’ command to see a list of net commands. These include web exit and web timeout minutes (to set the connection timeout).

2.2.1 web exit
This command allows the user to exit the current web session from telnet or ssh connections.

2.2.2 web timeout
This command allows the user to set the web session timeout to any value between 1 and 60 minutes (inclusive). Spectracom recommends selecting a timeout interval of 10 to 15 minutes.
2.3 HTTPS Certificate 20-Year Life

The HTTPS Certificate Creation Web UI page has been changed to indicate required parameters (with a red asterisk). Refer to the Security tab on the System Setup page.

The default Spectracom HTTPS Web Server Certificate is now 20 years. The new default Certificate life is therefore 7300 days (20 years, in days) and appears on the page as:

* Self Signed Certificate Expiration (Days): 7300

![HTTPS Certificate Creation Web UI Page](image-url)
2.4 Modem

Modem functionality has been improved in software version 2.3.1. ITU-R TF583.4 format is now supported. Support has also been added for the two most commonly used baud rates (1200 and 9600 baud) for ITU-R and ACTS formats. NetClocks running software version 2.3.0 require the user to reboot the unit when switching from Console to Modem mode. In software version 2.3.1, it is no longer necessary to reboot when switching from one mode to the other.

The user may select the Baud Rate or the Setup Port mode as shown in the following sections.

2.4.1 Baud Rate

The baud rates 1200 and 9600 are supported because they are the most commonly used baud rates for ITU-R and ACTS formats worldwide. ITU-R format typically uses 1200 baud, while ACTS format typically uses 9600 baud.
2.4.2 Setup Serial Port Mode

To switch from Serial Console Port mode, select Modem mode (Figure 2-4). Once the Modem mode is selected, click Modem Dial Out (Figure 2-5). This displays all the modem tabs.

![Figure 2-4: Switching from Console Mode to Modem Mode](image-url)
Figure 2-5: Modem Dial Out
2.4.3 Modem Command Line Commands

New modem line commands have been added to facilitate user operation and debugging of modem features. This supports customers in the field should there be issues concerning other dial-up time references.

The provided modem commands are:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mdo help</td>
<td>Used to get detailed information for modem commands</td>
</tr>
<tr>
<td>mdo avg</td>
<td>Set the averaging behavior of the modem</td>
</tr>
<tr>
<td>mdo log</td>
<td>Set logging mode</td>
</tr>
<tr>
<td>mdo stat</td>
<td>View or reset the modem statistics</td>
</tr>
<tr>
<td>mdo delaycomp</td>
<td>Enable/disable delay compensation</td>
</tr>
<tr>
<td>mdo mode</td>
<td>Set port mode and optionally change baud rate</td>
</tr>
<tr>
<td>mdo dialnow</td>
<td>Dial out immediately</td>
</tr>
<tr>
<td>mdo baud</td>
<td>Set baud rate</td>
</tr>
<tr>
<td>mdo speaker</td>
<td>Set modem speaker enable</td>
</tr>
</tbody>
</table>

2.4.3.1 mdo avg

Usage: mdo avg [on|off] [#|auto]
This command switches the averaging algorithm on and off. If averaging is turned on (mdo avg on), the number of points to average must be specified. If the number of points is specified as auto, the unit will choose the appropriate number. If no parameter is specified, the current state will be printed.

NOTE: By default, averaging is NOT used. Averaging is recommended only after a few successful dial-outs have been performed.

2.4.3.2 mdo log

This command allows the user to turn on logging of call data and state to debug files for use in providing feedback to Spectracom when testing with unsupported ACTS or ITU-R time references. The call data files are named call#.log and are found in the logs directory.

NOTE: Do not leave this mode switched on, as the number of log files increases with each call. Switch it on as directed by Spectracom if you are testing a new dial-up time service.

Enter mdo log debug to switch the log on. Enter mdo log normal to switch the log off. When detailed logging is enabled, every message from the modem is printed to a file. Remember that this mode should be used only for debugging, as files will accumulate.
2.4.3.3  mdo stat
This command allows the user to view or reset modem statistics. Enter mdo stat to print the statistics to the console. Enter mdo stat reset to reset the statistics.

2.4.3.4  mdo delaycomp
This command skips the delay compensation step in ACTS and ITU-R protocols. This is required in the UK when using the free ITU-R NPL format (only the pay-for-use format supports delay compensation). Skipping the delay compensation may be useful in debugging or synchronizing to untested ACTS or ITU-R protocols. If the modem indicates a No Sync error when calling and connecting, try disabling delay compensation.

NOTE: Disabling delay compensation reduces the accuracy of the time synchronization.

Enter mdo delaycomp spring on or mdo delaycomp itur on to enable delay compensation. Enter mdo delaycomp spring off or mdo delaycomp itur off to disable delay compensation.

2.4.3.5  mdo mode
This command sets the console mode and, optionally, changes the baud rate. Enter mdo mode console or mdo mode modem to switch between console and modem modes. Enter mdo mode modem 1200 or mdo mode modem 9600 to set the baud rate.

2.4.3.6  mdo dialnow
This command dials out the modem. Enter mdo dialnow to dial out immediately.

2.4.3.7  mdo baud
This command sets the baud rate.

NOTE: ITU-R protocols typically use 1200 baud, while ACTS protocols typically use 9600 baud. NIST ACTS may support either, but 9600 baud is recommended.

2.4.3.8  mdo speaker
Entering this command switches the modem speaker on and off. Enter mdo speaker on to enable the speaker and mdo speaker off to disable it.
2.5 NTP

The NTP Daemon has been extended to allow the user to define the Reference Identifier string. A Reference Identifier is a 4-byte field in the NTP packets indicating, in either numerical or ASCII format, the time source used by the NetClock. This field contains the Time Identifier, such as GPS, STCI (Serial Time Code Input), or Modem Format (ITUR, PTB, SP [SPRING], NPL etc.).

The user can set the Reference Identifier to indicate the actual time source, such as WWVB for a 9188 NetClock using the Serial Time Code Interface (STCI) to connect to a NetClock/2 or some other WWVB receiver. The user may also use the 4-byte field as an abbreviation for the location of the NetClock, such as NYC, CHI, BOS, etc. Refer to Figure 2-6.

![Figure 2-6: Reference Identifier Field](image)

Spectracom provides a means to set a Reference Identifier for the primary time sources, such as GPS, Serial Time Code Input, or User Defined. A means to define the
Modem Reference Identifier separately is also provided for NetClocks that include a Modem as a backup time source (Figure 2-6).

2.5.1 NTP Command Line

The NTP Daemon also supports new commands for software version 2.3.1:

`ntp refsrc`  
`ntp refsrc [primary|modem] [on|off] ['4-character-string'] – Sets NTP reference source`

`ntp timeout`  
`ntp timeout [seconds] – Used to set timeout for remote access tool`

2.5.1.1 ntp refsrc

This command allows the user to set the primary and modem user-defined reference identifiers. Input this as `ntp refsrc [primary|modem] [on|off] ['4-character-string]` with the appropriate entries.

2.5.1.2 ntp timeout

This command allows the user to set the time difference allowed between the remote Network Access Tool and the NetClock. This is a security feature avoiding replay attacks. Enter `ntp timeout [seconds]` to set the value.

2.6 System Time

The System Time Tab found on the System Setup web page allows the user to view the current time on the unit using UTC or a Local Clock defined by the user. This page also allows the user to set (manually) the system time. The page has been modified for version 2.3.1 software to include two additional check boxes. The “Allow user to set time using SNMP or Web UI” checkbox allows user inputs from SNMP or this Web UI to set the system time manually. If the checkbox is NOT checked, users may not manually input time. Refer to Figure 2-7.

**NOTE:** When a user sets the time manually, the serial time code messages from the unit and the NTP packets will indicate that the NetClock is NOT synchronized. Setting the time manually means the unit is NOT traceable to UTC. When entering time manually, you MUST use UTC time. If you enter local time (or a time from any other time zone), the time will be misinterpreted as UTC.
2.7 Further Assistance

If you require additional assistance integrating this addendum with your operations and maintenance manual(s), please contact Spectracom Customer Service at 585.321.5800. Spectracom may also be reached through our website at www.spectracomcorp.com.