DataSMART® T3/E3 IDSU
Installation Guide

Document #5000163

KENTROX®
A Platinum Equity Company

Revision history

Part #	Date	Description
65-15951001	November 1996	Issue 1
5000163	December 2001	Issue 2

Contents

Preface

Who should read this manual?

This manual is intended to be used by trained and qualified service personnel. It explains how to install the DataSMART T3/E3 IDSU and its components. It contains everything the installer needs to know to power up the IDSU and confirm that it is functioning correctly. For a detailed and comprehensive description of all operations of this product, turn to the *DataSMART T3/E3 IDSU User's Guide.*

Viewing this manual as a PDF file

This manual is designed to be used as both a printed book and a PDF file, and includes the following features for PDF viewing:

■   Cross-references are clickable hyperlinks that appear in blue text.

■   Chapters and section headings are represented as clickable bookmarks in the left-hand pane of the Acrobat viewer.

■   Page numbering is consistent between the printed page and the PDF file to help you easily select a range of pages for printing.

You can obtain PDF files of our manuals by visiting http://www.kentrox.com.

About this manual

This manual contains the following information:

"Preface" (this section) explains the purpose and organization of this manual and explains how to contact Kentrox Customer Support if you should run into difficulties.

"Getting started" describes site and environmental requirements and shows how to unpack and inspect the shipment.

"Preparing the hardware for installation" describes how to change the IDSU control port terminal settings via the internal DIP switch.

"Initial installation and power up" explains how to mount the unit on a desktop or in a standard equipment rack, and how to power up both the AC and the DC models.

"Cabling interfaces and ports" shows how to connect cables to the network interface, the data port, and the control port. This chapter also shows how to set up daisy-chaining.

"Initial configuration" gives step-by-step instructions for configuring the IDSU and its various interfaces and ports for the first time.

"Appendix A" lists the pinouts for the network interface, data ports, and control port.

"Appendix B" describes the front-panel thumbwheel switch and push-buttons.

This manual also contains an index.

Related documentation

In addition to this manual, you will have received:

■ *DataSMART T3/E3 IDSU User's Guide*

The user's guide provides detailed information about all of the product features. It contains comprehensive configuration information, troubleshooting guidelines, a complete glossary, and a quick-reference to all of the product forms and functions.

MIB source files

MIB source files are available by visiting: http://www.kentrox/support.

Who to call for assistance

If you need assistance with this product or have questions not answered by this manual, please visit our Support page on the Kentrox Web site. You are also welcome to call or send email to our Technical Assistance Center. Please have your product's software revision and hardware serial numbers available to give to the Support representative. All product returns must include a Return Authorization number, which you can obtain by calling the Technical Assistance Center.

The numbers listed below are current at the time of publication. See the Kentrox Web site for detailed contact and warranty information.

> 1-800-733-5511 (continental USA only)
> 1-503-350-6001
> email: support@kentrox.com
> http://www.kentrox.com

Safety precautions

This equipment has been designed to the highest quality standards of materials, workmanship and safety. Do not bypass any of the safety features of this equipment or operate this equipment in an improper environment.

This manual is intended for the use of qualified service personnel only.

WARNING!
To avoid hazard from electrical shock and/or fire, adhere to the safety practices listed in this section and identified within the instructions of this document.

Use normal caution when installing or modifying telephone lines. Dangerous voltages may be present. It is unsafe to install telephone wiring during a lightning storm.

Always disconnect all telephone lines at the network interface, and power connections from the wall outlets before servicing or disassembling this equipment.

All wiring external to the product(s) should follow the provisions of the current edition of the National Electrical Code or any national wiring rules that apply.

When installing the AC-powered unit or replacing its fuses, always secure the power (mains) cord with the tie wrap.

WARNING!
Tensions Dangereuses à l'intérieur. Confier la maintenance à une personne qualifiée.

WARNING!

This equipment uses double pole/neutral fusing.

For continued protection against risk of fire, replace the fuse only with a fuse of the same type and rating.

Precautionary symbols used in this document

This document uses the following symbol to denote safety precautions you should adhere to while performing the installation procedures.

This symbol alerts the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

1

Getting started

This chapter tells you how to prepare for installation of the DataSMART T3/E3 IDSU. Topics include:

■   Selecting an appropriate installation site

■   Unpacking the shipping cartons and inspecting their contents to ensure there is no shipment damage

■   Reviewing the front and back panels, and their controls, connectors, and indicators

After reading this chapter, you will be ready to install the unit as described in Chapter 2.

Select an appropriate site

The installation site for the DataSMART T3/E3 IDSU must meet certain requirements for power and grounding, ambient temperature and humidity control, physical space, and electrostatic protection. The site should be clean and free from extremes of temperature, humidity, shock, and vibration.

Power

The DataSMART T3/E3 IDSU operates from AC or DC power, depending on the type of power supply you ordered with the unit. Make sure that your installation site provides an appropriate power source for your power supply. The power requirements are listed below.

⚠️ **CAUTION!**
Damage to IDSU components may occur if the input voltage applied to the IDSU is not within the specified range.

AC power

One AC power supply is available for both North American and European ratings. It accepts nominal input voltages of 120 VAC, 60 Hz (North American standard) or 240 VAC, 50 Hz (for other site locations). The maximum operating range is 85 to 265 VAC, 47 to 63 Hz, 0.35 A.

When using an AC supply, the AC branch circuit receptacle should be installed near the equipment and shall be easily accessible. Do not attach the power supply cord to building surfaces.

DC power

One DC power supply is available. It accepts nominal input voltages of 48 VDC. The maximum operating range is 36 to 75 VDC, 0.6 A.

Power consumption

The DataSMART T3/E3 IDSU power consumption is 24 W nominal, 30 W maximum for AC power; 22W nominal, 25 W maximum for DC power.

Grounding

The DataSMART T3/E3 IDSU enclosure is grounded through its power supply connector. The AC power supply is designed to connect to a power source that has a protective-ground contact. It is grounded through a grounding conductor in its power cord. The DC supply is grounded by attaching frame ground to the ground terminal on the supply.

Environmental ranges

The work area you select for the DataSMART T3/E3 IDSU must fall within certain environmental limits.

■ Temperature: $0^{o}C$ to $50^{o}C$, nominal, operating; $-20^{o}C$ to $66^{o}C$, non-operating

■ Humidity: 5% to 95% RH, non-condensing

ESD precautions

Electrostatic discharge (ESD) is potentially damaging to circuitry within the DataSMART T3/E3 IDSU. Set up the work area to limit the effects of ESD. We recommend that you wear a ground strap when handling the components and that you employ antistatic mats within the work area.

Space requirements

The physical dimensions of the IDSU enclosure are shown below. Clearance of at least 1 in. (25 mm) is required on either side of the unit for cooling, and clearance of 4 in. (102 mm) is required at the rear of the unit for cable installation.

CAUTION!
Damage to the DataSMART T3/E3 IDSU may occur if appropriate clearances around the enclosure are not provided for cooling.

Figure 1—DataSMART T3/E3 IDSU dimensions and clearance requirements
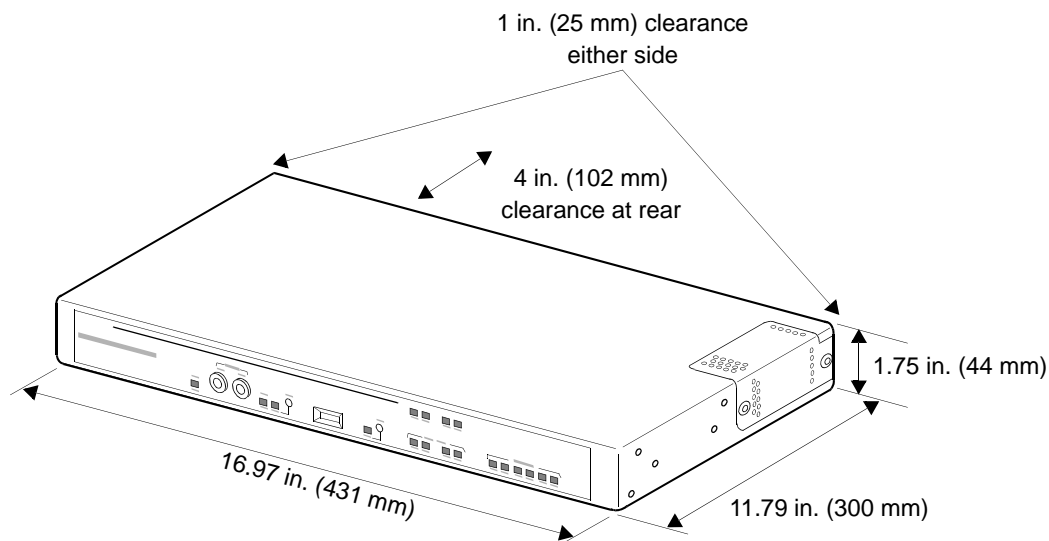
Unpack your shipment

Once you've selected the installation site, unpack the DataSMART T3/E3 IDSU shipment. Inspect the shipment carefully to ensure that there is no shipment damage.

Start by inspecting the shipping cartons for shipment damage. If there is evidence of shipment damage to the cartons, notify the shipping carrier and call your Kentrox Customer Service representative as described under "Who to call for assistance" on page 7.

If the cartons show no damage, unpack the shipment.

Keep all packing material in case you need to move or ship the unit in the future.

Location of controls and indicators

Take a moment to become familiar with the DataSMART T3/E3 IDSU controls and indicators. You will need to refer to these throughout the rest of this install procedure.

Figure 2—Front panel
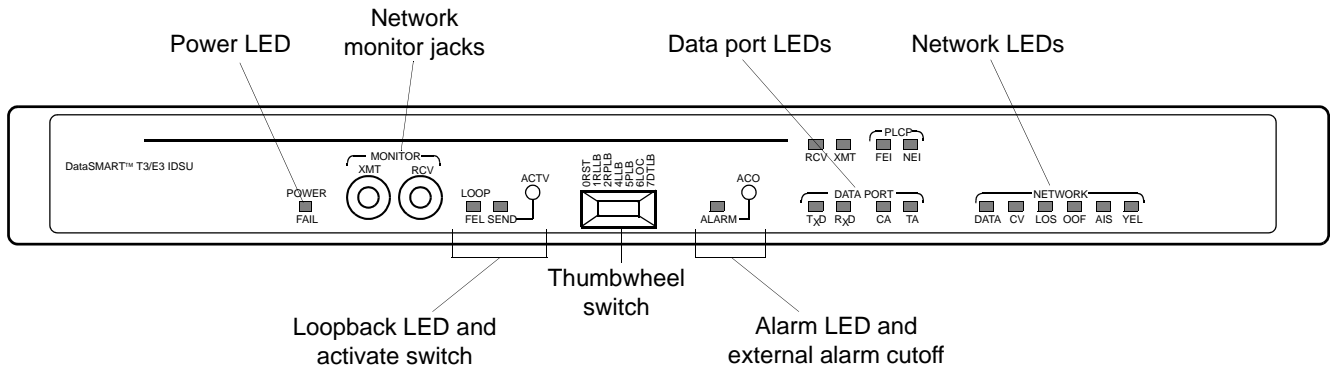
Figure 3—Rear panel
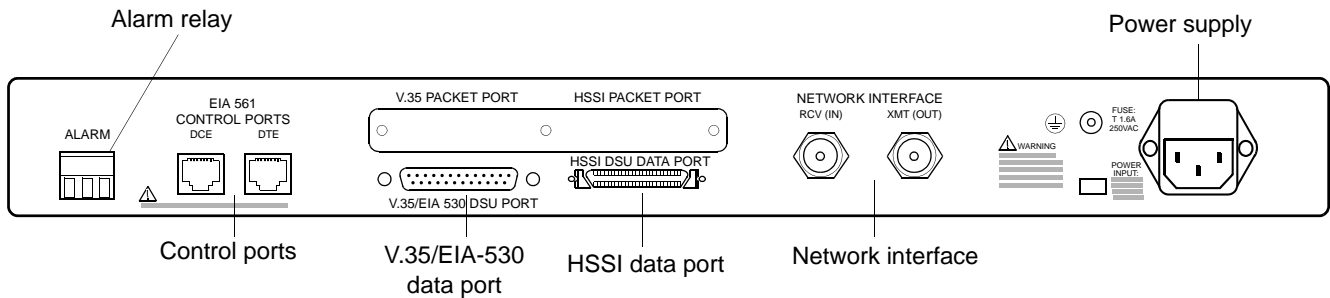
2 *Preparing the hardware for installation*

To initially access the DataSMART T3/E3 IDSU user interface, you will need to connect a control device to the IDSU control port. Two control ports are provided, a DCE port for connecting a terminal (or a PC running terminal emulation software), and a DTE port for connecting a terminal or PC via a modem.

To use either port, your control device and the IDSU must be set to the same baud rate, parity, data and stop bits. The IDSU comes from the factory set as follows:

Baud = 9600
Parity = None
Data-bits-per-character = 8
Stop-bits-per-character = 1

You can set your terminal to match the IDSU, or set the IDSU to match your terminal. This chapter shows you how to change the IDSU settings.

Resetting the IDSU terminal parameters

You can change the DataSMART T3/E3 IDSU default settings for baud rate, parity, and data and stop bits by using the DIP switch located on the IDSU circuit board. To access this board, you need to remove the IDSU side panel as shown in Figure 4.

⚠ **CAUTION!**
Do not remove the IDSU side panel while the unit is receiving power.

CAUTION!
The IDSU circuit board is susceptible to electrostatic discharge (ESD). Take appropriate precautions when removing the side panel and setting the DIP switch.

Remove the side panel

To remove the IDSU side panel:

1 Remove the two screws holding the side-panel in place. Use a standard #2 Phillips screwdriver.

2 Lift the panel up slightly, then pull it straight out.

Figure 4—Removing the side panel
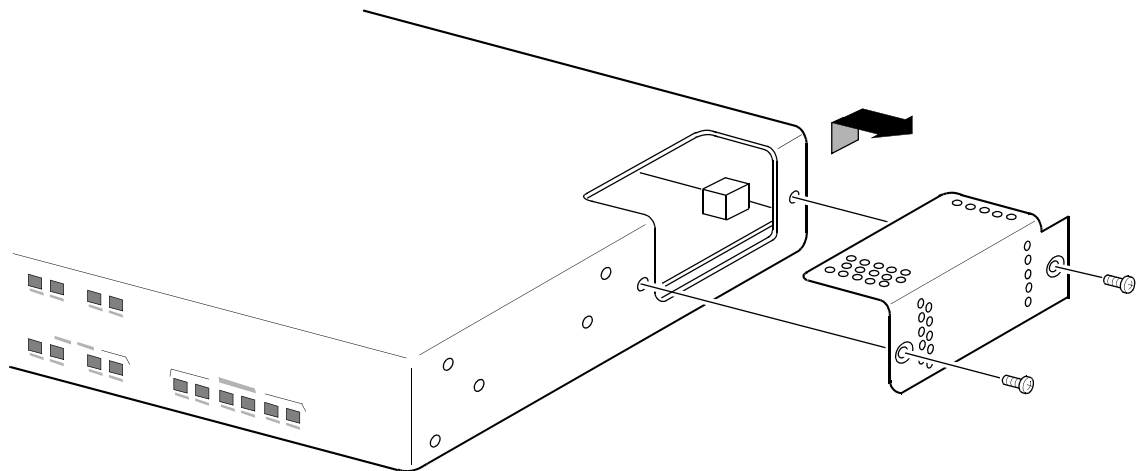
Reset the DIP switches

When the internal DIP switch is exposed, set them to the required values.
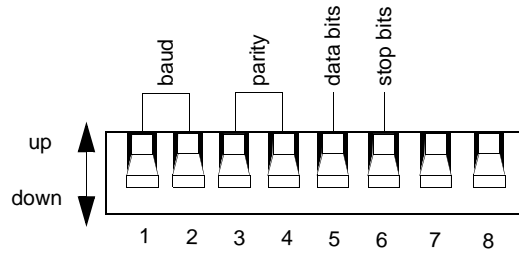
Baud setting	SW1	SW2
9600 (default)	down	down
4800	down	up
2400	up	down
1200	up	up

Parity setting	SW3	SW4
none (default)	down	down
none	down	up
odd	up	down
even	up	up

Data bits	SW5
8 data bits per character (default)	down
7 data bits per character	up

Stop bits	SW6
1 stop bits per character (default)	down
2 stop bits per character	up

Replace the side panel

Once you have set the DIP switches, replace the side panel using the two Phillips-head screws.

Enabling/disabling alarms via the internal DIP switch

In addition to the terminal settings, the IDSU internal DIP switch allows you to enable or disable alarm messages out the control port. Switch 7 enables or disables alarm messages. Switch 8 specifies whether, if alarms are enabled, they are output via the DCE control port or via the DTE control port.

To access the DIP switch, see instructions for removing the side panel on
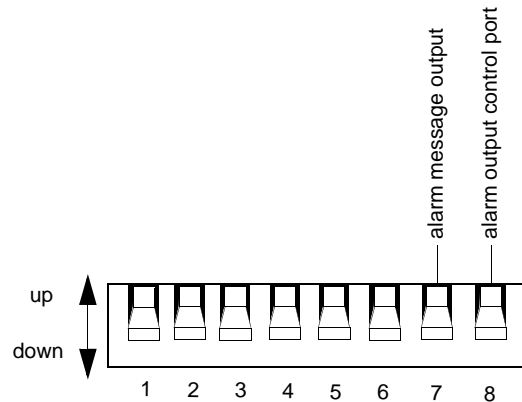
Alarms	SW7		Alarm output port	SW8
disabled (default)	down		DCE (default)	down
enabled	up		DTE	up

Enabling/disabling alarm messages

If you enable alarm messages they are output via the specified control port. If you disable them, alarms are recorded in the Alarm History report, but they are not output as messages. The setting of this switch has no effect on SNMP trap output.

This switch can be overridden by the **EAM/DAM** commands. See your user's guide.

Specifying the alarm output control port

If you are using a terminal connected to the DCE port, you normally want alarms output to that port. The only time you might want alarms sent to the DTE port is when you are using a modem connected to DTE or when you are using alarm dial-out. Alarm dial-out requires that alarms be sent to DTE. For example, you might want the alarm dial-out to go an external alarm device connected via the DTE port instead of to a terminal connected to DCE.

If you are using daisy-chaining, alarms must go to the same control port as the one being used by the control device, terminal or modem. Alarm dial-out is disabled during daisy-chaining.

This switch can be overridden by the **DCE/DTE** commands. See your user's guide.

3

Initial installation and power up

This chapter tells you how to install and power up the DataSMART T3/E3 IDSU unit. It assumes that all internal DIP switches have been set, and that the unit's side panel is in place.

Topics included here:

■   Installing the unit on a desktop or in a standard 19-inch or 23-inch equipment rack

■   Powering up the unit

■   Verifying power-up via the self-test diagnostics

After reading this chapter, you will be ready to cable the network interface, data port, and control port as described in Chapter 4.

Install the chassis

You can install the DataSMART T3/E3 IDSU as a stand-alone unit on a desktop or you can mount it in a standard equipment rack.

Clearance requirements

The clearance requirements for the IDSU enclosure are shown below. Clearance of at least 1 in. (25 mm) is required on either side of the unit for cooling, and clearance of 4 in. (102 mm) is required at the rear of the unit for cable installation. The chassis has a fan exhaust vent in its left-side panel and an air intake vent in its right-side panel.

⚠️ **CAUTION!**
Damage to the DataSMART T3/E3 IDSU and its components may occur if appropriate clearances around the enclosure are not provided for cooling.

Figure 5—DataSMART T3/E3 IDSU clearance requirements

1 in. (25 mm) clearance either side

4 in. (102 mm) clearance at rear
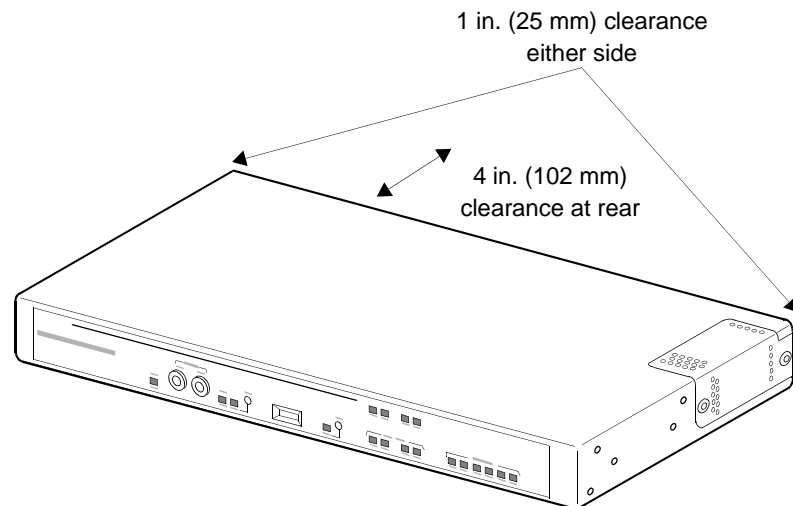
Mounting the IDSU on a desktop

The DataSMART T3/E3 IDSU can stand alone on a flat surface, as long as you adhere to the clearance requirements specified above. Rubber feet are provided but are not required for clearance.

Mounting the IDSU in a rack

Each unit is supplied with two metal ears for rack mounting. The figure below shows two options for mounting: a 19-inch rack and a 23-inch rack.

■   Note that the ears are not identical. The ear intended for the right side of the unit (as viewed from the front) is marked with a part number beginning with the letter "R". The left-side ear's part number begins with "L".

■   Mount each ear with the supplied screws, threading them into the holes in the side of the unit. Each ear can be mounted in either of two positions on the side of the unit, as shown in the figure.

Figure 6—Rack mounting with ears

Use forward or mid-rack positions.

19-inch rack

23-inch rack
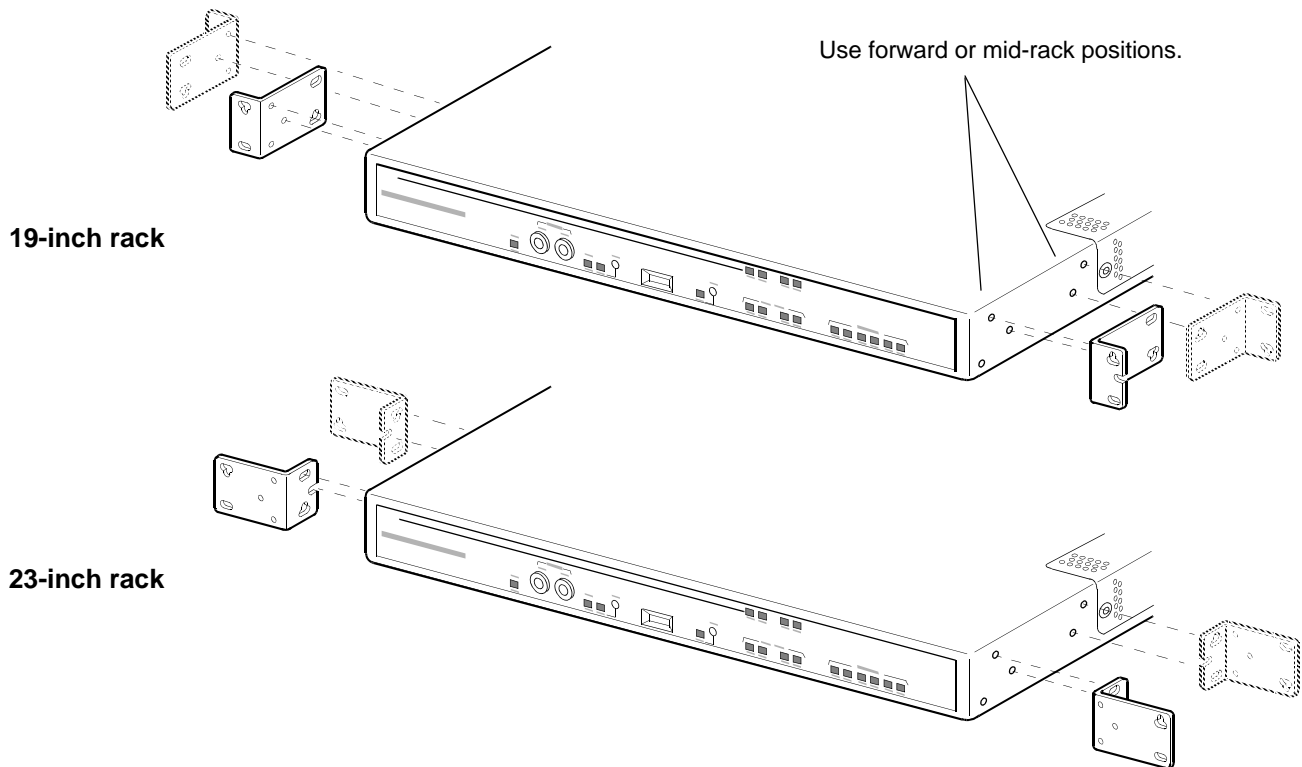
Attach the ears to the IDSU unit with the six Phillips screws provided with the unit.

Mount the ears to the rack using the four #12 mounting screws (with washers).

Route network, data, alarm, power and control cables as needed and secure them with the supplied cable tie. To gain rear access, you may need to use a service loop in the cables.

Power up the chassis

You power up the chassis by connecting its power cord to an appropriate power source.

> ⚠️ **CAUTION!**
> The power supply should be the first electrical connection connected when installing the IDSU, and the last electrical connection disconnected when removing the IDSU.

Connecting to an AC power source

Connect the installed AC power supply to a grounded power receptacle of the appropriate voltage. The voltage requirements are specified on the rear panel of the power supply. Plug the power cord into the DataSMART T3/E3 IDSU power input connector first, then into the power receptacle.

Secure the power cord to the back panel of the IDSU with a plastic cable tie to prevent the cord from being unplugged inadvertently.

Kentrox has several options for AC power cords to support applications in different countries.
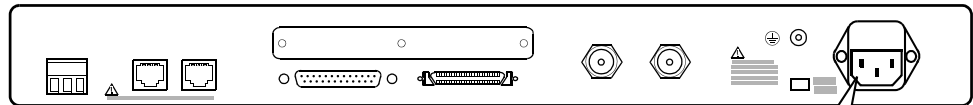
Plug one of these cables into the AC power connector

Part number	Description of cable
90000	US power cord
90001	EC power cord
90002	UK power cord
90003	Italy power cord
90004	Australia power cord
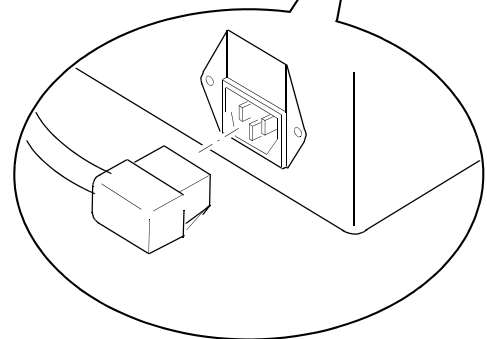
Connecting to a DC power source

Connect the installed DC power supply to a power source capable of supplying the appropriate voltage and current. The requirements are specified on the rear panel of the supply. Wire the power supply as described below.
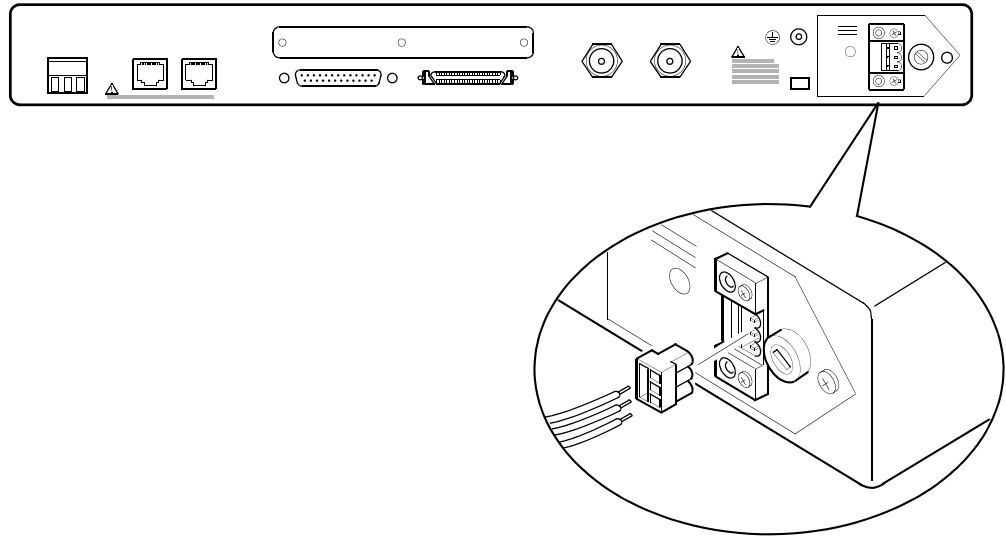
Wiring the DC power connector

1 Turn off the DC power source.

2 Prepare one 12 to 14 AWG (2.05 to 1.63 mm) wire marked with green insulation and one or more yellow stripes to connect the frame ground. Strip 0.125 in. (3.2 mm) of the insulation from the plug end of the wire. Do not strip more than 0.25 in. (6.4 mm).

3 Connect the frame ground wire to position 2 of the DC power termination plug.

4 Prepare two 14 to 22 AWG (1.63 to 0.64 mm) wires to terminate in the DC power termination plug. Strip 0.125 in. (3.2 mm) of the insulation from the plug end of each wire. Do not strip more than 0.25 in. (6.4 mm).

5 Connect the source positive to position 3 of the DC power termination plug.

6 Connect the source negative to position 1 of the DC power termination plug.

7 Plug the DC power cable into the DC power connector on the rear panel of the IDSU.

8 Turn on the DC power source.

Using the alarm relay

The DataSMART T3/E3 IDSU provides an external alarm relay switch that you can use to trigger an external alarm device. This switch provides normally-open and normally-closed positions.
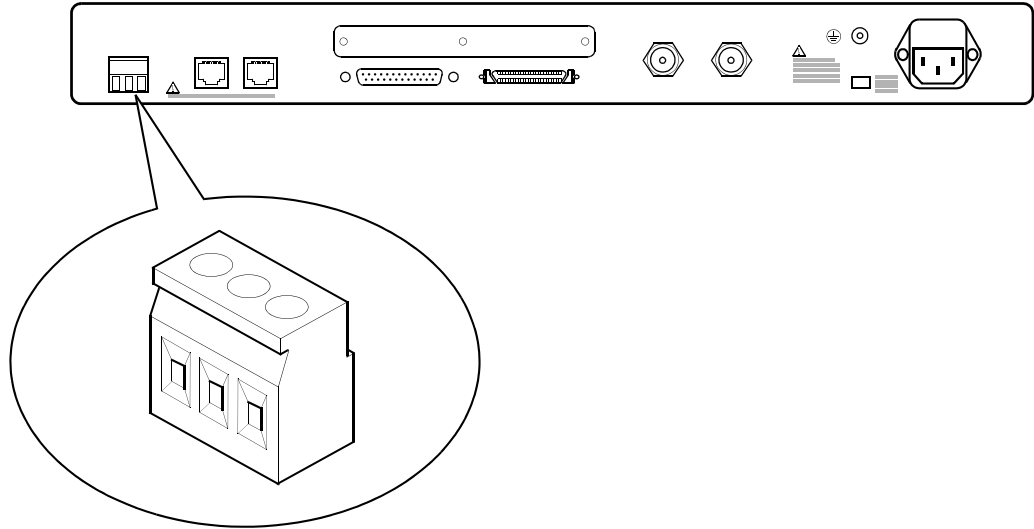
Wire the alarm relay as follows:

1   Prepare three 14 to 22 AWG (1.63 to 0.64 mm) wires to terminate in the alarm relay plug. Strip 0.125 in. (3.2 mm) of the insulation from the plug end of each wire. Do not strip more than 0.25 in. (6.4 mm).

2   Connect the COMM wire to position 2 of the plug.

3   Connect the N (normally open) wire to position 3 of the plug.

4   Connect the NC (normally closed) wire to position 1 of the plug.

Alarm relay output must be enabled through the user interface, once you have connected a control device. Use the **EAR** command.

The ACO button on the front-panel is used to cutoff the external alarm relay once it has been triggered.

ACO button
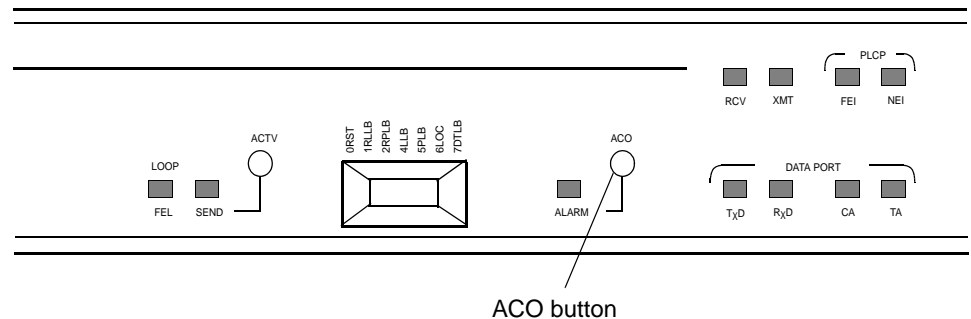
Self-test diagnostics

When the DataSMART T3/E3 powers up, it runs through a series of self-test diagnostics. You can also initiate these diagnostics by using the **DST** command through the user interface.

> ⚠️ **CAUTION!**
> If you activate self-test while the IDSU is in service, there will be a brief service interruption during the test. If you activate self-test when accessing the IDSU remotely through Telnet, self-test will break your remote connection.

Successful power up

The self-test verifies the functions of DataSMART T3/E3 IDSU hardware circuitry. The results of self-test are indicated by the POWER/FAIL LED on the front of the unit. This LED glows red for approximately 6 seconds until the self-test completes. When the test completes, the LED should turn green. If the LED stays red, the self-test failed.
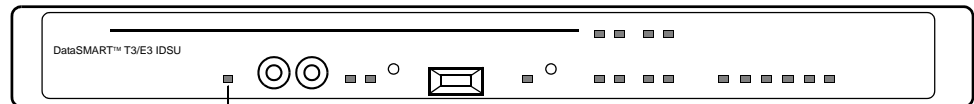
Green = Pass
Red = Failure

4 *Cabling interfaces and ports*

This chapter shows you the cabling requirements for the DataSMART T3/E3 IDSU network interface, data port, and control port. It also shows you how to cable the unit for daisy-chaining.

After completing these cabling procedures, you will be ready to configure the port software as described in Chapter 5.

The port types are covered in the following order:

■   Network interface (page 29)

■   HSSI data port (page 29)

■   V.35/EIA-530 user-programmable data port (page 30)

■   Control ports (page 31)

■   Daisy-chaining (page 33)

Pinouts for the various pin connectors are provided in Appendix A.

Network interface

The T3/E3 network interface receives and transmits data over two 75-ohm coaxial cables with BNC connectors. These cables are shipped with protective caps on the BNC connectors. Leave the caps in place until you are ready to connect the cables.

Network interface
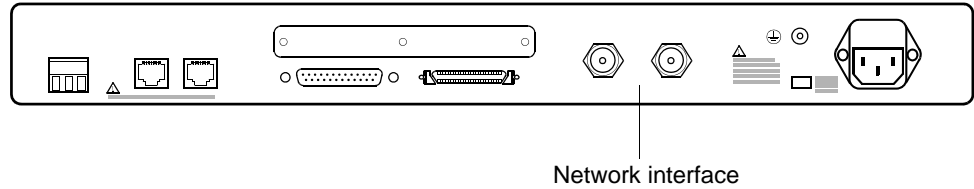
Cables and adapters

Part number	Description of cable
96*xx*009	BNC male to BNC female
96*xx* 010	BNC male to BNC male
77994001	BNC male to DIN female adapter

xx is length in feet. Call the factory for available lengths.

Maximum lengths

T3: 450 ft (137 m) maximum from transmitter to cross-connect and 450 ft (137 m) maximum from cross-connect to receiver.

E3: 274 m (900 ft) maximum.

HSSI data port

You connect to the HSSI data port via a 50-pin connector.

HSSI data port
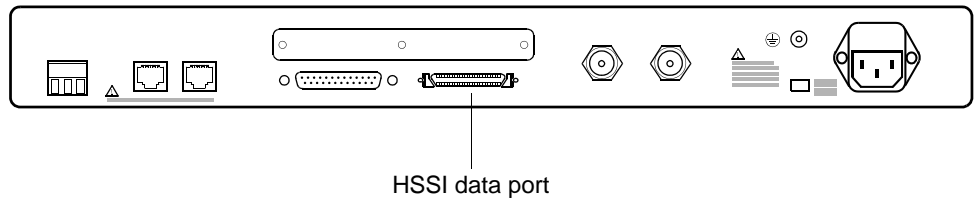
Cables and adapters

Part number	Description of cable
960005011	HSSI plug (male) to HSSI plug (male), 5, 10 or 15 feet

Maximum lengths

15 meters (50 ft.) per EIA-612

Connector pinout

See .

Signal requirements

The attached DTE must be capable of asserting TA.

Installing a ferrite

You must install a ferrite on the HSSI data port cable to comply with emissions requirements. The ferrite is provided with the cable.

To install, clip the ferrite to the HSSI data port cable. If the ferrite slips on the cable, use insulating tape to increase cable jacket diameter, or install a tie wrap.

Figure 7—HSSI data port with ferrite installed

optional tie wrap to prevent slipping

HSSI Data Port

V.35/EIA-530 user-programmable data port

The user-programmable V.35/EIA-530 data port connects to data terminal equipment (DTE) through a 25-pin socket (female) connector. When set to EIA-530, the port also supports RS449 and X.21 interfaces with appropriate cables and adapters.

V.35/EIA-530
data port

V.35 Cables and adapters

Part number	Description of cable
95010054	DB25P to V.35 (MRAC34P)
78904	Adapter V.35: DB25P to MRA34S

EIA-530, EIA-449, X.21 cables and adapters

Part number	Description of cable
950xx061	DB25P to DB25P EIA-530
950xx063	DB25P to DA15P X.21
950xx064	DB25P to DA15S X.21
78902	Adapter X.21: DB25P to DA15S
950xx065	DB25P to DC37P EIA-449 (RS449)
78901	Adapter EIA-449 (RS449): DB25P to DC37S

xx is length in feet. Call the factory for available lengths.
P = plug (male); S = socket (female)

Maximum cable lengths

V.35 = 50 ft (15.2 m)
EIA-530, EIA-449 (RS449), X.21 = 200 ft (61 m)

▶ **NOTE**
Use cables that are 10 ft. or shorter when the data port clock rate is greater than 2 MHz.

Pinouts

For EIA-530, see Table 5 on page 47.

For V.35, see Table 6 on page 48.

Signal requirements

The attached DTE must be capable of asserting DTR and RTS.

Connecting the rear-panel control ports

You can connect a local ASCII terminal or laptop to the rear-panel DCE control port, or you can connect a distant terminal via a pair of modems to the DTE port.

The DataSMART T3/E3 IDSU control ports are set to the following defaults: 9600 baud, 8 data-bits-per-character, 1-stop bit-per-character, and no parity. You must either set your terminal to match the port settings or change the port settings to match your terminal settings.

Procedures for changing the control port settings are provided on .

Control ports
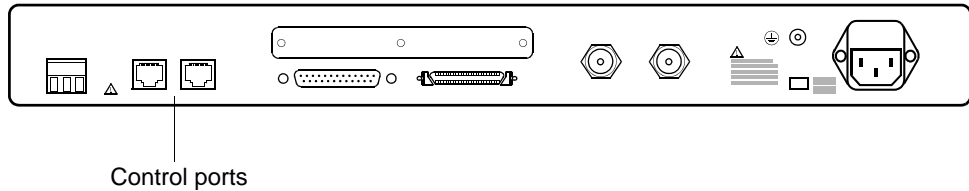
Cables and adapters

Part number	Description
930xx241	EIA-561 to EIA-561 (EIA-232D)
78899001	DB9S to RJ45S

P = plug (male); S = socket (female)

The cables named in the figure above can also be used to connect the unit to:

■ A PC using a 9-pin serial interface

■ A modem using the 9-pin connector

■ Other units in a daisy chain

Pinouts for control ports

See .

Signal requirements for control ports

For the DCE port on the rear panel, the signals DTR and RTS must be asserted by the data terminal equipment. If these signals are not asserted, the IDSU will not communicate over the DCE port.

For the DTE port on the rear panel, the signals DSR and CTS/DCD must be asserted by the data terminal equipment. If these signals are not asserted, the IDSU will not communicate over the DTE port.

Connecting control ports to a modem

Connect a modem to the DTE port *after* configuring the modem with the AT commands in the list below. It is essential to configure the modem before connecting it to the DTE port because many modems cannot be configured afterwards. This configuration sets auto-answering, flow control, and some other parameters essential to successful communication.

Use only a modem that is compatible with the following AT commands.

Table 1—Standard AT command set

AT command	Action	Modem response
ATS0=1	Auto answer on first ring	OK
AT&C1	DCD is asserted by modem when connection is made	OK
AT&D1	Enter command mode if DTR goes low	OK
Enter the following commands carefully. The characters entered will not be echoed and there will be no responses.		
ATQ1	Modem does not return codes	No response
ATE0	Modem does not echo command characters	No response
AT&W0	Store current configuration as user profile 0	No response
AT&Y0	Specify user profile 0 as power-up configuration	No response

Configuring units via a daisy-chain

Daisy-chaining allows you a single point of control for many units. The manner in which you cable the units together depends on whether you are using a DCE or DTE control port.

Using the DCE control port

Make sure the physical communications parameters (baud rate, data bits, stop bits, etc.) for all ports are set up identically.

Cable the daisy-chained units as shown in Figure 8 when you plan to access the first unit in the chain via a terminal connected to the unit's front-panel craft port or rear-panel DCE control port.

Figure 8—Cabling daisy-chained units when using a DCE control port
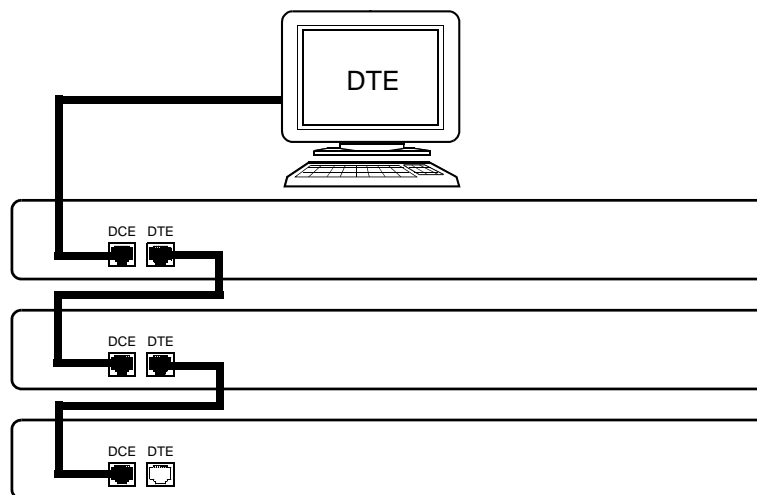
Use cable 930*xx*241 (EIA-561 to EIA-561)) for the daisy chaining.

To set up a daisy-chain of IDSUs, perform the following procedures.

Procedure 1

1   Set the baud rate, parity, data and stop bits correctly of the IDSU, as specified on page 17.

2   Connect the power cord and power on the unit, as specified on page 22.

3   Attach an ASCII terminal to the DCE port of the first unit. Do not connect anything to the DTE port of this unit.

4   On your terminal (or in your terminal emulation window) press the Enter key. This logs you into the unit and brings up the Main menu.

5   Enter the command **SA**:*xx:yy:zzz* to set the unit's daisy-chain address. Do not use address 00:00:000 (this is the default address of all the units).

   xx = 0 - 15
   yy = 0 - 15
   zzz = 0 - 255

6   Log out (enter <Ctrl-D>).

Procedure 2

1   Set the baud rate, parity, data and stop bits correctly on the next IDSU, as specified on .

2   Connect the power cord and power on the unit, as specified on .

3   Connect the next IDSU DCE port to the DTE port of the IDSU you just set up.

4   Press the Enter key. This logs you into the next unit and brings up its Main menu.

5   Enter the command **DE** to disable echo.

6   Enter the command **SA**:*xx:yy:zzz* to set the unit's daisy-chain address. The address must be unique. Do not use address 00:00:000 (this is the default address of all the units).

    xx = 0 - 15
    yy = 0 - 15
    zzz = 0 - 255

7   Log out (enter <Ctrl-D>).

Repeat procedure 2 for each IDSU you wish to connect to the daisy-chain.

Using the DTE control port

Cable the daisy-chained units as shown in Figure 9 when you plan to access the first unit in the chain via a modem connected to unit's rear-panel DTE control port.

Figure 9—Cabling daisy-chained units through a modem

Use cable 930*xx*241 (EIA-561 to EIA-561)) for the daisy chaining.

To set up a daisy-chain of IDSUs, perform the following procedures.

Procedure 1

1   Set the baud rate, parity, data and stop bits correctly of the IDSU, as specified on page 17.

2   Connect the power cord and power on the unit, as specified on page 22.

3   Press the Enter key. This logs you into the unit and brings up the Main menu.

4   Enter the command **SA**:*xx:yy:zzz* to set the unit's daisy-chain address. Do not use address 00:00:000 (this is the default address of all the units).

    xx = 0 - 15
    yy = 0 - 15
    zzz = 0 - 255

5   Enter the **DTE** command to switch the alarm message port from the DCE port to the DTE port.

6   Log out (enter <Ctrl-D>).

7   Disconnect the ASCII terminal from the DCE port.

8   Connect the modem to the DTE port.

Procedure 2

1   Set the baud rate, parity, data and stop bits correctly on the next IDSU, as specified on page 17.

2   Connect the power cord and power on the unit, as specified on page 22.

3   Press the Enter key. This logs you into the next unit and brings up its Main menu.

4   Enter the **DE** command to disable echo.

5   Enter the command **SA**:*xx:yy:zzz* to set the unit's daisy-chain address. The address must be unique. Do not use address 00:00:000 (this is the default address of all the units).
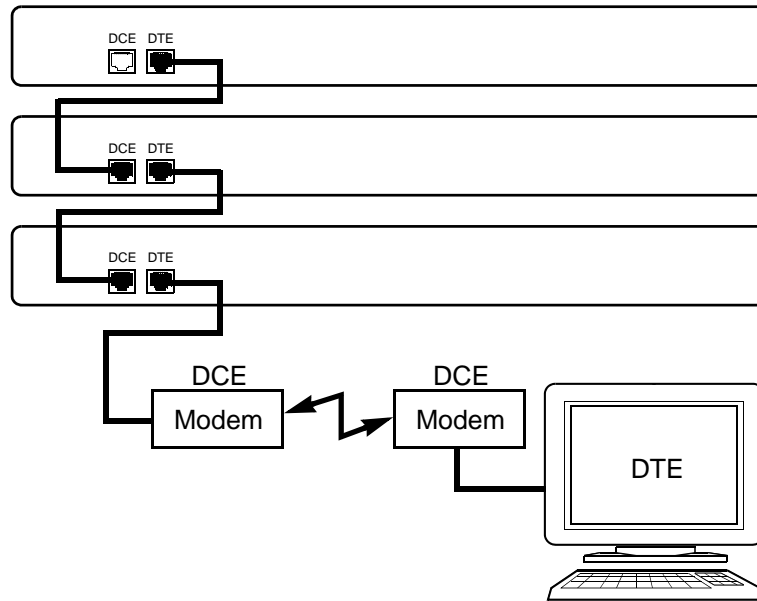
xx = 0 - 15
yy = 0 - 15
zzz = 0 - 255

6   Enter the **DTE** command to switch the alarm message port from the DCE port to the DTE port.

7   Log out (enter <Ctrl-D>).

8   Disconnect the ASCII terminal.

9   Connect the DTE port of the unit to the DCE port of the last unit you set up.

Repeat procedure 2 for each IDSU you wish to connect to the daisy-chain.

C H A P T E R

5 *Initial configuration*

This chapter takes you through the minimum configuration steps needed to verify that the DataSMART T3/E3 IDSU is active and functioning properly. After completing these steps, your network and data port LEDs should be "yellow" and you can proceed to your *DataSMART T3/E3 IDSU User's Guide* for additional configuration or performance monitoring information.

Topics covered include:

- Network configuration (page 39)

- Data port configuration (page 40)

- Verifying the configuration (page 41)

Procedures for setting up SLIP Telnet or IP access to the DataSMART T3/E3 IDSU are provided in Chapter 7 of your user's guide.

Logging in

Through the control port: stand-alone

On a stand-alone unit, the device typically has the address of 00:00:000. In this case, simply push the Enter key to log in. The IDSU will display the Main menu, and then the command prompt, indicating you are logged in.

Through the control port: daisy-chained

With daisy-chained units, each unit in the daisy chain has an address. To log into an IDSU that is daisy-chained, enter this:

<Ctrl-D>*xx***:***yy***:***zzz*<Ctrl-E>

where *xx***:***yy***:***zzz* is the address of the unit you want to log into. Note that the colon delimiters are required.

Logging out

You should always log out of the DataSMART T3/E3 IDSU when you are done, however, the Auto Logout feature logs you out automatically after 15 minutes with no activity.

To log out, enter <Ctrl-D>.

You can also log out by disconnecting the control port cable.

Network configuration

Set up the system clock

1 Specify the system reference clock by entering one of the following commands:

CLK:L for looping the network receive timing
CLK:I for using the IDSU internal oscillator

Always use the loop timing option if the network receive signal supplies timing. There should only be one timing source in the T3 or E3 circuit.

The default is loop timing.

Specify the network type and framing

2 Specify your network type and framing as one of the following. The type and framing must match your network signal.

NM13 for T3 M13 framing
NCBT for T3 C-Bit Parity framing
NE3 for E3 framing

The default is T3 M13.

Specify transmit output level

3 Set the transmit output level as follows:

NLO for cabling distances less than 450 feet
NHI for cabling distances of 450 feet or greater

The default is **NLO** (no amplification).

Specify transmit line build out (T3 only)

4 Set the transmit line build out as follows:

LBO:IN for cabling distances less than 225 feet
LBO:OUT for cabling distances of 225 feet or greater

The default is **LBO:OUT** (no line build out)

You can only set this parameter if the network is set to T3; E3 line build out is always set to out.

Data port configuration

Specify the port physical interface

1 Enter the type of data port connection you are using:

HSSI
V35
EIA530 (also supports EIA-449, RS449)

The default is HSSI.

Set the port clock rate

2 Use the following command to set the data port clock rate. This rate should be compatible with your DTE. Allowed values are shown in the table following the command description.

DSUCLK:*xx.x***,***yy.y*

xx.x   Set the transmit clock to a 0.5MHz resolution.

yy.y   Set the receive clock rate to a 0.5 MHz resolution.

The default for T3/HSSI is 45 MHz, the default for E3/HSSI is 34 MHz, and the default for V.35 or EIA-530 is 4 MHz.

Network type	Data port type	Allowed range
T3 or E3	V.35 or EIA-530	1 to 8.0 MHz
T3	HSSI	1 to 35 MHz; or 45 MHz if both transmit and receive are set to 45 MHz
E3	HSSI	1 to 24.5 MHz; or 34 MHz if both transmit and receive are set to 34 MHz

Verifying the configuration

The front-panel LEDs alert you if the DataSMART T3/E3 IDSU is experiencing abnormal conditions. The following figures show the LEDs during normal and abnormal conditions.
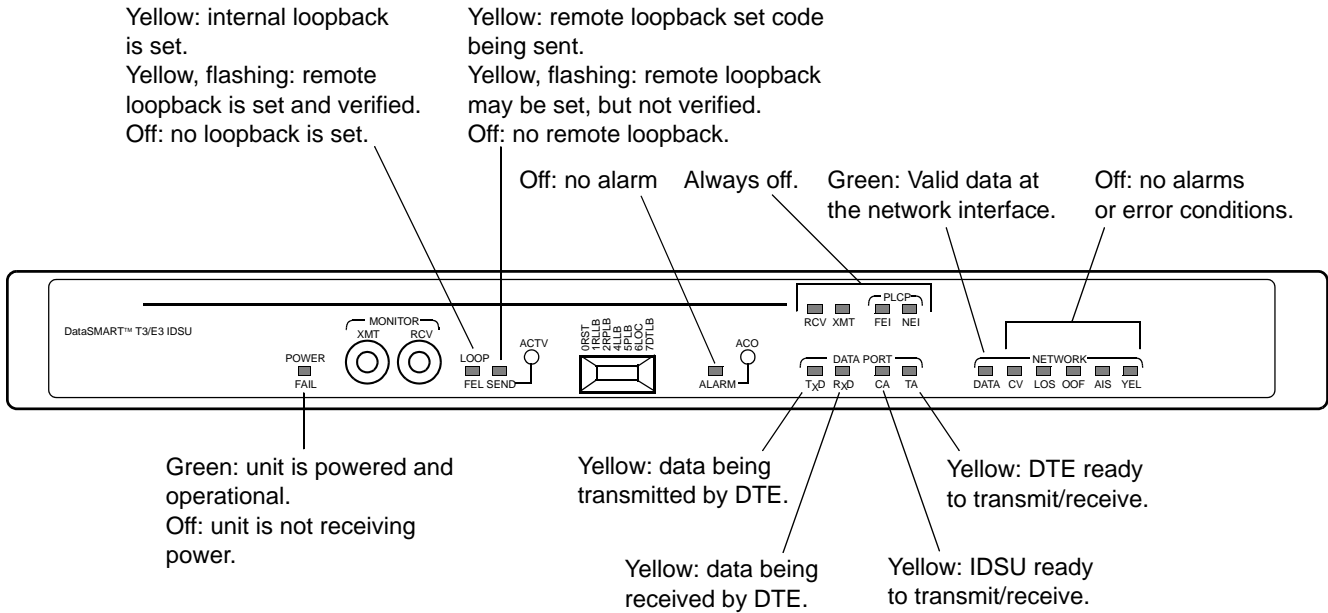
Figure 10—LEDs when conditions are normal

Yellow: internal loopback is set.
Yellow, flashing: remote loopback is set and verified.
Off: no loopback is set.

Yellow: remote loopback set code being sent.
Yellow, flashing: remote loopback may be set, but not verified.
Off: no remote loopback.

Off: no alarm

Always off.

Green: Valid data at the network interface.

Off: no alarms or error conditions.

Green: unit is powered and operational.
Off: unit is not receiving power.

Yellow: data being transmitted by DTE.

Yellow: data being received by DTE.

Yellow: IDSU ready to transmit/receive.

Yellow: DTE ready to transmit/receive.

Figure 11—LEDs when conditions are abnormal

Red: alarm condition exists.
Green: ACO switch has been activated, but alarm condition still exists.

Red: code violation.

Red: Loss of signal.

Red: Out of frame.

Red: unit is powered but not fully operational (self-test failed).

Off: no transmit (TxD), receive (RxD) data flow.

Off: IDSU (CV), DTE (TA) not ready to receive or transmit data.

Red: AIS being received.

Yellow: Yellow alarm being received.
Yellow, flashing: Yellow being transmitted.

Table 2—LED indicators and their meanings

LED	Indicator	Condition
POWER/FAIL	Green	Power is on, self-test successful.
	Red	Power is on, self-test failed.
	Off	No power is being received.
LOOP / FEL	Yellow	Internal loopback is set.
	Yellow, flashing	Remote loopback is set and verified.
SEND	Yellow	Remote loopback set code is being transmitted.
	Yellow, flashing	Remote loopback may be set but not verified.
ALARM	Red	Alarm exists at the network interface.
	Green	ACO switch has been activated, but alarm still exists at the network interface.
	Off	No alarm.
RCV XMT FEI NEI	Off	Not used; always off.
TxD	Yellow	Data is being transmitted by DTE, received by IDSU. (Indicates SD activity for HSSI port, transmit data activity for V.35 port.)
	Off	No transmit data.
RxD	Yellow	Data is being received at DTE, transmitted by IDSU. (Indicates RD activity for HSSI port, receive data activity for V.35 port.)
	Off	No receive data flow.
CA	Yellow	Indicates IDSU is ready to send and receive data. (Indicates the state of CA for HSSI port, and state of CTS & DCD in V.35 mode.)
	Off	IDSU not ready.
TA	Yellow	Indicates DTE is ready to send and receive data. (Indicates the state of TA for HSSI port, and DTR for V.35 port.)
	Off	DTE not ready.

Table 2—LED indicators and their meanings (continued)

LED	Indicator	Condition
DATA	Green	Valid data is being received at the network interface.
CV	Red	Code violation detected at the network interface.
LOS	Red	Loss of signal detected at the network interface.
OOF	Red	Out-of-frame condition detected at the network interface.
AIS	Red	Alarm indication signal (AIS) is being received at the network interface.
YEL	Yellow	Yellow alarm is being received at the network interface.
	Yellow, flashing	Yellow alarm is being transmitted at the network interface.

APPENDIX

A *Connector pinouts*

This appendix contains the pinouts for the following connectors:

- Control port pinout ()

- HSSI data port pinout ()

- EIA-530 pinout ()

- V.35 pinout ()

Table 3—Control port pin assignments

CCITT	Pin	Signal name	DTE	DCE
125	1	Ring Indicator (RI)	Input	Output
109	2	Rec Sign Det (DCD)	Input	Output
108.2	3	DTE Ready (DTR)	Output	Input
102	4	Signal GND	—	—
104	5	Received Data	Input	Output
103	6	Transmit Data	Output	Input
106	7	Clear To Send (CTS)	Input	Output
105	8	Request To Send (RTS)	Output	Input

Table 4—HSSI pin assignments

+ Pin	- Pin	Circuit name	Source
1	26	SG-Signal Ground	—
2	27	RT-Receive Timing	DCE
3	28	CA-DCE Available	DCE
4	29	RD-Receive Data	DCE
5	30	LC-Loopback circuit C	DCE
6	31	ST-Send Timing	DCE
7	32	SG-Signal Ground	—
8	33	TA-DTE Available	DTE
9	34	TT-Terminal Timing	DTE
10	35	LA-Loopback circuit A	DTE
11	36	SD-Send Data	DTE
12	37	LB-Loopback circuit B	DTE
13	38	SG-Signal Ground	—
14, 15, 16, 17, 18	39, 40, 41, 42, 43	Reserved for future use.	DTE
19	44	SG-Signal Ground	—
20, 21, 22, 23, 24	45, 46, 47, 48, 49	Reserved for future use.	DCE
25	50	SG-Signal Ground	—

**Table 5—DB25D connector pin assignments for EIA-530**

Pin	Designator CCITT/EIA	Circuit name	Source
1	—	Shield	—
2	(a) 103/BA	BA (A), Transmitted Data	DTE
3	(a) 104/BB	BB (A), Received Data A	DCE
4	(a) 105/CA	CA (A), Request To Send A (RTS)	DTE
5	(a) 106/CB	CB (A), Clear To Send A (CTS)	DCE
6	(a) 107/CC	CC (A), DCE Ready (DSR)	DCE
7	102/AB	AB, Signal Ground	—
8	(a) 109/CF	CF (A), Received Line Signal Detector	DCE
9	(b) 115/DD	DD (B), Receiver Signal Element Timing	DCE
10	(b) 109/CF	CF (B), Received Line Signal Detector	DCE
11	(b) 113/DA	DA (B), Transmit Signal Element Timing	DTE
12	(b) 114/DB	DB (B), Transmit Signal Element Timing	DCE
13	(b) 106/CB	CB (B), Clear To Send	DCE
14	(b) 103/BA	BA (B), Transmitted Data	DTE
15	(a) 114/DB	DB (A), Transmit Signal Element Timing	DCE
16	(b) 104/BB	BB (B), Received Data	DCE
17	(a) 115/DD	DD (A), Receiver Signal Element Timing	DCE
18	141/LL	LL, Local Loopback	DTE
19	(b) 105/CA	CA (B), Request To Send	DTE
20	108.2/CD	CD (A), DTE Ready	DTE
21	140/RL	RL, Remote Loopback	DTE
22	(b) 107/CC	CC (B), DCE Ready	DCE
23	(b) 108.2/CD	CD (B), DTE Ready	DTE
24	113/DA	DA (A), Transmit Signal Element Timing	DTE
25	142/TM	TM, Test Mode	DCE

Table 6—DB25D connector pin assignments for V.35

Pin	CCITT	Circuit name	Source
1	—	Protective GND	—
2	(a) 103	Tx Data A	DTE
3	(a) 104	Rx Data A	DCE
4	105	RTS	DTE
5	106	CTS	DCE
6	107	DSR	DCE
7	102	Signal GND	—
8	109	Rec Line Sig Det (DCD)	DCE
9	(b) 115	Rx Timing B	DCE
10	—	Not used	—
11	(b) 113	External clock B	DTE
12	(b) 114	Tx Timing B	DCE
13	—	Not used	—
14	(b) 103	Tx Data B	DTE
15	(a) 114	Tx Signal Timing A	DCE
16	(b) 104	Rx Data B	DCE
17	(a) 115	Rx Signal Timing A	DCE
18	141	LL, Local Loopback	DTE
19	—	Not used	—
20	108.2	DTR	DTE
21	140	RL, Remote Loopback	DTE
22	—	Not used	—
23	—	Not used	—
24	(a) 113	External Clk A	DTE
25	142	TM, Test Mode	DCE

B *Using the front-panel thumbwheel*

The front-panel thumbwheel switch allows you to set local and remote loopbacks. It also lets you reset the unit to factory defaults, overriding any configuration edits made previously.
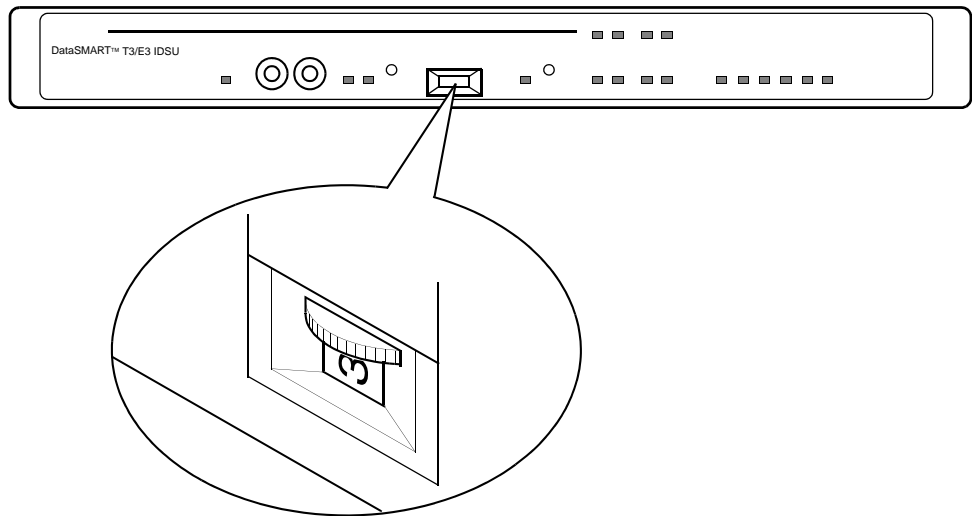
The following table describes the switch settings. To activate a setting, you must press either or both push-buttons. Each switch function has an equivalent command in the user interface. These equivalents are listed in the table. Refer to your user's guide for information about the commands.

▶ **NOTE**
Remote loopbacks can only be set if the network interface is T3 C-bit parity.

Set the thumbwheel to...	Push...	The following action results...
0 (RST) cmmd equivalent=**RLB**	ACTV	Resets any active remote or local loopback.
1 (RLLB) cmmd equivalent=**SRL**	ACTV	Sets a line loopback at the far-end (remote line loopback).
2 (RPLB) cmmd equivalent=**SRP**	ACTV	Sets a payload loopback at the far-end (remote payload loopback).
3	ACTV and ACO; hold for 3 seconds	Resets the unit to factory defaults. Control port baud rate and other terminal communication settings are set to internal DIP switch values.

Set the thumbwheel to...	Push...	The following action results...
4 (LLB) cmmd equivalent=**SLL**	ACTV	Sets a line loopback at the near-end
5 (PLB) cmmd equivalent=**SPL**	ACTV	Sets a payload loopback at the near-end
6 (LOC) cmmd equivalent=**SLO**	ACTV	Sets a local loopback at the near-end
7 (DTLB) cmmd equivalent=**SDT**	ACTV	Sets a data terminal loopback at the near-end
8	ACTV and ACO	Disables the SLIP connection
9	ACTV and ACO	Resets the IDSU device address to 00:00:000

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