UNION SWITCH & SIGNAL

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SM 8221

# DTOOL
# USER'S MANUAL

THIS MANUAL SUPERSEDES SM8221 DATED JUNE 1996.



JUNE 1997

# REVISION INDEX

Revised pages of this manual are listed below along with the date of revision. A black bar in the page margin indicates the area of change.

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# FOREWORD

This manual provides User Instructions for the PC based DTOOL (Diagnostic Tool) program provided for set-up and diagnostics of Genisys 2000 communications equipment. This Guide contains the following Sections:

| | |
|---|---|
| 1. Installation | This section provides information on installing the DTOOL program, making the necessary connections, and starting the program |
| 2. Summary of DTOOL Commands | This section contains an alphabetical list of the commands available for configuration and diagnostic operations using the program. |
| 3. Function of Commands | This section provides information on the use of each command. |
| 4. Using Configuration Commands | This section contains a typical configuration procedure and set up of Genisys 2000 unit in the field, including the expected DTOOL responses and displays. |
| 5. Using Diagnostic Commands | This section provides typical diagnostic procedures useful for maintenance of the field Genisys unit, as well as accessing miscellaneous statistical data and information. |
| 6. Command Conventions | The following conventions apply to the instructions in this guide |

a. Commands and subcommands are presented in CAPITAL letters and BOLD type.

b. Many commands include parameters that must be specified. In the commands, these are shown in angle brackets < > when they represent a variable entry.

c. Many commands include optional information. This is shown in brackets [ ]

d. Explanatory notes about a command are given in parenthesis.

e. CR = Carriage Return or Enter key

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# SECTION I
# INSTALLATION

## 1.1 INTRODUCTION

The PC-based procedures use the 9-pin serial port connector on the front edge of the Genisys Enhanced Controller PCB for serial communication. Asynchronous RS-423 signaling is employed at baud rates from 150 to 19200 BPS. When two or more Genisys units are used, the DTOOL operations apply only to the connected unit.

### 1.1.1 Installing DTOOL to PC

a. Copy both the DTOOL.EXE and DTOOL.HLP files to any directory accessible through the PATH as defined in the DOS environment.

b. Enter the following command in autoexec.bat file:

   SET DTHELP=<PATH containing DTOOL.HLP>

   Example: SET DTHELP=C: \ BIN \ DTOOL.HLP

This allows DTOOL to find its help text file (DTOOL.HLP) regardless of the current path. If DTHELP is not set, DTOOL searches the current path for a file named DTOOL.HLP.

### 1.1.2 Starting DTOOL

a. With the PC off, connect the PC COM1 or COM2 port to the diagnostic port on the Genisys 2000 Enhanced Controller PCB. This connection should be made with a Null Modem cable.

b. Turn the PC on. The DOS prompt should be displayed:

   C: \>

   If running DTOOL from a floppy disk, insert the program disk in the drive and change to the drive prompt.

   B: \>

c. Enter: CD\DTOOL (CR) at the DOS prompt (changes to the DTOOL directory):

   DTOOL>

d. Enter: DTOOL (CR) at the DTOOL> prompt (starts the DTOOL program):

   DTOOL>DTOOL (CR)

The following message will be displayed on the PC:

Union Switch and Signal, Inc. Genisys 2000 Diagnostic Tool, Version 3.00 for use with Genisys 2000 field code unit executives:

| | |
|---|---|
| N451 800-0201 | ATOS Protocol |
| N451 800-0202 | Genisys / 5XX Protocol |
| N451 800-0203 | MCS-1 Protocol |
| N451 800-0206 | S2 Protocol |

Starting Diagnostic Tool Executive using COM1:

To use COM2:, quit and type DTOOL2 at the DOS prompt.

Type HELP at the DTOOL> prompt for information on commands.

e. Type ENABLE at the DTOOL> prompt (enables communication with Genisys 2000)

**DTOOL>ENABLE**

The following will be displayed in the status area at the bottom of screen:

| | |
|---|---|
| DTOOL Mode | POLL |
| Remote Communication Status | NORMAL |

If communications cannot be established the message will be:

| | |
|---|---|
| Remote Communication Status | DISABLED |

f. Enter security access code: (Ex: FEROCKS)

**NOTE**

*DTOOL may also be run from a DOS window under WINDOWS 3.1 or WINDOWS NT 3.1.*

# SECTION II

# SUMMARY OF COMMANDS

## 2.1 DTOOL COMMANDS.

**CLEAR:** Clears (resets) statistics counters. **Caution:** Erases statistics previously stored in EEPROM.

**CONFIGURE:** Used to set unit configuration values

**CONVERT:** Converts radix of numbers

**DEPOSIT:** Changes memory contents. **Caution:** Used for factory test only. Could result in unreliable operation or failure of controller PCB.

**DISABLE:** Temporarily disables diagnostic communications

**ENABLE:** Enables diagnostic communications

**EXAMINE:** Examines memory contents of PCB. **Caution:** Used for factory test only.

**EXIT:** Exits DTOOL> program. Returns PC to DOS prompt.

**GET:** Gets various information (controls, indications, error messages, etc.) from connected Genisys.

**HANGUP:** Ends modem connection

**HELP:** Provides help on commands

**LOAD_DEFAULT:** Loads default unit configuration setup

**MODEM:** Passes commands to modem (bypasses serial link)

**NEWLOG:** Opens new session log file

**NOTRACE:** Stops current logic trace function

**QUIT:** Exit from DTOOL> program, returns PC to DOS prompt

**RESET:** Forces a hardware reset on connected unit

**SET:** Sets parameters of current session (address, baud, and port operation). **Caution:** RDB subcommand intended for factory test only.

| | |
|---|---|
| **SHOW:** | Accesses accumulated DTOOL statistics |
| **START:** | Forces a test indication message |
| **SYMBOL** | Loads symbol table (user-defined bit names) |
| **TRACE:** | Enables logic trace function |
| **WRITE:** | Saves entered configuration as permanent. **Caution:** This will replace parameter values previously stored in EEPROM. |

# SECTION 3
# FUNCTION OF COMMANDS

## 3.1 COMMAND NOTES

a. All commands are entered at the DTOOL> prompt followed by a carriage return (CR). The shortened COMMAND_SYNTAX described as one of the HELP subcommands may be used.

Example: DTOOL> **[<command>] (CR)**

b. When applicable, subcommands are entered following the command name separated by a space.

Example: DTOOL> **[<command>] [<subcommand>] (CR)**

c. In some commands, CONFIGURE for example, if the subcommand is omitted, there will be an automatic prompt for the subcommand: **Configure What?** and/or additional information. Enter the requested information. Refer to paragraph 4.4.2 for configuration program rules and notes.

## 3.2 COMMANDS

### 3.2.1 HELP

The **HELP** command is invoked to obtain information on the commands available with the DTOOL program. **HELP** is available for the following commands:

**CLEAR, CONFIGURE, CONVERT, DEPOSIT, DISABLE, ENABLE, EXAMINE, EXIT, GET, HANGUP, HELP, LOAD_DEFAULT, MODEM, NEWLOG, NOTRACE, QUIT, RESET, SHOW, SET, START, SYMBOL, TRACE, WRITE, COMMAND_SYNTAX, SUMMARY OF COMMANDS.**

Enter: **HELP [command] [subcommand] at** the prompt

Ex: **DTOOL>HELP CONFIGURE**

## 3.3 CLEAR

The **CLEAR** command is invoked to reset various statistical accumulators in the DTOOL program as well as in the Genisys Enhanced Controller PCB. There are two subcommands:

**LOCAL** and **REMOTE.**

### 3.3.1 CLEAR LOCAL

This command is invoked to reset all statistics accumulators that are maintained in the (local) DTOOL program. These accumulators gather data mainly on the performance of the communication link between the DTOOL and the Controller PCB.

Enter: CLEAR LOCAL at the DTOOL> prompt

## 3.3.2 CLEAR REMOTE

This command is invoked to reset all statistics accumulators that are maintained in the connected Controller PCB. These accumulators gather data mainly on the performance of the communication links of the connected unit.

Enter: **CLEAR REMOTE** at the DTOOL> prompt

## 3.4 CONFIGURE

The CONFIGURE command/subcommands are invoked to verify or change the configuration of the connected unit, such as setting the baud rate, key-on, and key-off delays. The commands are grouped by the following unit type:

**ATCS_SLAVE DC_SLAVE, SERIAL_SLAVE, and S2_SLAVE.**

Of these, only the **SERIAL_SLAVE** and **S2_SLAVE** subcommands are supported in this guide.

**NOTE**

*After configuration values are changed, the WRITE command must be invoked to save the changes, otherwise the configuration will revert to the previous configuration settings on the next reset.*

## 3.4.1 CONFIGURE SERIAL_SLAVE

This subcommand is selected to set or change the configuration parameters of the connected (field) slave unit. Associated subcommands are: **MASTER_PORT, NVLE, PORT, STATION.**

### 3.4.1.1 CONFIGURE SERIAL SLAVE MASTER PORT

This command is invoked to set or alter the configuration parameters of the controller master port. Once this command is entered, the user is prompted for changes to the master port configuration. Currently active parameters are shown as the default values and the allowable range is displayed (where appropriate). If an out-of-range value is entered, the same prompt is repeated. If no parameter is entered, the default value is not changed. After all prompts for changes are cycled, the selected master port parameters can be updated (accepted) by a YES response to the Write Active Master Port Configuration prompt that follows. A NO response leaves the parameters unchanged. The WRITE command must be issued to save the changes permanently.

Enter: **CONFIGURE SERIAL_SLAVE MASTER_PORT** at the DTOOL> prompt

Display: (See Figure 4-2)

### 3.4.1.2 CONFIGURE SERIAL_SLAVE NVLE

This command is invoked to set or alter the configuration of the non-vital logic emulator logic. Once this command is entered, the user is prompted for changes to the NVLE configuration. Currently active parameters are shown as the default values and the allowable range is displayed. If an out-of-range value is entered, the same prompt request is repeated. If no parameter is entered, the default value is not changed. After all prompts for changes have been displayed, the selected NVLE parameters can be updated by a YES response to the write active master port configuration prompt that follows. A NO response leaves the default parameters unchanged. The WRITE command must be issued to save the changes permanently.

Enter: **CONFIGURE SERIAL_SLAVE NVLE** at the DTOOL> prompt

Display: (See Figure 4-3)

### 3.4.1.3 CONFIGURE SERIAL_SLAVE PORT

This command is invoked to set or alter the configuration parameters of the Controller slave port. Once this command is entered, the user is prompted for new port characteristics, which are checked against displayed limits. If they are within range limits, the next prompt is displayed. If an invalid parameter is entered, the same prompt is repeated. If no parameter is entered, the default value is not changed. After all parameter prompts are cycled, the selected configuration can be updated by a YES response to the Update Active Configuration prompt that follows. A NO response leaves the serial slave port configuration unchanged. The WRITE command must be issued to save the changes permanently.

Enter: **CONFIGURE SERIAL_SLAVE** PORT at the DTOOL> prompt

Display: (See Figure 4-4)

### 3.4.1.4 CONFIGURE SERIAL_SLAVE STATION

This command is invoked to set the slave station addresses. Once this command is entered, the user is prompted for new slave station addresses. The current address (if any) is displayed as the default. When entered, the address is checked for validity. If invalid, the station address prompt is repeated. If no address is entered, the current address is not changed. After prompts are requested for six possible station addresses, the current configuration can be updated by a YES response to the Update Active Configuration prompt. A NO response leaves the serial slave station addresses unchanged. The WRITE command must be issued to save the changes permanently.

Enter: **CONFIGURE SERIAL_SLAVE** STATION at the DTOOL> prompt

Display: (See Figure 4-5)

## 3.5 CONVERT

The **CONVERT** command is used to convert numbers from one radix to another, for example from hexadecimal to binary form.

Enter: **CONVERT <current radix> <desired radix> <N>** at the DTOOL> prompt

Where: **N** is the number to be converted

## 3.6 DISABLE

The **DISABLE** command causes communication with the connected Genisys to be temporarily suspended. Normal communication is resumed by entering the **ENABLE** command.

Enter: **DISABLE** at the DTOOL> prompt

The following message will be displayed:

**COMTMD - DIAGNOSTIC COMMUNICATION TIME OUT**

Also, display status area will indicate: DISABLED

## 3.7 ENABLE

The **ENABLE** command causes communication with the connected Genisys to be resumed.

Enter: **ENABLE** at the DTOOL> prompt

**NOTE**

*The* **ENABLE** *command is also required to start the DTOOL> program.*

## 3.8 EXIT

The **EXIT** command terminates the DTOOL program and returns the PC to the DOS prompt.

Enter: **EXIT** at the DTOOL> prompt

## 3.9 QUIT

The **QUIT** command terminates the DTOOL program and returns the PC to the DOS prompt.

Enter: **QUIT** at the DTOOL> prompt

## 3.10 RESET

The RESET command is used to execute a hardware reset at the connected Genisys unit.

Enter: **RESET** at the DTOOL> prompt

## 3.11 GET

This command is used to obtain various types of information from the connected Genisys unit, such as controls, indications, error messages usually for diagnostic tests.

There are three associated subcommands:

a. **GET BIT**

b. **GET IDENTIFICATION**

c. **GET SERIAL_SLAVE**

**SERIAL_SLAVE** has one additional subcommand: **GENISYS_STATISTICS.**

As in the Configure command, if the subcommand is omitted, there will be an automatic prompt for the subcommand: **"Configure What?"** and/or additional information. Enter the requested information.

### 3.11.1 GET BIT

This is invoked to retrieve the value and status of defined bits from the Genisys bit string. Data on the requested bit(s) is presented on the display.

Enter: **GET BIT <Decimal starting bit number> [<Decimal number of bits>] at the** DTOOL> prompt

**NOTE**

*Data on up to 16 consecutive bits can accessed with a single request. If the number of bits is omitted (optional), data for the starting bit number only will be displayed.*

If the **SYMBOL** command has been invoked (paragraph 3.17) the assigned bit names may be used in place of the bit numbers.

Display: (See Figure 5-3)

## 3.11.2 GET IDENTIFICATION

This command is invoked to show the identity and software revision status of the connected unit.

Enter: **GET IDENTIFICATION** at the DTOOL> prompt Display: (See Figure 5-4)

## 3.11.3 GET SERIAL_SLAVE

This command is used to retrieve performance statistics from the connected slave unit. There is one subcommand: **GENISYS_STATISTICS**.

### 3.11.3.1 GET SERIAL_SLAVE GENISYS STATISTICS

This command retrieves Genisys slave protocol statistical data from the connected field unit. This data is used in evaluating the performance of the communication link between office and field.

Enter: **GET SERIAL_SLAVE GENISYS_STATISTICS** at the DTOOL> prompt

Display: (See Figure 5-2)

# 3.12 LOAD_DEFAULT

This command is invoked to reset all user configurable parameters to factory defaults and application PROM defaults in the active product configuration on the connected unit.

**NOTE**

*This command affects only the currently active parameters, not those stored in EEPROM. The parameters stored in FEPROM may be restored by executing a hardware RESET.*

# 3.13 HANGUP

The HANGUP command is used to break an existing phone connection with a remote unit.

Enter: **HANGUP** at the DTOOL> prompt

# 3.14 MODEM

The MODEM command is invoked to enable the user to pass commands directly to a modem. It is entered to dial the phone number for a remotely located unit to establish a remote connection. Any valid modem command may be entered on the command screen. Communication with the modem is terminated by entering Control-D on the PC keyboard.

Enter: **MODEM** at the DTOOL> prompt

## 3.15 SET

The **SET** command is invoked to set various parameters in the connected unit, generally for testing. There are four supported subcommands: **ADDRESS, BAUD, MASTER, SLAVE**. The **MASTER** and **SLAVE** subcommands each have four additional subcommands: **CYCLE, MARK**, **NORMAL, SPACE.**

## 3.15.1 SET ADDRESS

This command is used to set the unit address that DTOOL uses for diagnostic communication. It is used to address a specific unit when multiple Genisys units share a communication circuit. Valid addresses (for diagnostics) are 1 to 255. The default is 1.

Enter: **SET ADDRESS** at the DTOOL> prompt

## 3.15.2 SET BAUD

This command is invoked to set the serial data baud rate that DTOOL uses for communication with the connected unit. Valid baud rates are: 300, 600, 1200, 2400, 4800, 9600.

Enter: **SET BAUD <rate>** at the DTOOL> prompt

## 3.15.3 SET MASTER

**SET MASTER** is used to set a diagnostic test mode for the master serial port. The test modes select one of four test signals. **CYCLE, MARK, NORMAL**, or **SPACE** to be generated on the master serial port.

### 3.15.3.1 SET MASTER CYCLE

This command places a 50%~ duty cycle signal on the transmit output of the master port. Note: Normally this signal is used to test or set carrier bias (at the modem).

Enter: **SET MASTER CYCLE** at the DTOOL> prompt

### 3.15.3.2 SET MASTER MARK

This is used to force a continuous MARK signal on the transmit output of the master port. It is normally used with the SPACE command to test or set the modem carrier level or frequency.

Enter: **SET MASTER MARK** at the DTOOL> prompt

### 3.15.3.3 SET MASTER NORMAL

This is used to restore normal communication on the master port after testing is complete.

Enter: **SET MASTER NORMAL** at the DTOOL> prompt

#### 3.15.3.4 SET MASTER SPACE

Used to force a continuous SPACE signal on the transmit output of the master port. It is normally used with the MARK command to test or set the modem carrier level or frequency.

Enter: **SET MASTER SPACE** at the DTOOL> prompt

### 3.15.4 SET SLAVE

This command is used to set a diagnostic test mode for the slave serial port. The test modes select one of four test signals, CYCLE, MARK, NORMAL, or SPACE to be generated on the slave serial ports. Valid port numbers are 1 and 2.

#### 3.15.4.1 SET SLAVE CYCLE

This places a 50% duty cycle signal on the transmit output of the slave port. This signal is normally used to test or set carrier bias (at the modem).

Enter: **SET SLAVE<port number>CYCLE** at the DTOOL> prompt

#### 3.15.4.2 SET SLAVE MARK

This is used to force a continuous MARK signal on the transmit output of the slave port. It is normally used in conjunction with the SPACE command to test or set the modem carrier level or frequency.

Enter: **SET SLAVE<port number>MARK** at the DTOOL> prompt

#### 3.15.4.3 SET SLAVE NORMAL

This is used to restore normal communication on the slave port after testing is complete.

Enter: **SET SLAVE<port number>NORMAL** at the DTOOL> prompt

#### 3.15.4.4 SET SLAVE SPACE

This is used to force a continuous SPACE signal on the transmit output of the slave port. It is normally used with the MARK command to test or set the modem carrier level or frequency.

Enter: SET SLAVE<port **number>SPACE** at the DTOOL> prompt

## 3.16 SHOW

The SHOW command is invoked to retrieve various types of locally stored information (DTOOL) for display on the console. There are three subcommands: **COUNTS, ERROR**, **VERSION.**

### 3.16.1 SHOW COUNTS

This command is invoked to display statistical data on transmitted and received diagnostic (DTOOL) messages. This data may be useful for troubleshooting communication problems between the DTOOL and the connected unit.

Enter: **SHOW COUNTS** at the DTOOL> prompt The following is a typical response:

**Diagnostic Tool Message Counts**

| | |
|---|---|
| **Transmitted Messages** | **xxxxx** |
| **Received Messages** | **xxxxx** |

Where: x is the total number of messages

### 3.16.2 SHOW ERROR

SHOW ERROR is invoked to display information on communication errors detected in the protocol between DTOOL and the connected unit. This information may be useful for the troubleshooting of communication problems with the connected unit.

Enter: **SHOW ERROR at the DTOOL> prompt**
Display: (See Figure 5-5)

### 3.16.3 SHOW VERSION

This command is used to display the software version of the DTOOL program.

Enter: **SHOW VERSION** at the DTOOL> prompt The following is a typical response:

Union Switch & Signal Inc. Diagnostic Tool Version 1 .X

## 3.17 SYMBOL

The **SYMBOL** command is invoked to load the application symbol table containing the names of the user defined bits so that their assigned bit names are displayed in the static and dynamic bit status displays.

Enter: **SYMBOL<symbol table name>at** the DTOOL> prompt

Symbol table is the name of the .GID file that is generated when the application program is compiled with the DBUG switch ON.

## 3.18 TRACE

The TRACE command is invoked to control dynamic tracing of Genisys bit changes. When enabled, all changes of the selected bits are shown on the DTOOL display as they occur. There are four versions of the **TRACE** command: **ALL, BIT, DISABLE, ENABLE.**

### 3.18.1 TRACE ALL

This command is invoked to trace all logical bit changes except those bits that are specified in the **TRACE DISABLE** command. The bit changes are presented on the DTOOL display as they occur.

Enter: **TRACE ALL** at the DTOOL> prompt

### 3.18.2 TRACE BIT

The TRACE BIT command is used for tracing changes of specified bits.

Enter: **TRACE BIT<first bit>[<last bit>]** at the DTOOL> prompt

Where: **<first bit>** is the number of the first bit of the range to be traced and the **<last bit>** is the number of bits to be traced following the first bit. The range is limited to 32 bits in ascending sequence. (Example: 220, 10)

If the **SYMBOL** command has been invoked (paragraph 3.17) the assigned bit names may be used in place of the bit numbers.

### 3.18.3 TRACE DISABLE

This is used to exclude selected bits from tracing during the **TRACE ALL** command.

Enter: **TRACE DISABLE <first bit> [<last bit>]** at the DTOOL> prompt

Where: **<first bit>** and **<last bit>** are numbers of the first bit and the number of bits to be excluded from tracing. The range is limited to 32 bits in ascending sequence. (See note for **SYMBOL** command.)

### 3.18.4 TRACE ENABLE

This command is used to enable tracing changes of bits that were previously excluded by the **TRACE DISABLE** command.

Enter: **TRACE ENABLE <first bit> [<last bit>** at the DTOOL> prompt

The bit range is the same as for TRACE DISABLE.

### 3.19.1 NOTRACE ALL

The **ALL** subcommand terminates tracing of all bit changes.

Enter: **NOTRACE ALL** at the DTOOL> prompt

### 3.19.2 NOTRACE BIT

This subcommand terminates tracing of bit changes selected by the TRACE BIT command.

Enter: **NOTRACE BIT<first bit>[<last bit>]** at the DTOOL> prompt

Where: The bit range is the same as for **TRACE BIT**

## 3.20 NEWLOG

The **NEWLOG** command is invoked to terminate the log file developed by the current diagnostic session and open a new log file.

Enter: **NEWLOG <filename>** at the DTOOL> prompt

**NOTE**

*The filename can be any valid DOS file name including the DOS path. If the file extension is omitted, a .LOG extension is assumed. If no file name is assigned, MMDDhhmm.LOG will be assigned, where the path is the current path, MM is the month, DD is the day, hh is the hour, and mm is the minute. If an assigned file name already exists, the current log file remains open.*

## 3.21 WRITE

The **WRITE** command is invoked when it is desired to write the current active configuration parameters of the connected unit to the EEPROM on the connected Genisys Controller.

Once saved, the stored configuration will be automatically written to the active configuration memory each time a hardware reset occurs on the connected unit.

Enter: **WRITE** at the DTOOL> prompt

**NOTE**

*The* **HELP** *command describes actions and options that are available in the CONFIGURE and DIAGNOSTIC procedures.* **HELP** *can be requested at any time. Type the command* **HELP** *followed by the subcommand for which help is desired. Example:*

```
HELP CONFIGURE SERIAL_SLAVE MASTER_PORT
```

As stated in the **COMMAND_SYNTAX** command, the DTOOL program accepts abbreviated command terms in upper or lower case letters. The command must be distinguishable from other commands and must not have out-of-sequence letters. The following is an example from the above help command:

```
HE CON SER MAS
```

# SECTION IV

# USING CONFIGURE COMMANDS

This section provides instructions for using the DTOOL CONFIGURE commands to set up a Genisys 2000 unit for field operation.

## 4.1 EPROM INSTALLATION

The Genisys 2000 Enhanced Controller contains four EPROMs in normal field unit applications. Two comprise the Executive EPROM set and the other two the Application EPROM set. Each set contains an Even and an Odd EPROM which must be installed in designated sockets on the PCB; the EPROMS are labeled for sockets U4, U5, U6, or U7 or they may be EXEC EVEN and EXEC ODD, APPL EVEN and APPL ODD. The EPROM sockets on the Controller board are marked with these labels. Exercise care in properly aligning the keying mark on the EPROM with the socket keying. Be sure the EPROM pins are aligned with the socket pins.

The EXEC prom set is chosen for the required communication protocol, as follows:

| | |
|---|---|
| ACTS Executive | N451800-0201 |
| Genisys/5XX Executive | N451800-0202 |
| Harmon MCS-1 Executive | N45 1800-0204 |
| WB&S S2 Executive | N451800-XXXX |

The APPL prom set is application specific and may be “Configured’ using the Genisys 2000 development system or as supplied by US&S.

## 4.2 CONTROLLER BOARD JUMPERS

The Enhanced Controller has seven jumpers labeled JP1 through JP7 which are used to configure the serial communication ports and the Watchdog function. Table 4-1 describes the functions of the jumpers. Refer to SM6700B for the jumper locations on the board. The asterisk indicated factory configuration.

**Table 4-1. GENISYS 2000 Controller Jumper Setting**

| Jumper | Function | Position | Effect |
|---|---|---|---|
| JP1 | Slave Port 2<br>Synchronous transmit clock | AB<br>BC* | External<br>Internal |
| JP2 | Slave Port 1<br>Synchronous transmit clock | AB<br>CD | External<br>Internal |
| JP3 | Slave Port 2<br>Asynchronous transmit clock | AB<br>BC*[a] | External<br>Internal |
| JP4 | Slave Port 1<br>Synchronous clock, synchronous receive | AB<br>BC*[a] | External<br>Internal |
| JP5 | Slave Port 2<br>Asynchronous transmit clock | AB<br>BC* | External<br>Internal |
| JP6 | Watchdog Function | AB<br>BC*[b] | External<br>Internal |
| JP7 | Watchdog Timeout | AB*[c]<br>BC | External<br>Internal |

* Indicates factory setting

a. .For asynchronous serial port operation asynchronous clock must be set to INTERNAL. EXTERNAL position is used for synchronous communication only.
b. Watchdog **MUST** be enabled for all normal operation. Disabled position is for factory test on lv.
c. Factory watchdog setting should not be changed. Lowering the watchdog timeout could affect controller reliability.

**Jumper Settings for Genisys/5XX, S2, and MCS-1 Slave Applications**

| | | | |
|---|---|---|---|
| JP1 | BC | JP5 | BC |
| JP2 | BC | JP6 | BC |
| JP3 | BC | JP7 | AB |
| JP4 | BC | | |

## 4.3 INITIAL SET-UP

a. With the PC turned off, connect the PC COM1or COM2 port to the diagnostic port on the Genisys 2000 Enhanced Controller PCB. This connection should be made with a Null Modem cable.

b. Verify that the PC baud rate is set for 2400 BPS. This is the default value and normally should not have to be changed.

If necessary it can be set using the front edge switches and LEDs on the Controller board. Refer to SM6700B for the On-board procedure.

c. Set PC to matching baud rate if a rate other than 2400 BPS has been selected.

d. Turn the PC on. The DOS prompt should be displayed: C: \>

**NOTE**

*If running DTOOL from a floppy disk, insert the program disk in the drive and change to the drive prompt.*

e. Enter: **CD\DTOOL** (CR) at the DOS prompt (changes to the DTOOL directory)

f. Enter: **DTOOL** (CR) at the DTOOL> prompt (starts the DTOOL program)

The following message will be displayed on the PC:

Union Switch and Signal, Inc. Genisys 2000 Diagnostic Tool, Version 3.00 for use with Genisys 2000 field code unit executives:

| | |
|---|---|
| N451 800-0201 | ATCS Protocol |
| N451 800-0202 | Genisys / 5XX Protocol |
| N451 800-0203 | MCS-1 Protocol |
| N451 800-0206 | S2 Protocol |

Starting Diagnostic Tool Executive using COM1:
To use COM2:, quit and type **DTOOL2** at the DOS prompt.

Type **HELP** at the DTOOL> prompt (CR) for information on commands.

g. Type: **ENABLE** (CR) at the DTOOL> prompt (enables communications with the Genisys unit)

Communications status will be displayed in the status area at the bottom of screen:

| | |
|---|---|
| DTOOL Mode | POLL |
| Remote Communication Status | NORMAL |

**NOTE**

*If normal communications cannot be established the status message will indicate:* **DISABLED** *In this case, recheck the Initial Set-up.*

Enter access code at the DTOOL> prompt, if applicable.

## 4.4 CONFIGURATION PROCEDURE

Configuration of the field Genisys unit can be set or changed by either of the following methods:

a. It may be set or changed using the configuration switches on the front edge of the Controller board using an On-board Configuration Procedure. The On-board configuration procedure is described in SM6700B.

b. It may be set or changed using the DTOOL program **CONFIGURE** commands. This is described in the following paragraphs.

## 4.4.1 Configure Using the DTOOL Program

Figure 4-1 shows the DTOOL commands and subcommands typically used for field configuration, **CONFIGURE, WRITE**, and **HELP**. The applicable subcommands are used to select and execute the configuration values. The **CONFIGURE** command is entered to select the basic application, subcommand **SERIAL_SLAVE**, which applies in most. Genisys field applications. (Note that other protocols, such as **ATCS_SLAVE DC_SLAVE, S2_SLAVE** are also supported by DTOOL, but are not covered in this guide.) The next subcommand level is then used to set up specific configuration values, such as baud rate, key delays, etc.

When all field configuration data has been selected, the **WRITE** command is invoked to load (save) the selected configuration data in EEPROM on the Enhanced Controller PCB. If **WRITE** is not invoked, the configuration values will be temporary; they will revert to the previously saved field configuration at the next reset.

## 4.4.2 Configure Program Rules and Notes

a. When a command is entered, a prompt automatically requests new field configuration data.

b. The limits for a parameter are displayed, if applicable. A new value entered is checked against these limits.

c. The parameter descriptions include a default value or setting (always the current value) which is identified by the letter D: in brackets at the end of the parameter line.

Example: **SLAVE PORT PARITY [NONE=O, EVEN=1, ODD=3 D:O]**

(D:0 indicates the default is 0, no parity)

d. If the new value is within the proper range, a prompt for the next parameter is displayed.

e. If an invalid value is entered, the same prompt is repeated.

f. If a value is entered that does not apply to the executive software, the following message is displayed:

**COMMAND COULD NOT BE EXECUTED**

g. If no value is selected at the prompt and the Enter key is pressed, the current value remains unchanged.

h. If a value is not entered and the carriage is not returned, the program times out after 60 seconds and leaves all parameters at their previous settings.

i. The program does not allow the user to “skip over” a parameter without a response; all prompts in a given set must be answered. To bypass a parameter without change, press the carriage return.

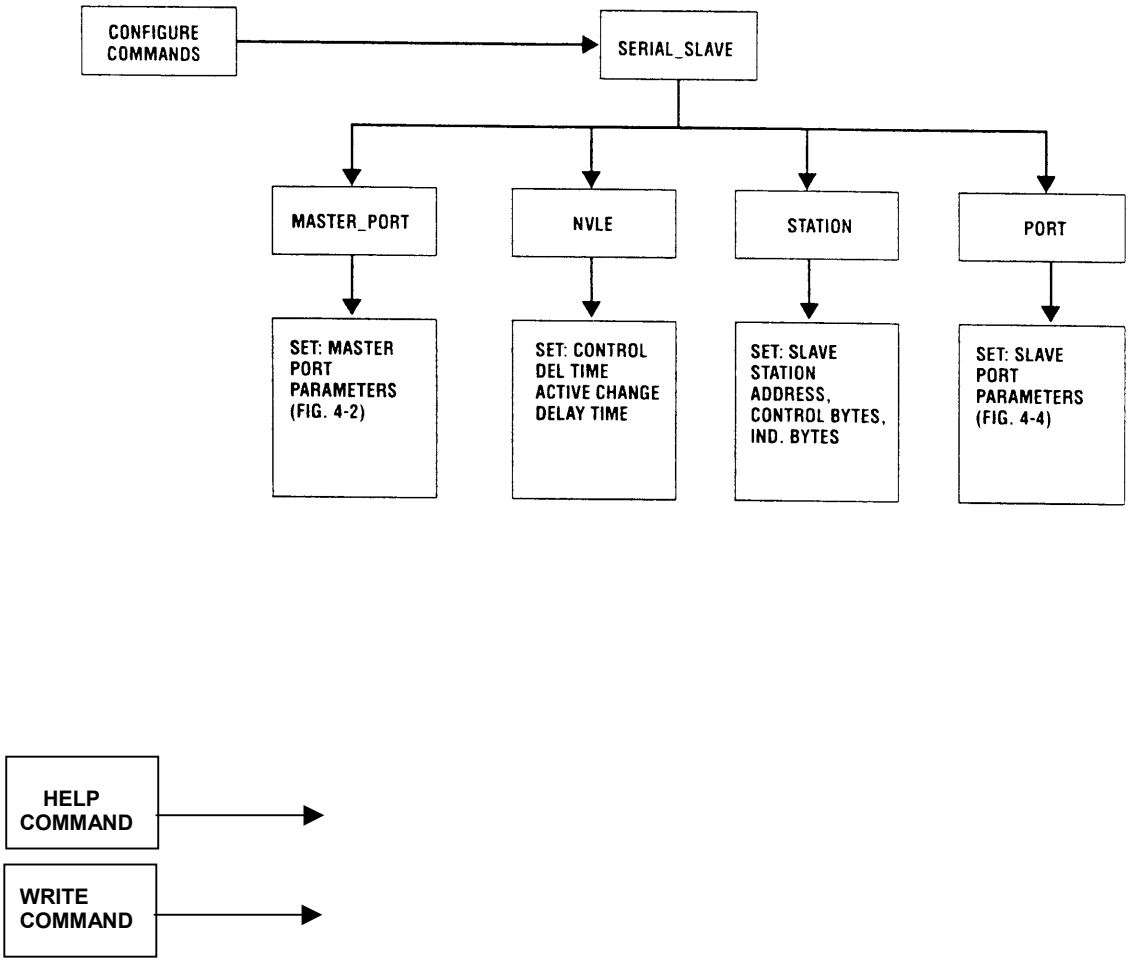


**Figure 4-1. DTOOL Commands Typically Used for Field Configuration**

j. After all prompts have been answered, the selected field configuration must be confirmed by answering Yes (**Y**) to a final configuration prompt. A No (**N**) response leaves the configuration unchanged.

## 4.4.3 Field Configuration Procedure

The following procedures assume that DTOOL communications have been established and the DTOOL program has been started per paragraph 4.3.

## 4.4.3.1 Serial_Slave Master Port

a. Enter: **CONFIGURE SERIAL_SLAVE MASTER_PORT** at the DTOOL> prompt (CR)

b. Verify or set the master port parameters as prompted. The prompts request inputs for master port baud rate, stop bits, parity, key-on/off delay, and other parameters. See Figure 4-2.

c. Answer **Y** (yes) to WRITE the new configuration to EEPROM or **N** (no) if the configuration is temporary

```
DTOOL>CONFIGURE SERIAL_SLAVE MASTER_PORT (CR)
Display:
        MASTER PORT [150- 19200 BPS  D:1200 BPS]:
        MASTER PORT STOP BITS [1 -2 BITS D:1 BIT(S)]:
        MASTER PORT PARITY [NONE=0, EVEN=1, ODD=3 D:0]:
        MASTER PORT KEY ON DELAY [0-64 BITS D:12 BIT(S)]:
        MASTER PORT KEY OFF DELAY [0-64 BITS D:12 BIT(S)]:
        MASTER PORT NO RESPONSE TIME OUT [30 - 8000 MS D:250 MS]:
        CONSTANT CARRIER ON MASTER PORT? [Y/N D:Y]:
        USE SECURE POLL ON MASTER PORT? [Y/N D:Y]:
        USE CHECKBACK CONTROLS ON MASTER PORT? [Y/N D:N]:
        ENABLE COMMON MODE ON MASTER PORT? [Y/N D:N]:
        WRITE NEW ACTIVE MASTER PORT CONFIGURATION? [Y/N D:N]:

NOTE: PARAMETERS ARE CYCLED IN ABOVE SEQUENCE. A RESPONSE IS REQUIRED
FOR EACH PARAMETER.
```

**Figure 4-2. Typical Configure Serial_Slave Master_Port Display**

## 4.4.3.2 Serial_Slave NVLE

a. Enter: **CONFIRGURE SERIAL_SLAVE NVLE** at the DTOOL> prompt (CR)

b. Verify or set the NVLE control delivery time and indication change delay as prompted. See figure 4-3.

c. Answer **Y** (yes) to WRITE the new configuration to EEPROM or **N** (no) if the configuration is temporary.

```
DTOOL>CONFIGURE SERIAL_SLAVE NVLE (CR)
Display:
        CONTROL DELIVERY TIME [30 -8000 MS D:70 MS]:
        INDICATION CHANGE DELAY TIME [0 - 2000 MS D:50 MS]:
        WRITE NEW ACTIVE NVLE CONFIGURATION? [Y/N  D:N]:
```

**Figure 4-3. Typical Configure Serial Slave NVLE Display**

### 4.4.3.3 Serial_Slave Port

a. Enter: **CONFIGURE SERIAL_SLAVE PORT** at the **DTOOL>** prompt (CR)

b. Verify or set the slave port parameters as prompted. The prompts request inputs for baud rate, stop bits, parity, key- on$_1$'off delay, data accept and word receive delays, time out, and carrier on/off or other parameters. See Figure 4-4.

c. Answer **Y** (yes) to WRITE the new configuration to EEPROM or **N** (no) if the configuration is temporary.

```
DTOOL>CONFIGURE SERIAL_SLAVE PORT (CR)
Display:
        SLAVE PORT [150- 19200 BPS D:1200 BPS]:
        SLAVE PORT STOP BITS [1 - 2 BITS D:1 BIT(S)]:
        SLAVE PORT PARITY [NONE=0, EVEN=1, ODD=3 D:0]:
        SLAVE PORT KEY ON DELAY [0-64 BITS D:12 BIT(S)]:
        SLAVE PORT KEY OFF DELAY [0-64 BITS D:12 BIT(S)]:
        SLAVE PORT DATA ACCEPT DELAY [0-16 BITS D:0 BIT(S)]:
        SLAVE PORT WORD RECEIVE DELAY [125-100 MS D:5 MS]:
        SLAVE PORT COMM FAILURE TIME OUT [0-600 SEC D:300 SEC]:
        CONSTANT CARRIER ON SLAVE PORT? [Y/N D:Y]:
        WRITE NEW ACTIVE SLAVE PORT CONFIGURATION? [Y/N D:N]
```

**Figure 4-4. Typical Serial_Slave Port Display**

### 4.4.3.4 Serial_Slave Station

a. Enter: **CONFIGURE SERIAL_SLAVE STATION** at the DTOOL> prompt (CR)

b. Verify or set the station address, control and indication bytes parameters for up to 6 stations as prompted. See Figure 4-5.

c. Answer **Y**(yes) to WRITE the new configuration to EEPROM or **N** (no) if the configuration is temporary.

```
DTOOL>CONFIGURE SERIAL_SLAVE STATION (CR)
Display:

        SERIAL SLAVE 1 ADDRESS [1 -255 D:11]:
        MCS SLAVE 1 CONTROL BYTES [1 -15 D:0]:
        MCS SLAVE 1 INDICATION BYTES [1 -15 D:0]:
        SERIAL SLAVE 2 ADDRESS [1 -255 D:12]:
        MCS SLAVE 2 CONTROL BYTES [1 -15 D:0]:
        MCS SLAVE 2 INDICATION BYTES [1 -15 D:0]:


        (Note: Up to 6 Serial_Slave Stations listed)
        WRITE NEW ACTIVE SERIAL SLAVE STATION CON FIG? [Y/N  D:N]
```

**Figure 4-5. Typical Serial_Slave Station Display**

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# SECTION V

# DTOOL DIAGNOSTIC COMMANDS

This section provides instructions for DTOOL diagnostics. These commands permit examination of various data stored in the Controller, verification of configuration data, and setting up various operational modes for test and adjustment. Figure 5-1 shows the DTOOL commands and subcommands typically used for diagnostics procedures. Note that other commands not shown in the figure are reserved for factory use only.

The following procedures assume that DTOOL communications have been established and the DTOOL program has been started per paragraph 4.3.

## 5.1 MISCELLANEOUS COMMUNICATIONS AND ENTRY/TERMINATION COMMANDS

These commands include the following: **DISABLE, ENABLE, EXIT, HANGUP, MODEM,** and **QUIT.**

### 5.1.1 DISABLE

The **DISABLE** command is used to temporarily break communication with the connected Genisys unit. Normal communication is resumed by entering the **ENABLE** command.

Enter: **DISABLE** at the DTOOL> prompt (CR)

Response: The PC will show the DTOOL> prompt, and the message

**REMOTE COMMUNICATIONS: DISABLED**

### 5.1.2 ENABLE

The **ENABLE** command is used to reestablish communication with the connected Genisys. It is also used to establish communication when starting DTOOL.

Enter: **ENABLE** at the DTOOL> prompt (CR)

Response: The PC will show the DTOOL> prompt, and the message

**REMOTE COMMUNICATIONS: NORMAL**

### 5.1.3 EXIT

The **EXIT** command terminates the DTOOL program and returns the PC to the DOS prompt.

Enter: **EXIT** at the DTOOL> prompt (CR)

Response: The PC should show the DOS prompt.

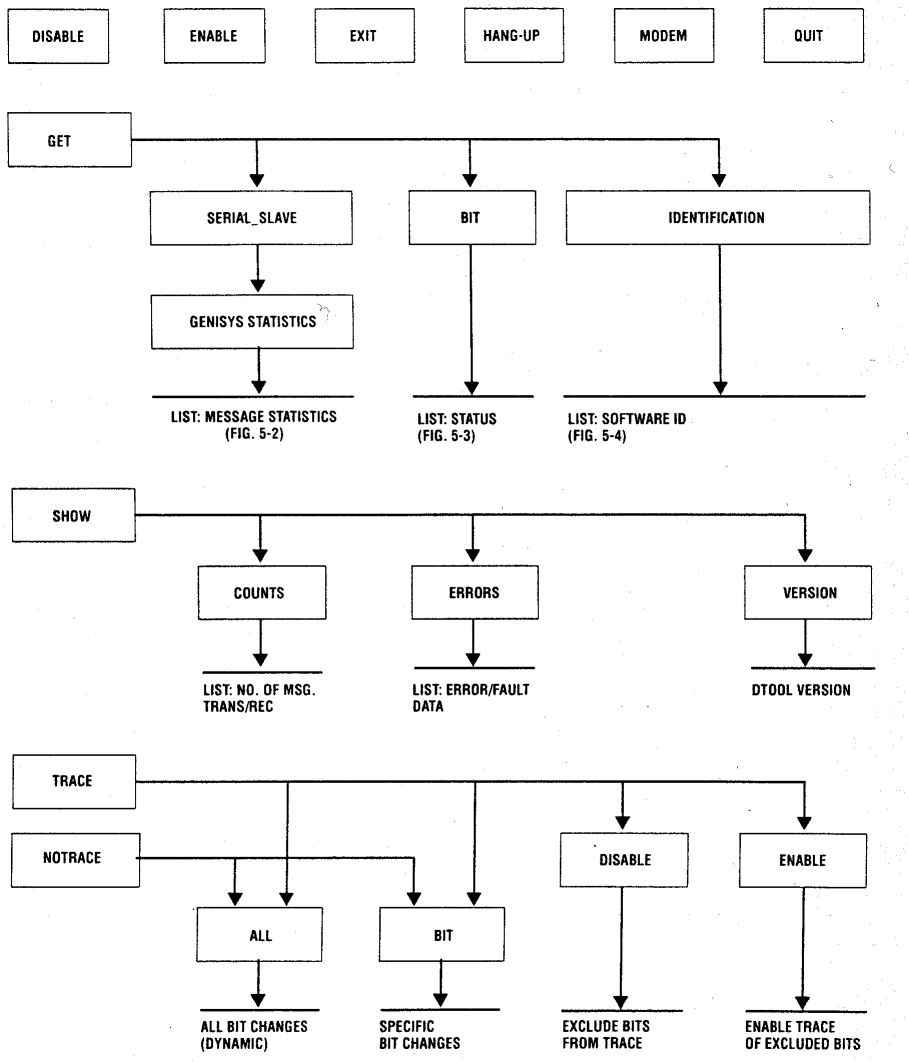


**Figure 5-1. DTOOL Diagnostic Commands (Sheet 1 of 2)**

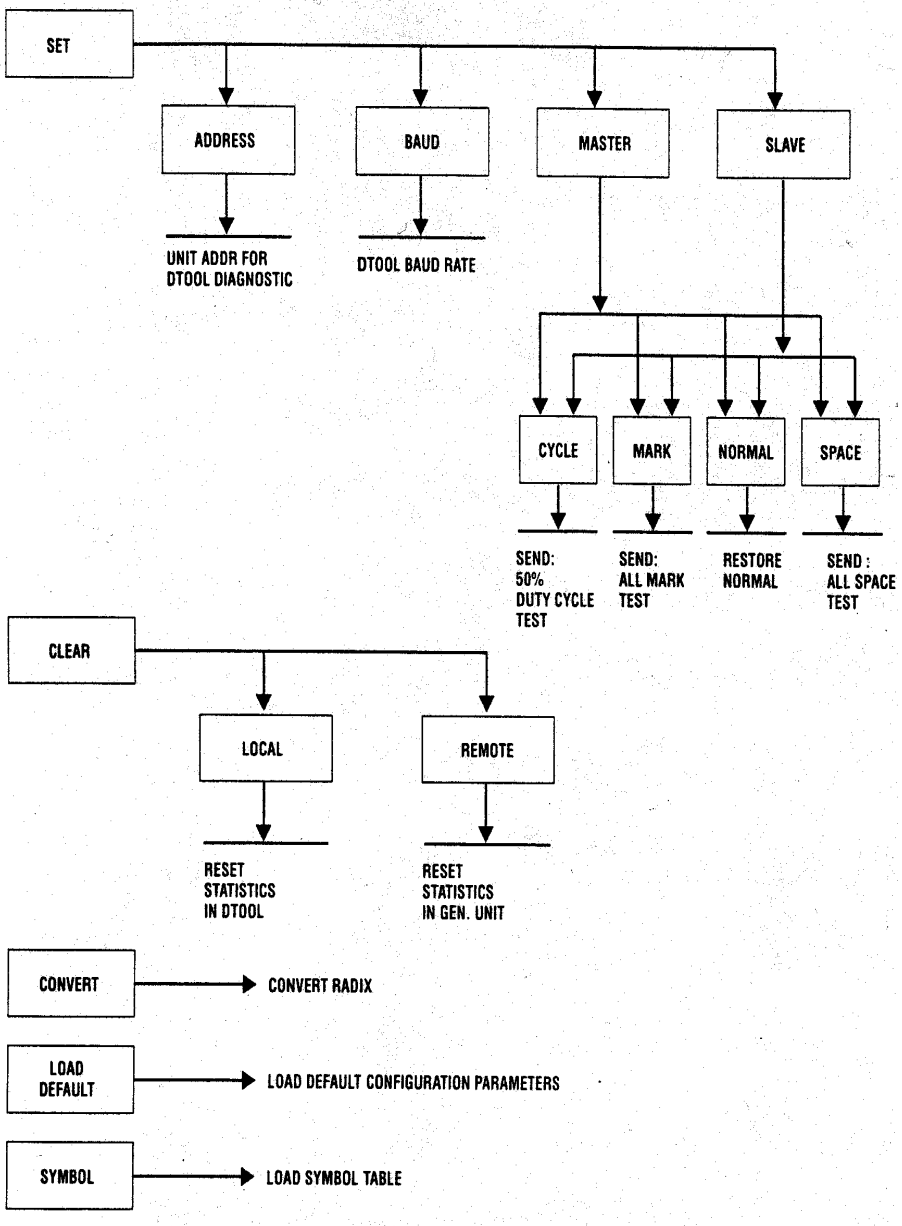


**Figure 5-1. DTOOL Diagnostic Commands (Sheet 2 of 2)**

### 5.1.4 HANGUP

The **HANGUP** command is used to terminate an existing phone connection with a remote unit.

Enter: **HANGUP** at the DTOOL> prompt (CR)

Response: The PC will show the DTOOL> prompt, and the message

**REMOTE COMMUNICATIONS: DISABLED**

### 5.1.5 MODEM

The **MODEM** command is used to dial up the modem at a remote unit.

Enter: **MODEM** at the DTOOL> prompt (CR)

Response: The PC screen will clear when the modem is ready to dial up the remote unit. Enter the required phone number.

### 5.1.6 QUIT

The **QUIT** command is similar to **EXIT.** It terminates the DTOOL program and returns the PC to the DOS prompt.

Enter: **QUIT** at the DTOOL> prompt (CR)

Response: The PC should show the DOS prompt

## 5.2 GET COMMANDS

The **GET** command retrieves and displays serial_slave message statistics, bit status, and software revision status from the connected unit.

## 5.2.1 GET SERIAL_SLAVE GENISYS STATISTICS

This command retrieves message and error count data for analysis.

Enter: **GET SERIAL_SLAVE GENISYS STATISTICS** at the DTOOL> prompt (CR)

Response: The display lists protocol statistical data such as the number of good messages, controls, acknowledges received, indication sent, good and failed messages, errors, and other information. Figure 5-2 shows a typical statistics display.

The message and error counts can be cleared with the CLEAR/REMOTE command.

**DTOOL>GET SERIAL_SLAVE MESSAGE STATISTICS (CR)**

**Display:**

| | | | |
|---|---|---|---|
| **GOOD MESSAGES RECD** | **XXXXX** | **GOOD MESSAGES FOR THIS UNIT** | **XXXXX** |
| **GOOD CONTROLS RECD** | **XXXXX** | **FAILED CONTROL CHECKBACKS** | **XXXXX** |
| **GOOD COMMON CTL'S RECD** | **XXXXX** | **GOOD RECALLS RECD** | **XXXXX** |
| **GOOD ACK MESSAGES RECD** | **XXXXX** | **GOOD EXECUTE MESSAGES RECD** | **XXXXX** |
| **GOOD INDICATIONS SENT** | **XXXXX** | | |
| **UNACK INDICATIONS** | **XXXXX** | **SUPPRESSED TRANSMISSIONS** | **XXXXX** |
| **HARDWARE RECEIVE ERRORS** | **XXXXX** | **MESSAGE CRC ERRORS** | **XXXXX** |
| **MESSAGE LENGTH ERRORS** | **XXXXX** | | **XXXXX** |
| **INVALID MESSAGES RECD** | **XXXXX** | **ILLEGAL MESSAGES HEADERS** | |

Where X is the total number of events for that parameter

**NOTE**
*Use CLEAR REMOTE command/subcommand to reset message and error count to zero.*

**Figure 5-2. Typical Get Serial_Slave Message Statistics Display**

## 5.2.2 GET BIT

This command retrieves the value and status of specified bits from the Genisys.

Enter: GET **BIT** <Decimal starting bit number> [<Decimal number of bits>] at the DTOOL> prompt (CR). (See para 3.11.1 for data entry.)

Response: The display will show the bit number; user defined name if any, bit value (hex) and status of the requested bits. Figure 5-3 shows a typical Bit display

**NOTE**

*Data on up to 16 consecutive bits can accessed with a single request. If the number of bits is omitted (optional), data for the starting bit number only will be displayed.*

**If the SYMBOL command** has been invoked (paragraph 3.17) the assigned bit names may be used in place of the bit numbers.

**DTOOL>GET BIT 1 16 (CR)**
**Display:**

| BIT | NAME | (HEX) VALUE | STATUS |
|---|---|---|---|
| 0001 | 9NWZ | 0080 | CLEAR VALID |
| 0002 | 9RWZ | 00C1 | SET VALID |
| | | | |
| 0016 | 47RWZ | 0080 | CLEAR VALID |

**Figure 5-3. Typical Get Bit Display**

## 5.2.3 GET IDENT

Gets the ID and time stamped data on software revision status.

Enter: GET IDENT (CR)

Response: Typically, the PC will show executive, application, and database revision status, checksums and other software statistics as shown in figure 5-4.

**DTOOL>GET IDENTIFICATION (CR)**
**Display:**

**US&S GENISYS/5XX FIELD CODE UNIT**

| | |
|---|---|
| **EXECUTIVE REVISION** | **-06 12/05/1995** |
| **DATABASE REVISION** | **-02** |
| **APPLICATION LOGIC REVISION** | **-01** |
| **GENISYS COMPILER VERSION** | **-1.03** |
| **EXECUTIVE CHECKSUM** | **-0061F570** |
| **APPLICATION CHECKSUM** | **-0134483F** |
| **TOTAL UNIT UPTIME** | **-000 22:59:38** |
| **LAST UNIT RESET** | **-Tue (Date/Time)** |
| **LAST STATISTICS RESET** | **-(Day/Date/Time)** |

**Figure 5-4. Typical Get Identification Display**

## 5.3 SHOW Commands

The **SHOW** commands retrieve various types of information locally stored in DTOOL for display.

### 5.3.1 Show Counts

This displays statistical data on transmitted and received diagnostic (DTOOL) messages.

Enter: **SHOW COUNTS** at the DTOOL> prompt

The following is a typical response:

**Diagnostic Tool Message Counts**

| | |
|---|---|
| **Transmitted Messages** | **xxxxx** |
| **Received Messages** | **xxxxx** |

Where: x is the total number of messages

### 5.3.2 SHOW ERROR

This command displays communication errors detected in the protocol between DTOOL and the connected unit.

Enter: **SHOW ERROR at** the DTOOL> prompt

Display: The display is a list of errors and faults detected by DTOOL. See Figure 5-5.

**DTOOL>SHOW ERROR (CR)**
**Display:**

| | |
|---|---|
| **Invalid Errors** | **X** |
| **Hardware Errors** | **X** |
| **Buffer Overflow** | **X** |
| **Transmitter Time Out** | **X** |
| **Receiver Time Out** | **X** |
| **Handler Error** | **X** |
| **Receive CRC Error** | **X** |
| **No Message Header** | **X** |
| **Protocol Errors** | **X** |
| **Request Errors** | **X** |
| **Remote Unit Fault** | **X** |
| **Print Data Lost** | **X** |
| **Invalid Error Header** | **X** |
| **Total Line Errors** | **X** |
| **Multiple Line Errors** | **X** |

**Where: X is the total number of events for that parameter**

**Figure 5-5. Typical Show Error Display**

### 5.3.3 SHOW VERSION

Displays the current version of DTOOL software.

Enter: **SHOW VERSION at the** DTOOL> prompt

Typical response: **Union Switch & Signal Inc. Diagnostic Tool Version 1.X**

## 5.4 TRACE Commands

The TRACE commands control dynamic tracing of Genisys bit changes. All changes of the selected bits are shown on the DTOOL display as they occur.

### 5.4.1 TRACE ALL

Traces all logical bit changes except those bits specified in the TRACE DISABLE command.

Enter: **TRACE ALL at the DTOOL>** prompt

Response: Bit changes are shown on the DTOOL display as they occur.

### 5.4.2 TRACE BIT

This command traces changes of specified bits.

Enter: **TRACE BIT <first bit>[<last bit>]** at the DTOOL> prompt

Where**: <first bit>** and **<last bit>** are numbers of the bit range to be traced. The range is limited to 32 bits in ascending sequence. (See para 3.18.2 for data entry.)

If the **SYMBOL** command has been invoked (paragraph 3.17) the assigned bit names may be used in place of the bit numbers.

### 5.4.3 TRACE DISABLE

Used to exclude selected bits from tracing during the TRACE ALL command.

Enter: **TRACE DISABLE <first bit> [<last bit>** at the DTOOL> prompt

Where: **<first bit>** and **<last bit>** are numbers of the first bit and the number of bits to be excluded from tracing. The range is limited to 32 bits in ascending sequence. (See note for SYMBOL command.)

### 5.4.4 TRACE ENABLE

Enables tracing changes of bits that were previously excluded by the TRACE DISABLE command.

Enter: **TRACE ENABLE <first bit>[<last bit>** at the DTOOL> prompt

The bit range is the same as for TRACE DISABLE.

## 5.5 NOTRACE

This is invoked to terminate tracing of bit changes.

### 5.5.1 NOTRACE ALL

**ALL** terminates tracing of all bit changes.

Enter: **NOTRACE ALL** at the DTOOL> prompt

### 5.5.2 NOTRACE BIT

Terminates tracing of bit changes selected by the TRACE BIT command.

Enter: **NOTRACE BIT <first bit>[<last bit>]** at the DTOOL> prompt

Where: The bit range is the same as for **TRACE BIT**

## 5.6 SET Commands

These commands are used to set various parameters in the connected unit, such as address and baud rate and to set master and slave port signals for tests or adjustments.

### 5.6.1 SET ADDRESS

Sets the unit address that DTOOL uses for diagnostic communication. It is used to address a specific unit when multiple Genisys units share a communication circuit.

Enter: **SET ADDRESS** at the DTOOL> prompt

### 5.6.2 SET BAUD

Sets the baud rate that DTOOL uses for communication with the connected unit.

Enter: **SET BAUD** <rate> at the DTOOL> prompt

### 5.6.3 SET MASTER

Sets a diagnostic test mode for the master serial port. The test signals are CYCLE, MARK, NORMAL, or SPACE which is generated on the master serial port.

#### 5.6.3.1 MASTER CYCLE

Places a 50% duty cycle signal on the transmit output of the master port. Note: This signal is normally used to test or set carrier bias (at the modem).

**Enter: SET MASTER** CYCLE at the DTOOL> prompt

#### 5.6.3.2 SET MASTER MARK

Forces a continuous MARK signal on the transmit output of the master port. It is normally used with the SPACE command to test or set the modem carrier level or frequency.

Enter: SET MASTER MARK at the DTOOL> prompt

#### 5.6.3.3 SET MASTER NORMAL

Restores normal communication on the master port after testing is complete.

Enter: **SET MASTER NORMAL at the** DTOOL> prompt

#### 5.6.3.4 SET MASTER SPACE

Forces a continuous SPACE signal on the transmit output of the master port. It is normally used with the MARK command to test or set the modem carrier level or frequency.

Enter: SET **MASTER SPACE** at the DTOOL> prompt

### 5.6.4 SET SLAVE

Sets a diagnostic mode for the slave serial port. The test signals are the same as for **SET MASTER (CYCLE, MARK, NORMAL,** and **SPACE)** but are generated on the slave serial port 1 or 2 which must be specified.

#### 5.6.4.1 SET SLAVE CYCLE

Places a 50% duty cycle signal on the transmit output of the slave port. This signal is normally used to test or set carrier bias (at the modem.

Enter: **SET SLAVE<port number>CYCLE** at the DTOOL> prompt

#### 5.6.4.2 SET SLAVE MARK

Is used to force a continuous MARK signal on the transmit output of the slave port. It is normally used in conjunction with the SPACE command to test or set the modem carrier level or frequency.

Enter**:** **SET SLAVE<port number>MARK** at the DTOOL> prompt

#### 5.6.4.3 SET SLAVE NORMAL

Restores normal communication on the slave port after testing is complete.

Enter: **SET SLAVE<port number>NORMAL** at the DTOOL> prompt

#### 5.6.4.4 SET SLAVE SPACE

Forces a continuous SPACE signal on the transmit output of the slave port. It is normally used with the MARK command to test or set the modem carrier level or frequency.

Enter: SET SLAVE<port number>SPACE at the DTOOL> prompt.

## 5.7 Miscellaneous Programming Commands.

### 5.7.1 Clear

The CLEAR commands reset various statistical accumulators in the DTOOL program as well as in the Genisys Enhanced Controller PCB.

#### 5.7.1.1 CLEAR LOCAL

Resets statistics accumulators in the DTOOL that accumulate data mainly on the performance of the communication link between the DTOOL and the Controller PCB.

Enter: **CLEAR LOCAL** at the DTOOL> prompt

#### 5.7.1.2 CLEAR REMOTE

Resets statistics accumulators in the connected Controller PCB that accumulate data mainly on the performance of the communication links of the connected unit.

### 5.7.2 CONVERT

This command is provided to convert numbers from one radix to another, for example from hexadecimal to binary form.

Enter**: CONVERT <current radix> <desired radix> <N>** at the DTOOL> prompt

Where: **N** is the number to be converted

### 5.7.3 LOAD DEFAULT

This command resets all user configurable parameters to factory defaults and application PROM defaults in the active product configuration on the connected unit.

**NOTE**

*This command affects only the currently active parameters, not those stored in EEPROM. The parameters stored in EEPROM may be restored by executing a hardware RESET.*

### 5.7.4 RESET

Forces a hardware reset on connected unit.

Enter: **RESET at** the DTOOL> prompt