EST 9600

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1. OVERVIEW

DESCRIPTION

The EST-9600 is a serial server that allows multi-drop devices to use Ethernet LANs either unencrypted or with 128-bit AES encryption. The EST-9600 connects any HDLC based synchronous protocol serial device through a LAN and between LANs via routers. The EST-9600 is designed specifically to support synchronous polling protocols that are HDLC based. These protocols include SDLC, BDLC, X.25, Frame Relay, synchronous PPP protocol, etc. These protocols are often error corrected, and the EST-9600 allows these protocols to work through routed local and wide area networks. The EST-9600 uses UDP protocol to deliver the HDLC traffic, allowing the necessary data connection over a local LAN and across routed networks. The EST-9600 functions independently of the device protocol, allowing HDLC protocols to be carried with no configuration changes.

An EST-9600 host authenticates with remote drop EST-9600s to allow serial synchronous HDLC data connections. Remote drop EST-9600s can authenticate with both a primary host and a backup host. This feature makes it easy to have redundant host sites that will always receive the same poll responses as the master host site. If the objective is to have a backup host site or have a second site that always monitors the RTU responses, the EST-9600 makes it simple and easy to accomplish.

The EST-9600 supports RS-232 serial interface speeds up to 230 Kbps, RS-530 speeds up to 2048 Kbps.

To deliver HDLC traffic via Ethernet in as close to the nature of HDLC as possible, the EST-9600 uses UDP/IP "best-effort", speedy delivery, rather than the delay and extra overhead that TCP/IP error-correction and flow control could cause. Up to 20 drop EST-9600s may be used with each host EST-9600.

The EST-9600 can be managed through its serial port, via telnet, or with a web browser. Remote configuration is supported using TCP/IP (telnet) or any web browser. Security features of the EST-9600 include fine-grained configuration and management controls as well as the ability to turn off remote management functions.

Instead of replacing your existing host computers and terminals to migrate to Ethernet, add the EST-9600 for a fraction of the cost. OEM manufacturers can design the EST-9600 into their products or use it as an add-on method to gain Ethernet connectivity.

FEATURES

- Industrial rated -40 to +70C
- Ethernet port: 10/100BaseT
- Encapsulates HDLC protocols over Ethernet networks
- Point-to-point or point-to-multi-point for serial synchronous polling applications
- AES 128-bit encrypted or non-encrypted payload
- UDP transport for non-interference with HDLC error correction functions
- Synchronous serial RS232 port
- Option for RS530/V.35 port
- Internal or external sync clock
- Speeds to 2.048 Mbps
- Supports up to 20 Drops
- Backup host option
- Configurable watchdog timer
- Web browser, telnet or serial port configuration
- Statistics, logging and diagnostic tools
- Can authenticate with RADIUS server
- Stand-alone or Rack Mounting
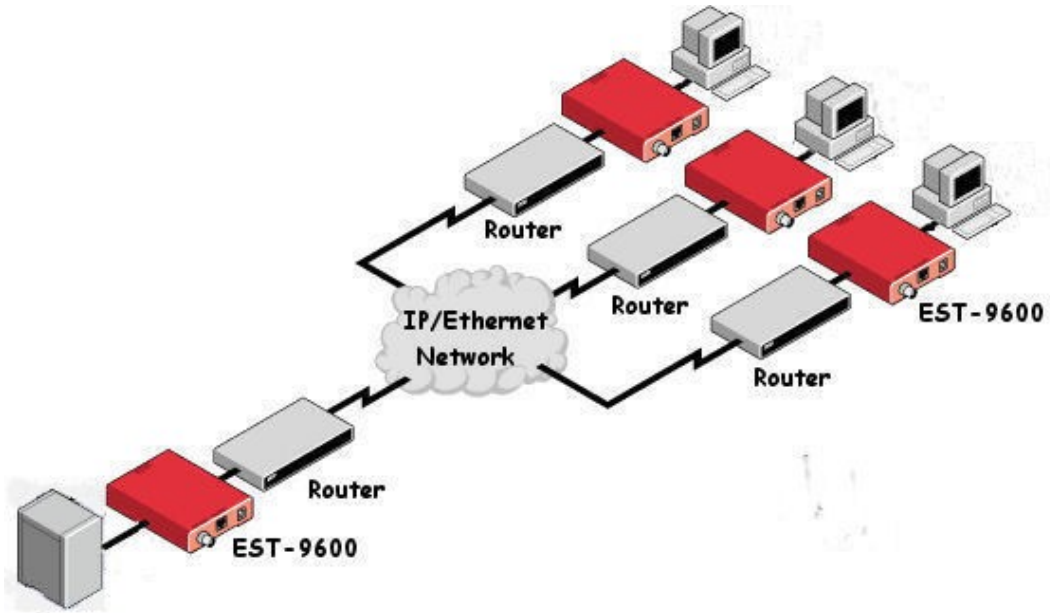- 120, 220 VAC, 12, 24, 48 and 125 VDC options

EST 9600 Front View

EST 9600 Rear View (48 VDC Version)

APPLICATION

2.   SPECIFICATIONS

PORTS

One synchronous serial port:
RS-232 (per EIA/TIA 561 RJ 45 connector)
    Speeds to 230 Kbps
RS-530 or V.35 balanced interface option
    Speeds to 2.048 Mbps
One 10/100BaseT Ethernet port
One asynchronous 9600 baud RS-232 port for setup

HDLC COMPATIBILITY

Accepts/Sends any HDLC frame up to 1500 bytes long
Data Encoded via NRZ or NRZI
Standard CRC-CCITT as used in HDLC or Sync PPP
Internal or External clocks
Including but not limited to: HDLC, Sync PPP, Frame relay

PROTOCOL FEATURES

IP, DHCP (Client), UDP, ICMP, HTTP, TCP/IP
Authentication: internal name/password database, or up to two external, customer-supplied RADIUS servers
Encryption: 128-bit AES or NONE
V1 Protocol: TCP is used to establish the connection. UDP is used to tunnel HDLC.
V2 Protocol: Exclusive use of UDP protocol for both connection establishment and HDLC tunneling.
Web browser, telnet, or serial port configuration and management
Default IP address: 192.168.0.96

INDICATORS

Front - Power, Status, Valid received sync data, port activity
Rear – LAN connection, LAN activity

CONTROLS

DIP switch:
    Setup (initial setup using serial terminal)
    Reset

PHYSICAL/ELECTRICAL

Power: 6VDC external supply, 1330 ma standard
12, 24, 48, 125 VDC and 240 VAC options are available
Supplied with 120 VAC external power supply
5 ¼"x 5 ½"x 1 ¾"
One pound

ENVIRONMENTAL

Operational Temperature: -40 to +70 C
Storage Temperature: -50 to +75 C
Humidity: < 95% Non-condensing

3.   CONTROLS AND INDICATORS

CONTROLS

DIP Switches

Switch	Down	Up
1	Normal	Reset
2	Setup Port Inactive	Setup Port Active
3	Must be Down	
4	Must be Down	

INDICATORS

Front

Indicator	Condition	Meaning
Power	ON	Power to unit
Status	OFF	Set for Internal Clock
	ON	Set for External Clock
Sync	Flashing	Sync Port Data Activity
Setup	Flashing	Setup Port Data Activity

Rear

Indicator	Condition	Meaning
Top	Flashing	LAN activity present
Bottom	ON	Good LAN connection

4.   INSTALLATION

UNPACKING

The following is included with each unit:

- Unit and external power supply
- Cable for initial setup using a PC
- Manual
- Information regarding warranty, maintenance contracts and repair

SETUP

Initial setup is done through the SETUP port using the serial cable provided. See Section 6 for specific information.

SECURITY

Link Security

The EST-9600 tunnels HDLC serial protocols encrypted or non-encrypted. The EST-9600 default is encryption enabled. For private networks that are already considered to be sufficiently secure, turning encryption off may be an acceptable mode of operation.

The EST-9600 has default pass phrases. If encryption is turned on, be aware that the pass phrases should be changed from the default values.

Management Security

The EST-9600 can be managed via the Serial Setup port, via Telnet, or via a Web Browser. The serial port can be enabled or disabled using switch 2 on the rear of the unit. Switch 2 must be up for the serial management port to be active.

The encrypted HDLC data is sent via the Ethernet interface. This is the same interface used to access telnet or browser management. The telnet port can be enabled or disabled. The telnet port is a non-standard port 8000. This provides some degree of security, as the default port for telnet is port 23.

Management using the browser port can also be enabled or disabled. In addition, the browser port can be limited to only 1 or 2 specific IP addresses.

CONNECTIONS

Connect the synchronous port to the equipment using an appropriate cable. See Section 6 for pinouts and cabling guidance.

Connect the Ethernet port to the local area network using standard Ethernet cables. A straight through patch cord is used for connection to a hub or switch. To other equipment, a crossover cable may be required.

5.   QUICK SETUP GUIDE

For serial or telnet quick setup, the default user NAME is "admin". The default PASSWORD is blank, so enter nothing at the prompt. Just press the "Enter" key to continue. If using telnet, the default IP address is 192.168.0.96, port number 8000 rather than port 23. For serial connections, use 9600 bps, 8 data bits, no parity, no flow control. For a quick setup, select the following 4 highlighted menu items. The menus are shown in detail below:

    2 Set HDLC Tunnel Values
    3 Set Ethernet LAN Values
    4 Set HDLC Port Values
    8 Save and Activate

```
Enter name: admin
Enter password:


 ---- Welcome to the EST-9600 version v2_02 Setup Program ----



 1 Set Administration Values
 2 Set HDLC Tunnel Values
 3 Set Ethernet LAN Values
 4 Set HDLC Port Values
 5 Display Settings
 6 Display Status
 7 Reset Default Settings or Reset Unit
 8 Save and Activate
 9 Exit without Saving

Select a function by number ->:
```

The EST-9600 can tunnel in encrypted mode or with no encryption. Menu selection 3 is used if you wish to change from the default of Encryption ON to NONE. For Tunnel Mode, menu selection 4, set the Tunnel Mode to either Host or Drop. Drop is the default since most units will be drops in multi-drop applications. When configuring drops, select "6. Primary Host Values".

```
Select a function by number ->: 2

Protocol Version: v1                    Common Passphrase: ***
Encryption: AES-128                     Tunnel Mode: host
Server Port: 22

---Tunnel Values -----------------------------------
1 Protocol Version                      [0=v1, 1=v2]
2 Common Passphrase
3 Encryption                           [0=AES-128, 1=none]
4 Tunnel Mode                          [0=host, 1=drop]
5 Server Port
6 Primary Host Values                  [submenu]
7 Backup Host Values                   [submenu]
8 Advanced Tunnel Values               [submenu]
9 Host Authorized Names and Passphrases [submenu]
0  --Return to previous menu.

Items 6 & 7 are set on drops, 9 is set only on host. ->:
```

At drops it is necessary to enter the IP address of the host by selecting "5. Primary Host Values". Drops "find" the host via the IP address. At the Host unit no address is entered for the drops. The Host discovers the address of the drop from the drop's connection request to the host. Menu selection 5 gives you the menu below where the Primary Host Values are entered.

The address of the host is entered per the following example:
->: 1 192.168.10.10

```
Items 5 & 6 are set on drops, 8 is set only on host. ->: 5

Primary IP Address: 205.166.54.121     Primary Passname: client1
Primary Passphrase: ***

---Primary Host Values -----------------------------------
 1 Primary IP Address
 2 Primary Passname
 3 Primary Passphrase
 0  --Return to previous menu.

Press ? for help ->:
```

In the "LAN Values" menu, enter the IP Address, the Subnet Mask and the Default Gateway for the unit. This is required in both the Host and the Drop units.

```
Select a function by number ->: 3

DHCP: disable                      IP Address: 205.166.54.120
Subnet Mask: 255.255.255.0         Default Gateway:
Host Name: noname                  Domain:
Primary Name Server:               Secondary Name Server:

---LAN Values -------------------------------
 1 DHCP                [0=disable, 1=client]
 2 IP Address
 3 Subnet Mask
 4 Default Gateway
 5 Host Name
 6 Domain
 7 Primary Name Server
 8 Secondary Name Server
 0  --Return to previous menu.

Press ? for help ->: █
```

In the "HDLC Port Values" menu, enter the clock choice for the drops and the host. The default is Internal Clock. There are jumpers inside the EST-9600 that must be set to match the software setting. See the photos below for details on changing the clock source jumpers.

View of jumpers for interface selection and clock source
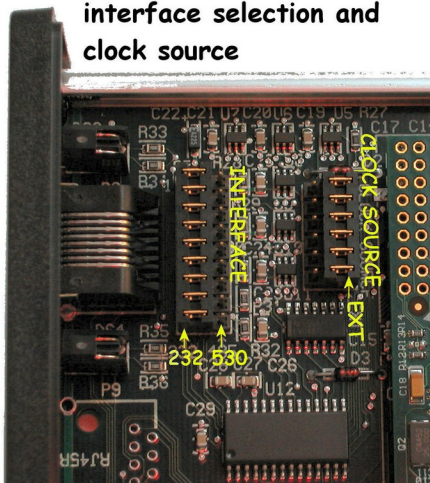
The internal jumpers are accessed by removing the 2 Phillips head screws that hold on the front panel. Remove the 2 screws and slide the circuit board forward to expose the jumpers. There are 2 sets of jumpers. The longer set of jumpers nearest the front panel set the HDLC serial interface to RS232 when toward the front panel or RS530 when set away from the front. The smaller set of jumpers about an inch further back set the clock source to internal when set toward the front and external clock when set toward the rear.

Defaults are RS232 electrical interface and internal clock source.

When setting the EST-9600 to Internal Clock source, also set the rate. The Encoding, menu selection 3, defaults to NRZ (non-return to zero). This is typical for PPP, Frame Relay, X.25 data. NRZI is often used with IBM SDLC protocols.

```
Select a function by number ->: 4

Sync Mode Clock Source: internal        Internal Clock Rate (bps): 56000
Encoding: nrz                           Max Transmit Unit (bytes): 1500

---HDLC Values ------------------------------------
 1 Sync Mode Clock Source    [0=external, 1=internal]
 2 Internal Clock Rate (bps) [0=1200, 1=2400, 2=4800, 3=9600, 4=19200, 5=38400,
                              6=56000, 7=64000, 8=128000, 9=192000, 10=256000,
                              11=512000, 12=768000, 13=1536000, 14=2048000]
 3 Encoding                  [0=nrz, 1=nrzi]
 4 Max Transmit Unit (bytes)
 0  --Return to previous menu.

Press ? for help ->: █
```

After making all the necessary changes, select item 8 from the main menu, " Save and Activate". Remember that after changing the IP address, if the EST-9600 is again accessed for setup via telnet or a web browser, it is necessary to change the address of the PC to match the IP subnet of the EST-9600.

6.   SETUP

INTRODUCTION

Initial setup is performed using a PC with terminal emulation software (HyperTerm). After initial configuration is complete, Telnet or a Web Browser may be used for further configuration and for monitoring.

CONNECTIONS

Using the serial cable provided, connect the PC to the SETUP port on EST. Put DIP switch 2 in the UP position. The SETUP port will remain active as long as switch 2 is in the UP position.

USING A PC

Set the PC terminal emulation software as follows:

Rate:	9600
Data Bits:	8
Stop Bits:	1
Parity:	None
Flow Control:	None (disabled)

Apply power to the EST.

USING THE SETUP PORT

After the unit boots, press <Enter>. An **Enter name:** prompt should appear. Enter the user name **admin**. At the **Enter password:** prompt, press <Enter>. The following menu should appear.

```
Enter name: admin
Enter password:


 ---- Welcome to the EST-9600 version v1_00 Setup Program ----


 1 Set Administration Values
 2 Set HDLC Tunnel Values
 3 Set Ethernet LAN Values
 4 Set HDLC Port Values
 5 Display Settings
 6 Display Status
 7 Reset Default Settings or Reset Unit
 8 Save and Activate
 9 Exit without Saving

Select a function by number ->:
```

MENUS

The following menus are available from the SETUP port or via Telnet. To change a setting, type the <item #> <space> <new data> and press <Enter>.

Set Administration Values

```
Username: admin                         Password:
   Respond to Ping: enable                Telnet Setup Enable: enable
   Telnet Setup Port: 8000                Web Browser Setup Enable: enable
   Web Server Port: 80

   ---Administration Values ----------------------------------
    1 Username
    2 Password
    3 Respond to Ping               [0=disable, 1=enable]
    4 Telnet Setup Enable           [0=disable, 1=enable]
    5 Telnet Setup Port
    6 Web Browser Setup Enable      [0=disable, 1=enable]
    7 Web Server Port
    8 Web Allowed IP Address/Submask Values  [submenu]
    0  --Return to previous menu.

   Press ? for help ->:
```

Set HDLC Tunnel Values

```
   Protocol Version: v1                  Common Passphrase: ***
    Encryption: AES-128                   Tunnel Mode: host
    Server Port: 22

    ---Tunnel Values ----------------------------------
     1 Protocol Version               [0=v1, 1=v2]
     2 Common Passphrase
     3 Encryption                     [0=AES-128, 1=none]
     4 Tunnel Mode                    [0=host, 1=drop]
     5 Server Port
     6 Primary Host Values             [submenu]
     7 Backup Host Values              [submenu]
     8 Advanced Tunnel Values          [submenu]
     9 Host Authorized Names and Passphrases  [submenu]
     0  --Return to previous menu.

    Items 6 & 7 are set on drops, 9 is set only on host. →:
```

Beginning with firmware version 2.01, the EST-9600 supports two different protocols for communication between the devices. V1 is the original protocol and should be selected if adding a device to an existing EST-9600 application. V2 is the new protocol and is designed for easier communication through a firewall router. For new applications, V2 is the recommended choice. The host and all drops must be configured for the same protocol version.

Version 1.08 of the firmware includes an HDLC Watchdog Feature.
When enabled, the watchdog will monitor the HDLC Rx and Tx counters. If either of the counters stop incrementing for a configured timeout period, the EST-9600 will perform a system reboot. The timeout period may range from 15 seconds to 24 hours. The watchdog will hold-off until valid data flow is initially detected.

Set Ethernet LAN Values

```
   DHCP: disable                       IP Address: 192.168.0.96
   Subnet Mask: 255.255.255.0          Default Gateway:
```

```
Host Name: noname                       Domain:
Primary Name Server:                    Secondary Name Server:

---LAN Values ----------------------------------
 1 DHCP                    [0=disable, 1=client]
 2 IP Address
 3 Subnet Mask
 4 Default Gateway
 5 Host Name
 6 Domain
 7 Primary Name Server
 8 Secondary Name Server
 0  --Return to previous menu.

Press ? for help ->:
```

Set HDLC Port Values

```
Sync Mode Clock Source: internal        Internal Clock Rate (bps): 56000
   Encoding: nrz                        Max Transmit Unit (bytes): 1500

   ---HDLC Values ------------------------------------
   1 Sync Mode Clock Source     [0=external, 1=internal]
   2 Internal Clock Rate (bps) [0=1200, 1=2400, 2=4800, 3=9600, 4=19200, 5=38400,
                                6=56000, 7=64000, 8=128000, 9=192000, 10=256000,
                                11=512000, 12=768000, 13=1536000, 14=2048000]
   3 Encoding                   [0=nrz, 1=nrzi]
   4 Max Transmit Unit (bytes)
   0  --Return to previous menu.

   Press ? for help ->:
```

Display Settings

```
   --------------------------------------------------
   ==  Administration Values  ==
   Username: admin                      Password:
   Respond to Ping: enable              Telnet Setup Enable: enable
   Telnet Setup Port: 8000              Web Browser Setup Enable: enable
   Web Server Port: 80
   --------------------------------------------------
   ==  Web Allowed IP Address/Netmask Values  ==
   Allowed Web IP Address 1:            Allowed Web IP Netmask 1:
   Allowed Web IP Address 2:            Allowed Web IP Netmask 2:
   --------------------------------------------------
   ==  Tunnel Values  ==
   Protocol Version: v1                 Common Passphrase: ***
   Encryption: AES-128                  Tunnel Mode: host
   Server Port: 22
   --------------------------------------------------
   ==  Primary Host Values  ==
   Primary IP Address: 192.168.0.97     Primary Passname: client1
   Primary Passphrase: ***
   press return for more, ESC to quit:
   --------------------------------------------------
   ==  Backup Host Values  ==
   Backup IP Address:                   Backup Passname: client1
   Backup Passphrase: ***
   --------------------------------------------------
   ==  Host Authorized Names and Passphrases - ==
   Drop 1: client1                      Passphrase 1: ***
   Drop 2:                              Passphrase 2:
   Drop 3:                              Passphrase 3:
   Drop 4:                              Passphrase 4:
   Drop 5:                              Passphrase 5:
   --------------------------------------------------
   ==  Host Authorized Names and Passphrases - ==
   Drop 6:                              Passphrase 6:
   Drop 7:                              Passphrase 7:
   Drop 8:                              Passphrase 8:
   Drop 9:                              Passphrase 9:
   Drop 10:                             Passphrase 10:
   press return for more, ESC to quit:
```

```
         -----------------------------------------------
         ==  Host Authorized Names and Passphrases - ==
         Drop 11:                        Passphrase 11:
         Drop 12:                        Passphrase 12:
         Drop 13:                        Passphrase 13:
         Drop 14:                        Passphrase 14:
         Drop 15:                        Passphrase 15:
         -----------------------------------------------
         ==  Host Authorized Names and Passphrases - ==
         Drop 16:                        Passphrase 16:
         Drop 17:                        Passphrase 17:
         Drop 18:                        Passphrase 18:
         Drop 19:                        Passphrase 19:
         Drop 20:                        Passphrase 20:
         -----------------------------------------------
         ==  Advanced Tunnel Values  ==
         Host Authentication Mode: user-list   Idle Disconnect Time (seconds): 120
         Send Keep-Alive Time (seconds): 40    IP DSCP (QoS) (v2): 0
         Limit UDP packet size (v2): yes
         press return for more, ESC to quit:
         -----------------------------------------------
         ==  RADIUS Server 1 Values  ==
         RADIUS Server 1 Name/Addr:            RADIUS Server 1 UDP Port: 1812
         RADIUS Server 1 NAS Index: 0          RADIUS Server 1 Shared Secret:
         -----------------------------------------------
         ==  RADIUS Server 2 Values  ==
         RADIUS Server 2 Name/Addr:            RADIUS Server 2 UDP Port: 1812
         RADIUS Server 2 NAS Index: 0          RADIUS Server 2 Shared Secret:
         -----------------------------------------------
         ==  RADIUS Common Values  ==
         RADIUS Server timeout (seconds): 2    RADIUS Server retries: 2
         -----------------------------------------------
         ==  LAN Values  ==
         DHCP: disable                         IP Address: 192.168.0.96
         Subnet Mask: 255.255.255.0            Default Gateway:
         Host Name: noname                     Domain:
         Primary Name Server:                  Secondary Name Server:
         press return for more, ESC to quit:
         -----------------------------------------------
         ==  HDLC Values  ==
         Sync Mode Clock Source: internal      Internal Clock Rate (bps): 56000
         Encoding: nrz                         Max Transmit Unit (bytes): 1500
```

Display Status

```
    === Ethernet Status ===
    HWaddr  00:06:3B:00:51:C9
    addr:192.168.0.96  Bcast:192.168.0.255  Mask:255.255.255.0
    UP  BROADCAST  RUNNING  MULTICAST  MTU:1500  Metric:1
    RX  packets:0  errors:0  dropped:0  overruns:0  frame:0
    TX  packets:0  errors:525  dropped:0  overruns:0  carrier:525
    collisions:0  txqueuelen:1000

    === HDLC Status ===
    UP  POINTOPOINT  NOARP  MTU:1500  Metric:1
    RX  packets:0  errors:0  overruns:0  frame:0
    TX  packets:0  errors:0  dropped:0  overruns:0  carrier:2
    collisions:0  txqueuelen:10

    === Tunnel node Status ===
    Location              Rx Count   Tx Count   Tx Drops   Connects   UserName
    --------------------- ---------- ---------- ---------- ---------- --------
    HDLC                       0          0          0          1 none
    192.168.0.97:22            0          0          0          0 client1

    (Counts are counts of packets, not bytes.)

    Display tunnel log file (y,n,p):
```

Reset Default Settings or Reset Unit

```
To reset to default values, Press D.
   To reset Unit, press R.
   Press return to exit :
```

Save and Activate

```
Setup complete.
   No changes to activate.
   Bye
```

USING A WEB BROWSER

Below is the main web browser menu. The left side shows the main menu selections. The right hand column shows the sub menus for the main menu selections that have sub menus. All pages with fields that can filled in have help screens that describe the function of that selection. On the URL bar of the browser, enter the IP address of the EST-9600. If you have changed the default web browser port from 80, enter the new port number with the IP address, i.e. "192.168.0.96:7999"
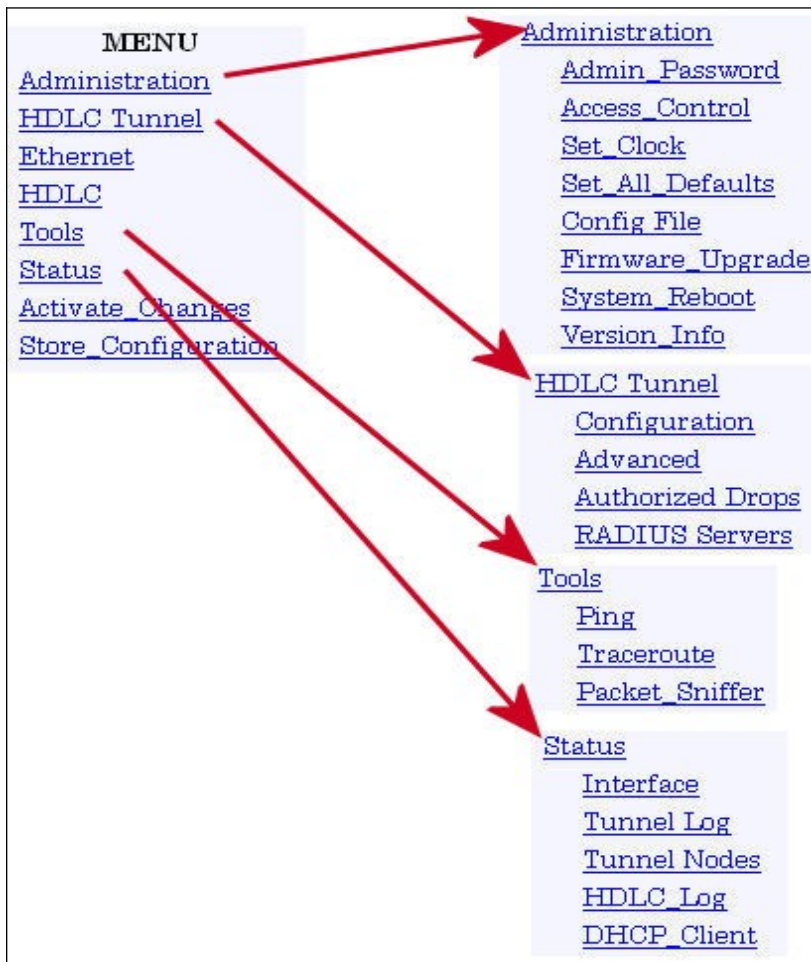
ADMINISTRATION

Admin Password. Access to the EST-9600 is controlled with the Administration functions. Under Administration the user name and password are set.

Admin Password

Username | admin
Old Password |
New Password |
Verify New Password |

Submit   Cancel

Admin Access Control. Ping can be enabled or disabled. Telnet access can be enabled or disabled. The Telnet setup port can be changed from the default 8000 to any other port. Web browser access can be enabled or disabled. The web browser port can be changed from the default 80 to any other port. Access can be limited to a list of 2 IP addresses.

Admin Access Control

Respond to Ping ○ disable ● enable
Telnet Setup Enable ○ disable ● enable
Telnet Setup Port [8000]
Web Browser Setup Enable ○ disable ● enable
Web Server Port [80]

Accepted Web IP Source Addresses

Target | Netmask

Submit   Cancel

WARNING: Make changes very carefully. It is possible to block out your current web session.

Set Clock sets a relative clock, relative to the power-on time of the EST-9600. The clock is reset when the EST-9600 is rebooted.

Set Clock

The EST-9600 does not have a real-time clock. However a software clock is implemented and used to time-stamp log entries. The software clock will be set to the specified time at each reboot.

Year (2000-2035) [2000]
Month (1-12) [1]
Day (1-31) [1]
Hour (0-23) [0]
Minute (0-59) [0]

[Submit] [Cancel]

Set All Defaults puts all the settings back to the factory default state.

Config File is a way to save the configuration file to a PC or to load a working configuration file from a PC into the EST-9600.

Firmware Upgrade is used to upgrade EST-9600 firmware.

System Reboot reboots the EST-9600.

Version Info reports the firmware version.

HDLC TUNNEL

HDLC Tunnel is a top level menu with sub menus for setting the HDLC tunnel attributes.

The Tunnel Configuration sub menu is used to set the Common Passphrase.

Tunnel Configuration

--- Common Drop/Host Settings ---

Protocol Version ⦿ v1 ◯ v2
Common Passphrase [***   ]
Encryption [AES-128 ∨]
Tunnel Mode ◯ host ⦿ drop
Server Port [22]

--- **Host Only Settings** ---

Host Authentication Mode ⦿ user-list ◯ RADIUS

--- **Drop Only Settings** ---

Primary IP Address [205.166.54.121   ]
Primary Passname [client1   ]
Primary Passphrase [***   ]
Backup IP Address [   ]
Backup Passname [client1   ]
Backup Passphrase [***   ]

[Submit] [Cancel]

Advanced Tunnel Configuration sets the idle disconnect value and the keep-alive value. When Protocol V2 is selected, two additional advanced configuration options are available, IP DSCP and Limit UDP packet size.

Advanced Tunnel Configuration

Idle Disconnect Time (seconds) [120]
Send Keep-Alive Time (seconds) [40]
IP DSCP (QoS) (v2) [0]
Limit UDP packet size (v2) ◯ no ⦿ yes
[Submit] [Cancel]

Authorized Drop Names & Passphrases is a listing of the drop names and passphrases. These much match between the drop and the host for a drop to be authenticated by the host. Valid at host end only.

Authorized Drop Names and Passphrases

Valid on Host Units Only

	Drop name		Passphrase
1:	client1		***
2:			
3:			
4:			
5:			
6:			
7:			
8:			
9:			
10:			

[Submit] [Cancel]

RADIUS Servers provides a way to move the authentication from the Host EST-9600 to a Radius server. This is useful when a radius server is used as a centralized authorization device. In installations with many EST-9600 units, a radius server approach makes it easier to change EST-9600 host devices in the event of a hardware failure.

RADIUS Servers

Test RADIUS Server1 setup   Test RADIUS Server2 setup

RADIUS Server 1

RADIUS Server 1 Name/Addr	
RADIUS Server 1 UDP Port	1812
RADIUS Server 1 NAS Index	0
RADIUS Server 1 Shared Secret	

RADIUS Server 2

RADIUS Server 2 Name/Addr	
RADIUS Server 2 UDP Port	1812
RADIUS Server 2 NAS Index	0
RADIUS Server 2 Shared Secret	

RADIUS Common Settings

RADIUS Server timeout (seconds)	2
RADIUS Server retries	2
RADIUS Server Test Name	
RADIUS Server Test Password	

Submit   Cancel

ETHERNET

Ethernet IP Configuration is where the IP address of the EST-9600 is set.

Ethernet IP Configuration

DHCP	⦿ disable ○ client
IP Address	205.166.54.120
Subnet Mask	255.255.255.0
Default Gateway	

Optional DNS Settings

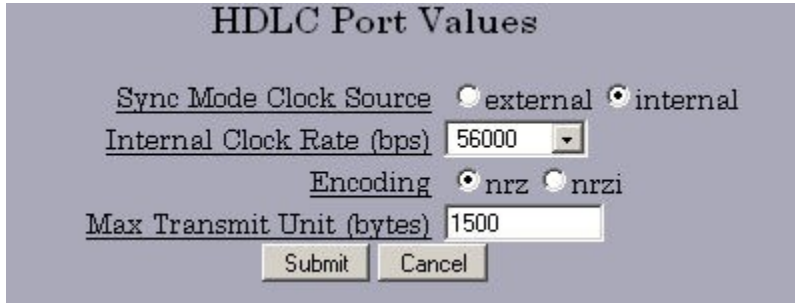|	
Host Name	noname
Domain	
Primary Name Server	
Secondary Name Server	

Submit   Cancel

HDLC

HDLC Port Values set the clock source to external or internal, the speed, and the Maximum Transmit Unit (MTU). The EST-9600 defaults to internal sync mode clock source. There are 15 clock speed choices, ranging from 1200 bps to 2048000 bps.

WATCHDOG

When enabled, the watchdog will monitor the HDLC Rx and Tx counters. If either of the counters stop incrementing for a configured timeout period, the EST-9600 will perform a system reboot. The timeout period may range from 15 seconds to 24 hours. The watchdog will hold-off until valid data flow is initially detected.

TOOLS

The Tools include Ping, Traceroute, and a Packet Sniffer.

STATUS

Interface Status displays the status of the Ethernet and the HDLC interfaces.

Interface Status

Ethernet   IP: 205.166.54.120   Enet: 00:06:3B:00:51:59
RX packets:73310 errors:0 dropped:0 overruns:0   frame:0
TX packets:4560 errors:0 dropped:0 overruns:0   carrier:0
  collisions:31

HDLC
 Interface is down.

[Refresh]

The Tunnel Logfile shows the status of the connections to the remote drop or host. Note that the keys are changed every 24 hours.

```
                              Tunnel Logfile

01-01-2000 00:00:00 ---Tunnel Started---
01-01-2000 00:00:03 HDLC ready.
01-01-2000 00:00:03 Trying to connect to remote server 205.166.54.121:22
01-01-2000 00:00:04 Connected to remote server 205.166.54.121:22
01-01-2000 00:00:07 Authenticating to remote server 205.166.54.121:22
01-01-2000 00:00:08 205.166.54.121:22 changed key
01-02-2000 00:00:12 205.166.54.121:22 changed key
01-03-2000 00:00:14 205.166.54.121:22 changed key
01-04-2000 00:00:17 205.166.54.121:22 changed key
01-05-2000 00:00:20 205.166.54.121:22 changed key
01-06-2000 00:00:22 205.166.54.121:22 changed key
```

Tunnel Node status shows the traffic count for HDLC and Ethernet traffic.

```
                              Tunnel Nodes

Location              Rx Count   Tx Count   Tx Drops   Connects   UserName
--------------------  ---------- ---------- ---------- ---------- --------
HDLC                          0          0          0          1 none
205.166.54.120:3072       11940      11939          0          1 client1

(Counts are counts of packets, not bytes.)
```

The HDCL Logfile shows HDLC traffic.

The DHCP Client Log shows DHCP activity.

ACTIVATE

Activate Changes is used to move configuration changes to the active state. If changes are activated but not stored in the next step, the changes will only be active until the next reboot and/ or power cycle. To make changes, the steps are:
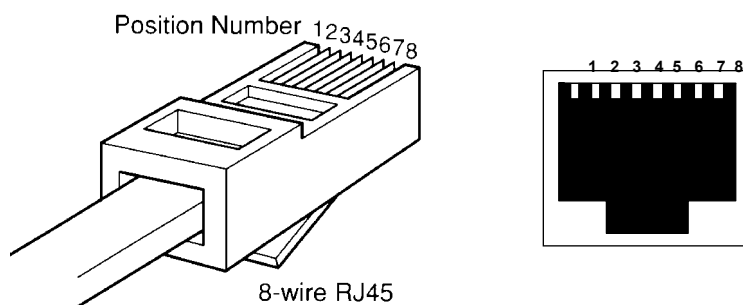1. Make a menu change.
2. SUBMIT the change.
3. Activate the change.
4. Store the configuration.

STORE

Store Configuration is used to save changes to memory. Once changes are saved to memory the changes will be survive a reboot and/or power cycle.

7.   INTERFACE SIGNALS AND CABLING

CONNECTOR AND PIN REFERENCE

RJ-45 Plug and Jack

PORT INTERFACE

Synchronous Port

The Synchronous port can be either RS-232 or RS-530 depending on the position of a jumper inside the unit. This jumper (P7) is located behind the synchronous port connector (P8) and is defaulted to RS-232. To change the port to RS-530, remove the two screws that hold the front panel in place and remove the circuit board. Move the jumper to the position farthest away from the port connector and reassemble the unit (See p. 9).

RS-232 (RJ-45)

Pin	Signal	In/Out
1	Receive Clock	IN/OUT
2	Transmit Clock	IN/OUT
3	Clear to Send	IN
4	Signal Ground	-----
5	Transmit Data	OUT
6	Receive Data	IN
7	Request to Send	OUT
8	Data Carrier Detect	IN

RS-530/422 (RJ-45)

Pin	Signal	In/Out
1	Transmit Data A (-)	OUT
2	Transmit Data B (+)	OUT
3	Receive Data A (-)	IN
4	Receive Clock A (-)	IN/OUT
5	Receive Clock B (+)	IN/OUT
6	Receive Data B (+)	IN
7	Transmit Clock A (-)	IN/OUT
8	Transmit Clock B (+)	IN/OUT

Ethernet Port

Pin	Signal	In/Out
1	Transmit	OUT
2	Transmit	OUT
3	Receive	IN
6	Receive	IN

Setup Port

RS-232 (RJ-45)

Pin	Signal	In/Out
1	Data Set Ready	OUT
2	Data Carrier Detect	OUT
3	Busy	IN
4	Signal Ground	-----
5	Receive Data	OUT
6	Transmit Data	IN
7	Clear to Send	OUT
8	Request to Send	IN

CABLES

Synchronous Port

RS-232

```
        EST                To DCE    To DTE
        RJ-45              DB-25P    DB-25S

          1 ——————————————— 17    or    17
          2 ——————————————— 15    or    15
          3 ——————————————— 5     or    4
          4 ——————————————— 7     or    7
          5 ——————————————— 2     or    3
          6 ——————————————— 3     or    2
          7 ——————————————— 4     or    5,8
          8 ——————————————— 8     or    NC
```

RS-530

```
        EST                RS-530
        RJ-45              DB-25

          1 ——————————————— 2
          2 ——————————————— 14
          3 ——————————————— 3
          4 ——————————————— 17
          5 ——————————————— 9
          6 ——————————————— 16
          7 ——————————————— 15
          8 ——————————————— 12
                          ┌— 4
                          └— 5
                          ┌— 6
                          ├— 8
                          └— 20
```

Setup Port

To a TERMINAL

```
      EST               Terminal
      RJ-45             DB-25P
       4
       5
       6 ────────────────── 7
         ────────────────── 3
         ────────────────── 2
```
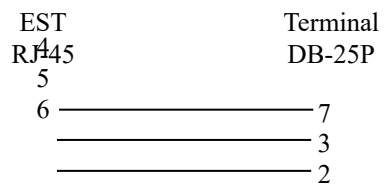
To a PC using terminal emulation

```
      EST                    Computer
      RJ-45              DE-9S      DB-25S

       4 ──────────────────  5   or   7
       5 ──────────────────  2   or   3
       6 ──────────────────  3   or   2
```
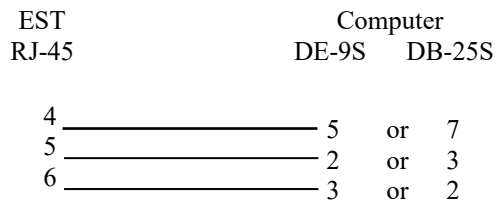
8. TROUBLESHOOTING

When troubleshooting problems, a rational plan can save you many hours of frustration. The following is a brief outline of standard troubleshooting procedures.

1. Gather the facts to determine the exact nature of the problem.

2. Draw a picture of the system showing the equipment at both the host and remote ends and the phone lines or in-house wiring. Use this as a reference to note your observations, test steps and test results. A picture keeps you focused and often saves duplicate effort.

3. Record the front panel indications before changing anything. This is an important part of fact gathering.

4. If you change anything, change only one thing at a time.

9.   WARRANTY

This DCB product is warranted to be free of defects in materials and workmanship for two years. Data Comm for Business, Inc. will repair or replace any equipment proven to be defective within the warranty period. All warranty work is F.O.B. Champaign, IL. This warranty is exclusive of abuse, misuse, accidental damage, acts of God or consequential damages, etc. DCB liability shall not exceed the original purchase price.

All equipment returned for repair must be accompanied by a Returned Material Authorization (RMA) number. To receive an RMA number, call (217) 897-6600 between the hours of 8 AM and 5 PM central time. Equipment must be shipped prepaid to DCB and will be returned at DCB's expense.

Ship returned items to:

Data Comm for Business
2949 County Road 1000E
Dewey, IL 61840
ATTN: RMA #

Data Comm for Business, Inc.
PO Box 6329
Champaign, IL 61826-6329

Tel   (217) 897-6600
Fax   (217) 897-1331