MANUAL

560-5279 NIC Option Card for 56K

APPROVALS

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REVISION HISTORY

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56K-NIC Option Card
Ethernet Port Settings

Record 56K-NIC Option Card Ethernet parameters below, for quick reference.

NET Port Ethernet Address: _____

NET Port IP Address: _____

NET Port Subnet Mask: _____

NET Port Default Gateway: _____

TrueTime

Model 560-5279
NIC Option Card Manual

SECTION ONE

1.   GENERAL INFORMATION

   1.1.   OVERVIEW

   This manual provides the user of a 560-5279 card, referred to as 56K-NIC in this manual, all the information necessary to install, set up, and utilize the card. The 560-5279 card provides a network interface for the 560-5179-1 Fault Monitor/CPU card as well as providing the standard RS-232/RS422 serial interface. The network interface allows the user to remotely monitor/control the 560-5179-1 Fault Monitor/CPU (56K system) over the Internet.

   Internet access uses the Telnet protocol. Telnet is a session-based terminal/remote host protocol developed for the Internet. Telnet is available on every Windows NT, 95, or 98 system. Telnet is also widely available on UNIX systems.

   The 56K-NIC has an RJ-45 Ethernet connector, labeled NET and a DB-9 Serial port connector, labeled SERIAL. The 56K-NIC SERIAL port may be configured for either RS-232 or RS-422 (jumper setting).

   The 56K-NIC offers "pass-through" access to the 560-5179-1 Fault Monitor/CPU card using either the SERIAL or NET port. The 56K-NIC Serial and NET port ASCII strings (commands/requests) are the same as those defined in the 560-5179-1 Fault Monitor/CPU manual. The 56K-NIC card has additional commands that are specific to 56K-NIC control.

   In addition to the SERIAL and NET ports, the 56K-NIC card provides the 560-5179-1 Fault Monitor/CPU card's Primary (P), Secondary (S) and Tertiary (T) status inputs on BNC connectors. A bi-color LED is provided on the rear panel to indicate 56K-NIC activity. An audio alarm (beeper) that is controlled by the "host" 560-5179-1 Fault Monitor/CPU is included on the card. The 56K-NIC may include two Alarm Relays (560-5279R OPTION) that are controlled by the Fault Monitor/CPU. Note that when the Alarm Relay option is ordered, an additional single slot barrier strip panel is provided with the 56K-NIC.

      1.1.1.   PHYSICAL SPECIFICATIONS

   Height: 11 cm (4.4 in)
   Width: 2 cm (0.8 in)
   Depth: 13 cm (5 in)
   Weight: ≈ 1/4 kg (1/2 lb)

      1.1.2.   ENVIRONMENTAL SPECIFICATIONS

   Storage Temp: -40° to +85°C
   Operating Temp: 0° to +50°C
   Humidity: Up to 95% Relative, Non-Condensing
   Cooling Mode: Convection

      1.1.3.   POWER REQUIREMENTS

Voltage: ±5 VDC (provided by 560-5179-1 assembly)
Power: 2 W

1.1.4. CARD COMPATIBILITY

The 560-5279 card must be installed directly behind the 560-5179-1 Fault Monitor/CPU card. <u>The 560-5179-1 card MUST be configured for RS-232 operation (SW3-1 OFF)</u>.

1.1.5. ETHERNET INTERFACE

The Ethernet Interface connector (NET port) on the 56K-NIC card is a standard RJ-45 female socket. It conforms to standard Ethernet signal levels.

1.1.6. SERIAL PORT I/O SIGNALS

Use 560-5279 JP4 to select RS-232 or RS-422 operation:

JP4 1-2 selects RS-232
JP4 2-3 selects RS-422

Fixed Serial Protocol: ASCII, 9600 Baud, 8 Data, No parity, 1 Stop

PIN NAME	SIGNAL	PIN
OUT1	560-5179-1 Alarm (TTL)	1
RxD	RS-232 Input	2
TxD	RS-232 Output	3
OUT2	560-5179-1 Alarm (TTL)	4
GND	Signal Ground	5
RIN-	-RS-422 Input	6
RIN+	+RS-422 Input	7
TOUT-	-RS-422 Output	8
TOUT+	+RS-422 Output	9

1.1.7. ALARM OUTPUT SIGNALS

The OUT1 and OUT2 Alarm outputs are generated on the 560-5179-1 Fault Monitor/CPU card and are passed through to the 560-5279 56K-NIC card (refer to the 560-5179-1 manual). The alarm outputs are TTL level signals capable of 10 mA. The outputs are active-high.

1.1.7.1. OUT1: (Composite Fault Active since Last Clear)

The OUT1 TTL signal is available on Serial port connector PIN 1. This signal may also be configured to drive an Alarm Relay (OPTION). The Alarm Relay option requires an additional barrier strip rear panel (one card slot).

1.1.7.2. OUT2: (Fault Currently Active)

The OUT2 TTL signal is available on Serial port connector PIN 4. This signal may also be configured to drive an Alarm Relay (OPTION). The Alarm Relay option requires an additional barrier strip rear panel (one card slot).

1.1.7.3. MAJORALARM: (TBD)

The Majoralarm signal is not available at this time. The Alarm Relay, plus an additional rear panel barrier strip option, is required for this output. The TTL signal is output on a BNC and may also be configured to drive an Alarm Relay.

1.1.7.4. MINORALARM: (TBD)

The Minoralarm signal is not available at this time. The Alarm Relay, plus an additional rear panel barrier strip option, is required for this output. The TTL signal is output on a BNC and may also be configured to drive an alarm relay.

1.1.8. STATUS INPUT SIGNALS

The BNC connectors on the 56K-NIC card are status inputs that connect to the 560-5179-1 Fault Monitor/CPU card (refer to the 560-5179-1 manual). The status inputs are TTL level signals with 4.7 kΩ pull-up resistors.

P: Primary Fault Input
S: Secondary Fault Input
T: Tertiary Fault Input

1.1.9. AUDIO ALARM (BEEPER)

The 560-5279 card includes an audio alarm (beeper). The beeper is controlled by the Fault Monitor/CPU card (refer to the 560-5179-1 manual). The beeper may be hardware disabled on the 560-5279 card (disabled = JP2 OFF).

1.1.10. STATUS LED

A Red/Green LED is visible on the rear panel. This LED is a 56K-NIC-activity detector that will alternate between Red and Green when the 56K-NIC is operating normally.

1.1.11. ALARM RELAYS (OPTION)

The Alarm Relay option provides two Form C relays that may be used to signal an alarm. These relays are energized when no alarm is present and de-energized under the conditions of alarm or loss of power. Note that this option includes an additional one-slot barrier strip rear panel that should be mounted in the 56K chassis one slot to the left of the 560-5279 card (viewed from the rear of the chassis).

The OPTIONAL Alarm Relays have the following contact ratings:

Ratings (resistive load):	1 A 30 VDC/0.5 A 125 VAC
Max. Switching Power:	30 W DC/62.5 VA AC
Max. Switching Voltage:	220 VDC/250 VAC
Max. Switching Current:	1 A DC/AC

The barrier strip rear panel plate connects to the 560-5279 card via a 10-pin Molex connector. This keyed connector must be mated with the P2 connector on the 560-5279 card. The barrier strip panel marking has the following meaning:

C1	=	Common contact of relay controlled by OUT1 signal
NC1	=	Normally closed contact of relay controlled by OUT1 signal
NO1	=	Normally open contact of relay controlled by OUT1 signal
C2	=	Common contact of relay controlled by OUT2 signal
NC2	=	Normally closed contact of relay controlled by OUT2 signal
NO2	=	Normally open contact of relay controlled by OUT2 signal
J2	=	Reserved (BNC location)
J1	=	Reserved (BNC location)

Alarm States: The marking of the barrier strip indicates the alarm state:
C1 and NC1 connected = Alarm   C1 and NO1 connected = No Alarm
C2 and NC2 connected = Alarm   C2 and NO2 connected = No Alarm

SECTION TWO

2. OPERATION AND INSTALLATION

2.1. OVERVIEW

The 56K-NIC card is an option card for use with the 560-5179-1 Fault Monitor/CPU card. The 56K-NIC card provides a network interface to the Fault Monitor/CPU card in addition to a Serial interface that supports both RS-232 and RS-422.

The 56K-NIC card is powered by the "host" 560-5179-1 Fault Monitor/CPU card and is therefore not designed to be a "hot swappable" type card, although it can be plugged in "hot" without damage. The user must configure the 56K-NIC card jumpers and then install the card directly behind the 560-5179-1 Fault Monitor/CPU card.

The 56K-NIC communicates with the Fault Monitor/CPU with an RS-232 interface. The 560-5179-1 card MUST be set for RS-232 operation (560-5179-1 SW3-1 = ON).

The user must provide a terminal (RS-232 or RS-422) for 56K-NIC set-up parameters and an Ethernet network connection. Once the 56K-NIC card has been set-up, the card retains all configuration data in a combination of EEPROM and FLASH Memory.

2.1.1. 560-5279 JUMPERS

2.1.1.1. JP1 (must be OFF)

This two-pin jumper is the 560-5179-1 Fault Monitor/CPU remote reset enable. When JP1 is ON, the 56K-NIC card has the ability to reset the "host" 560-5179-1 card. This feature is not implemented in the standard program – consult TrueTime for support of this feature. The factory default is OFF (560-5179-1 remote reset disabled).

2.1.1.2. JP2

This two-pin jumper is the hardware enable for the audio alarm (beeper). When JP2 is ON, the beeper is enabled and under the control of the 560-5179-1 Fault Monitor/CPU card. The factory default is OFF (beeper disabled).

2.1.1.3. JP3 (used when Alarm Relay Option is installed)

This three-pin jumper switches the OUT2 and MINORALARM signals from the 560-5179-1 Fault Monitor/CPU for 56K-NIC Alarm Relay control. JP3 1-2 = OUT2 control. JP3 2-3 = MINORALARM control. The factory default is 1-2 (OUT2 relay control).

2.1.1.4. JP4

This three-pin jumper switches the Serial port's receive signal from RS-232 to RS-422. If the user desires RS-232 Serial port communication, set JP4 1-2. If RS-422 Serial port communication is desired set JP4 2-3. The factory default is 1-2 (RS-232).

2.1.1.5   JP5 (used when Alarm Relay Option is installed)

This three-pin jumper switches the OUT1 and MAJORALARM signals from the 560-5179-1 Fault Monitor/CPU for 56K-NIC Alarm Relay control. JP5 1-2 = OUT1 control. JP3 2-3 = MAJORALARM control. The factory default is 1-2 (OUT1 relay control).

2.1.2. BASIC QUICK START INSTRUCTIONS

The following setup procedure assumes that the 56K-NIC card has been configured for RS-232 operation. Connect an RS-232 terminal (or a computer serial port/terminal program) to the DB-9 Serial port. A null modem adapter is required between the 56K-NIC card and the RS-232 terminal. Set the RS-232 terminal for 9600 baud, 8 data bits, No parity, 1 stop bit. Use the RS-232 terminal to set the Ethernet port addresses.

*Caution: The NET port **must** have its address configuration parameters set **before** the Ethernet cable is connected.*

Once the addresses are configured, the 56K-NIC card will reset and use the new addresses. The Ethernet cable may now be connected. The NET port should now respond to PING at the configured address. If it does not, check the connection to the network and all network configuration parameters.

2.1.3. TELNET ACCESS

The 56K-NIC card connects to the 560-5179-1 Fault Monitor/CPU card, and provides both Serial and NET port interfaces. The main feature of the 56K-NIC card is the ability to perform 56K system monitor and control functions from a remote location, using the Internet. The protocol used for Internet access to the 56K-NIC card is Telnet. Telnet is a widely available ASCII character-based interface. Telnet operates just like Procomm or any other terminal emulation program where you enter 560-5179-1 Fault Monitor commands, and get responses. Telnet is a standard Internet communications program. It is bundled with Windows 95, Windows 98 and Windows NT. Telnet connects to the 56K-NIC card through the NET port. Telnet can only be used when the Serial port is inactive. If a user accesses the Serial port while a Telnet session is active, Telnet will receive the following message from the 56K-NIC card:

NOTICE: Utility Monitor Session has taken priority from this Telnet Session.

2.1.3.1. STARTING TELNET

To use Telnet, use Windows Explorer to find the file named Telnet.exe and then launch the program. This will cause Telnet to open a window on the desktop labeled "Telnet – (None)".

2.1.3.2. MAKING A TELNET CONNECTION

At the top of the Telnet window is a pulldown label named "Connect". Click on this label, then click on "Remote System". This will open a dialog box labeled "Connect".

2.1.3.3. CONNECT DIALOG BOX

The top window is labeled "Host Name". Enter the IP Address of the 56K-NIC card. The middle window is labeled "Port". The default value in the window is "Telnet". This value is fine; no change is needed. The bottom window is labeled "Term Type". The window has the default set to "VT100". No change is needed. Click on the "Connect" button at the bottom of the dialog box, which initiates a connection to the 56K-NIC card. NOTE: If an hourglass shows up instead of the following "login" prompt, the connection attempt has failed. When a 56K-NIC connection is made, the following greeting is sent:

> Welcome to TrueTime Network Interface
> User name:

The User name may be either "operator" or "guest".
The 56K-NIC will prompt for a password:

> password: ********

The factory default password for the "operator" login is "mercury". The factory default password for the "guest" login is "truetime" (all lower case).

After the login and password are approved, Telnet will display the following (example):

> Network Interface 182-9002v001 (c) 1998, 1999 TrueTime Inc.
> All Rights Reserved
> Login successful
> >

2.1.3.4. ENDING TELNET

A Telnet session may be terminated by closing Telnet using the dialog box Disconnect or by typing "logout". The following message is sent after the "logout" command:

> Goodbye.

The "connection to the host lost" dialog box will also appear.

The 56K-NIC timeout feature will automatically terminate a Telnet session. When no NET port activity is detected for 15 minutes, the 56K-NIC disconnects from Telnet. The following message is sent from the 56K-NIC after a 15-minute timeout:

NOTICE: Telnet Session aborted because of lack of activity.
Goodbye.

2.1.4. SERIAL ACCESS

Serial access uses the DB-9 connector. The 56K-NIC card's DB-9 is referred to as the Serial port and is also referred to as the Utility Port and Utility Monitor Port in 56K-NIC text strings. The 56K-NIC card provides transparent access to the serial functions of the "host" 560-5179-1 Fault Monitor/CPU card. All 560-5179-1 serial commands are supported as well as special commands that are used for 56K-NIC control. A computer using any terminal emulation program such as Procomm or HyperTerminal may access the serial port. Note that a null modem connection is required.

2.1.4.1. HYPERTERMINAL

To use HyperTerminal, go through the dialog box sequence described in the following sections.

Starting HyperTerminal
Start => Programs => Accessories => HyperTerminal => HyperTerminal

This will cause HyperTerminal to open a dialog box labeled "Connection Description"

2.1.4.2. CONNECTION DESCRIPTION DIALOG BOX

The cursor will be in a window labeled "Name". HyperTerminal will store this name for future uses of this particular connection. Enter the name you would like to use for this connection. Any character string can be entered.

There is another window in the dialog box. This window is labeled "Icon". You can leave this window alone. The next time you launch HyperTerminal from the START box you will have the option of launching the session you have just created. The session will be visible in the pulldown that HyperTerminal displays.

2.1.4.3. "CONNECT TO" DIALOG BOX

HyperTerminal now opens a dialog box labeled "Connect To". If you need to change from Com1, do so. Otherwise, click on "OK". This will take you to a dialog box labeled "Port Settings".

2.1.4.4 "PORT SETTINGS" DIALOG BOX

There are several windows in this dialog box. Most of them must be altered. Work your way through them, from top to bottom. The required port settings are as follows:

Bits per second	9600
Data bits	8
Parity	None
Stop Bits	1
Flow control	none

Click "OK" and a connection will be made through the Serial port to the 56K-NIC card. A HyperTerminal window will open.

2.1.5. SERIAL PORT PRIORITY

The Serial port has priority over remote Telnet access. If the Serial port is used when a Telnet session is in progress, the Telnet session is suspended. Serial port use must end before full Telnet access is possible.

2.1.6. SESSION TIMERS

Both the Serial and NET ports have independent "session timers" that operate as watchdog timers. A Serial or Telnet session timer starts whenever data is passed through the interface. If no data is passed through the interface for 15 consecutive minutes, the Serial or NET port watchdog timer program will terminate the session. Note that the timeout terminated Telnet session results in disconnection to the remote host. A new Telnet connection can be made immediately. The Serial "logout" command will immediately release the Serial port so Telnet access can be achieved on the NET port.

2.1.7. SERIAL OR TELNET 56K-NIC CARD COMMANDS

The 56K-NIC card is ready for commands after the 56K-NIC boots its operating program. All 56K-NIC specific commands start with F100 followed by parameters. The parameters specify which 56K-NIC command is to be executed. The parameters may also provide data to the command. Note that the following commands may be entered in either upper or lower case.

COMMAND	FUNCTION	PARAMETERS
F100 DHCP	DHCP Control	ENABLE/DISABLE
F100 EA	NET Port Ethernet Address	00-A0-69-##-##-##
F100 IC	NIC Configuration Request	None
F100 IP	NET Port IP Address	###.###.###.###
F100 G	NET Port Gateway	###.###.###.###
F100 P	Password	Xxxxxxxxxx
F100 R	Reset to Default	None
F100 SM	NET Port Subnet Mask	###.###.###.###
F100 ST	Network Self test results Request	None
F100 VER	Version Request	None

2.1.7.1. FUNCTION F100 DHCP

DHCP (Dynamic Host Configuration Protocol) provides the 56K-NIC the ability to auto-configuring its network address. DHCP is a TCP/IP client/server protocol that allows IP addresses to be administered and assigned from a common pool located at the server. In order for DHCP to work, the 56K-NIC card must be installed on an Ethernet LAN that includes a DHCP server. Use F100 DHCP to enable or disable the DHCP feature. If any change is made, the 56K-NIC card will reboot after this command is finished. DHCP status (enabled / disabled) can be queried without rebooting the unit.

DHCP Control

To query DHCP, send: F100<space>DHCP
To enable DHCP, send: F100<space>DHCP<space>ENABLE<cr>
To disable DHCP, send: F100<space>DHCP<space>DISABLE<cr>

Where:

F   =   ASCII character F
100   =   56K-NIC card function number
<space>   =   ASCII space character
DHCP   =   specify DHCP command
<space>   =   ASCII space character
ENABLE=   command DHCP to be enabled
DISABLE   =   command DHCP to be disabled
<cr>   =   ASCII Carriage Return

2.1.7.2. FUNCTION F100 EA / IP / SM / G / IC = NET PORT CONFIGURATION ENTRY/REQUEST

The 56K-NIC card Network Configuration Parameters may only be altered when DHCP is disabled. Whenever a NET port parameter is changed, the unit will reboot after the command is finished. Use Serial or Telnet Function F100 IC to obtain information about the 56K-NIC card's address configuration.

F100 EA = Ethernet Address

The Ethernet address is a six-byte, hexadecimal value specific to each

56K-NIC card. The first three bytes are registered to TrueTime, Inc.; the last three bytes are the hex value of the unit's unique number. The Ethernet address of the 56K-NIC card is a fixed address established at the factory. To request the Ethernet address of the 56K-NIC card, send the string:

> F100 EA<CR>

The unit responds with:

> F100 EA:00-A0-69-xx-xx-xx<CR><LF>

Where "xx-xx-xx" are the six hex digits of the unit's unique address. Attempts to set this field will be rejected with a syntax error message.

F100 IP = IP Address

The IP Address can only be set if DHCP is disabled. The IP address can be queried at any time. To obtain the IP address of the 56K-NIC card, send the string:

> F100 IP<CR>

The unit responds with:

> F100 IP:nnn.nnn.nnn.nnn<CR><LF>

Where "nnn.nnn.nnn.nnn" is the dotted decimal address notation.

To set the IP address and restart the 56K-NIC card, send a string of the form:

> F100 IP:nnn.nnn.nnn.nnn<CR>

Example: F100 IP:206.54.0.21<CR>

Note: Changing this parameter will cause a software reset of the 56K-NIC card.

F100 SM = Subnet Mask

The subnet mask can only be set if DHCP is disabled. The subnet mask can be queried at any time. To return the subnet mask of the 56K-NIC card, send the string:

> F100 SM<CR>

The unit responds with:

F100 SM:nnn.nnn.nnn.nnn<CR><LF>

To set the subnet mask and restart the 56K-NIC card, send the string:

F100 SM:nnn.nnn.nnn.nnn<CR>

Example: F100 SM:255.255.255.240<CR>

Note: Changing this parameter will cause a software reset of the 56K-NIC card.

F100 G = Gateway

The Default Gateway Address can only be manually set if DHCP is disabled. The Default Gateway can be queried at any time. To obtain the Default Gateway of the 56K-NIC card, send the string:

F100 G<CR>

The unit responds with:

F100 G:nnn.nnn.nnn.nnn<CR><LF>

To set the Default Gateway and restart the 56K-NIC card, send the string:

F100 G:nnn.nnn.nnn.nnn<CR>

Example: F100 G:206.54.0.17<CR>

Note: Changing this parameter will cause a software reset of the 56K-NIC card.

F100 IC = Network Configuration Request

To review the entire network configuration of the 56K-NIC card, send the string:

F100<space>IC<CR>

The unit responds with (example):

F100 IP:123.456.789.123 SM:123.456.789.123
G: 123.456.789.123 <CR><LF>

This response indicates the specific IP address, Subnet Mask, and Default Gateway of the 56K-NIC card. Note that leading zeros within fields of the dotted decimal addresses are omitted from the IP address, Subnet Mask, and Default Gateway.

To set all settable network parameters and reset the 56K-NIC card, send the string (example):

> F100 IP:123.456.789.123 SM:123.456.789.123
> G: 123.456.789.123 <CR>

This example provides the 56K-NIC card with an IP address, Subnet Mask, and Default Gateway. Note that leading zeros may be omitted when entering IP address, Subnet Mask, and Default Gateway. Any field may be omitted and order is not significant. Blanks are allowed on either side of a colon. Any legal command set containing one of the three network parameters will cause a reboot of the 56K-NIC card.

2.1.7.3. FUNCTION F100 P = CHANGE USER PASSWORD

The User Password is only used when initiating a Telnet Session.

The password may be changed from either the Telnet or the Serial port. <u>The user may change the password from the Telnet interface only after logging in with the old password</u>. It is not necessary to know the old password in order to enter a new password when using the local Serial interface. If a user forgets the password, all they have to do is use the Serial port to define a new one. Maximum password size is ten characters.

To change the User Password, send the string:

> F100<space>P<cr>

Where:

F   =   ASCII character F
100   =   56K-NIC card function number
<space>   =   ASCII space character
P   =   specify Password command
<cr>   =   ASCII Carriage Return

Setting guest login Password example:
>f100 p
Password change for guest
Enter   new user password: *****
Confirm new user password: *****
Password for user - guest successfully changed
>

The new password will be used for the next Telnet login. The new password and the confirming password must match or the 56K-NIC will respond with the following:

ERROR: Passwords do NOT match. New password rejected.

The old password will be used for the next Telnet login.

2.1.7.4. FUNCTION F100 VER = SOFTWARE VERSION REQUEST

This command queries the 56K-NIC software version number. The version number is set at compile time, and cannot be changed -- it may only be queried.

To query the software version number send:

    F100<space>VER<cr>

Example: F100 VER 182-9002v001

Where:

F   =   ASCII character F
100   =   56K-NIC card function number
<space>   =   ASCII space character
VER   =   specify Version Request command
<cr>   =   ASCII Carriage Return

2.1.7.5   FUNCTION F100 BASET = 10/100BASET CONTROL

With the BASET command, the unit can be set to 10BaseT only, or allow it to negotiate between 10BaseT and 100BaseT. The current BASET setting can be queried with this command. If the BASET command is used to set the BASET value, the 56K-NIC card will reboot.

To query the current BaseT speed, send:

    F100<space>BASET<cr>

To set 100BaseT maximum connection speed to 100BaseT, send:

    F100<space>BASET<space>100<cr>

To set 10BaseT maximum connection speed to 10BaseT, send:

    F100<space>BASET<space>10<cr>

Where:

F	=	ASCII character F
100	=	56K-NIC card function number
\<space\>	=	ASCII space character
BASET	=	specify BaseT command
\<space\>	=	ASCII space character
100	=	set maximum BaseT speed to 100
10	=	set maximum BaseT speed to 10
\<cr\>	=	ASCII Carriage Return

2.1.7.6. FUNCTION F100 ST = SELF TEST STATUS

The status of the power-up tests can be queried with the ST command. The return result contains the PASS/FAIL status of the flash memory checksum test, ram test, serial port test and version check. To query the self-test status, send:

F100\<space\>ST\<cr\>

Where:

F	=	ASCII character F
100	=	56K-NIC card function number
\<space\>	=	ASCII space character
ST	=	specify ST command
\<cr\>	=	ASCII Carriage Return

The returned result is in the following format:

F100\<sp\>ST\<sp\>flash/CRC\<sp\>:\<sp\>\<status\>,\<sp\>Ram\<sp\>:
\<sp\>\<status\>,\<sp\>Serial\<sp\>:\<sp\>\<status\>,\<sp\>Ver\<sp\>:\<sp\>
\<status\>\<cr\>\<lf\>

Where:

F	=	ASCII character F
100	=	56K-NIC card function number
\<space\>	=	ASCII space character
ST	=	ST command
FLASH/CRC	=	flash checksum result
Ram	=	ram test result
Serial	=	serial port test result
Ver	=	This test compares the version of the code against the version recorded in the non-volatile memory.

<status>	=	is either ASCII PASS or FAIL
,	=	ASCII comma
:	=	ASCII colon
<cr>	=	ASCII Carriage Return
<lf>	=	ASCII Line Feed

Example: F100 ST flash/CRC : PASS, Ram : PASS, Serial : PASS, Ver : PASS

2.1.7.7   LOGIN/LOGOUT COMMAND

There are two available Telnet logins, either "operator" or "guest". Note that no "Login" is necessary to access the Serial interface.

As shipped, the Operator login on Telnet has a default password of "mercury" (lower case). In order to maintain security, the Operator password should be changed at time of installation. Operator may perform all Serial functions with the exception of changing the Guest password.

As shipped, the Guest login on Telnet has a default password of "truetime" (lower case). Guest may perform all of the defined Serial Functions, including changing the Guest password. In order to maintain security, the Guest password should be changed at time of installation. Guest may perform all Serial functions with the exception of changing the Operator password.

2.1.8.   560-5179-1 FAULT MONITOR/CPU ERROR MESSAGES

ERROR 01: Value Out of Range
User has entered a valid 560-5179-1 command, with an invalid parameter value.

ERROR 02: Syntax
User has entered a valid 560-5179-1 command with a minor syntax error.

ERROR 05: No Such Function
User has entered an invalid 560-5179-1 command.

2.1.9.   56K-NIC ERROR MESSAGES

ERROR: Illegal Command
User has entered an invalid 56K-NIC command.

ERROR: Undefined Command
User has entered an invalid 56K-NIC command.

ERROR: Command is NOT Supported
User has attempted to use a command that is not supported.

ERROR: Access Denied
An attempt has been made to use a 56K-NIC command that is not user-accessible.

ERROR: Login Refused
Attempt to login from Telnet with an invalid user name. The user name must be either "operator" or "guest".

2.1.10. 56K-NIC INFORMATIONAL MESSAGES
These messages inform the user of 56K-NIC events.

DHCP is Enabled

DHCP is Disabled

Goodbye
56K-NIC card has just terminated a Telnet session.

Resetting the Unit
A command has just been executed that requires a soft restart of the 56K-NIC card. The restart happens immediately after this message is sent

NOTICE: A new Telnet Session has been started on the Internet Port.
Informs Serial port user that someone has logged onto Telnet on the NET port.

NOTICE: Cannot respond to command because Utility Port session has priority.
The NET port has tried to issue a command but was prevented from doing so because the Serial port is active. The user on the NET port cannot execute a command until activity on the Serial port ceases.

NOTICE: Resource usage conflict. Try again later.
Simultaneous attempts to change the user password are being attempted from the Serial and the NET port.

NOTICE: There is already a Telnet Session on the Internet Port.
Message to the Serial port user when the NET port was already active.

NOTICE: Telnet now has full access to Product.
Sent to Serial port after the Serial port timeout has expired or the local user has issued the "logout" command. Informs the Serial port user that the Serial port session has terminated, and Telnet can now be fully used.

NOTICE: Telnet Port Inactivity Timeout
Sent to the NET port to inform that the Telnet Session watchdog has expired. The Telnet session will be terminated immediately after this message is displayed.

NOTICE: Telnet Session terminated by timeout.

Sent to Serial port, if it is active, to inform the Serial port user that the Telnet Session has timed out.

NOTICE: Utility Monitor Session has relinquished control to this Telnet Session.
Sent to the Telnet user to inform him that he is no longer inhibited from performing commands because of a Serial port session. The Serial port session has just ended.

NOTICE: Utility Monitor Session has taken priority from this Telnet Session.
Sent to the NET port user to inform him that he can no longer enter commands because of activity on the Serial port. The Serial port has priority over the NET port.

NOTICE: Utility Port Inactivity Timeout
Sent to the Serial port after its timer has expired from lack of activity.

NOTICE: You have taken control away from the Telnet Session.
Sent to the Serial port to inform the user that a Telnet Session was in progress when the Serial port user regained access.

Sorry! Maximum number of concurrent telnet sessions exceeded.
Another Telnet user is currently logged in. Only one Telnet session at a time is allowed.

OK
A command has been accepted and processed as specified.

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Login Successful
A NET port user has just successfully logged in by sending in the correct login name and password.

Welcome to TrueTime Network Interface.
User name:
Prompt for user name: "operator" or "guest".

Password:
Prompt for login password. The user must enter the password appropriate for the user login. Factory defaults: "operator" = "mercury", "guest" = "truetime".

Enter New User Password:
User has entered Change Password command (F100 p). This is the first prompt for the new password. User must enter a new password.

Confirm New User Password:
This messages prompts for the new password to be entered again for confirmation.

ERROR: Passwords do NOT match. New password rejected.
The re-entered new password does NOT match the original new password.