



Communications Test Design, Inc.

# **TerraBoss & TerraUno Getting Started Guide**

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## Service and Warranty

For assistance with applications or technical questions, please contact CTDI technical support:

Phone: North America 1-888-444-9556

International: +1-615-884-7455

Email: [NCservice@ctdi.com](mailto:NCservice@ctdi.com)

To place an order, please contact CTDI sales:

Phone: 1-866-953-9030

Email: [productsales@ctdi.com](mailto:productsales@ctdi.com)

Should a product require repair or replacement, please contact CTDI Customer Service:

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April 2009

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# Compliance Information

## Regulatory – Compliance and Agency Approval

These products comply with or have obtained Regulatory Agency approval at least against the following standards:

- **EMC – Emission**            FCC Part 15 (Class B)
- **Safety**                        UL 60950  
                                          CSA C22-2 N°60950
- **Telecom**                      FCC Part 68  
                                          IC CS-03

## Compliance and Regulatory Statements

### 1. FCC Part 15 Statement

These digital equipments have been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected

### 2. FCC Part 68 Statement

These equipments comply with Part 68 of the FCC rules.

On the product nameplate of this equipment (located on the underside of the product chassis) is a label that contains, among other information, the certification number for this equipment. If requested, this number must be provided to the telephone company.

## Connection to the Telephone Line

- These equipments use jacks for connection to the telephone line. You must, upon request, provide the following "USOC Jack type" to your local telephone company: *RJ48C, RJ48H or RJ48M*
- Your telephone company may discontinue your service if your equipment causes harm to the telephone network. They will notify you in advance of disconnection, if possible. During notification, you will be informed of your right to file a complaint to the FCC.
- Occasionally, your telephone company may make changes in its facilities, equipment, operation, or procedures that could affect the operation of your equipment. If so, you will be given advance notice of the change to give you an opportunity to maintain uninterrupted service.
- THE REGISTRATION NUMBER OF THE SYSTEM MUST BE PROVIDED SO THAT THE TELEPHONE COMPANY CAN ASCERTAIN INTENDED MODES OF OPERATION AND VERIFICATION OF REGISTRATION PORTS.
- If a need arises in the future, the telephone company will call the user and request the following information for any equipment being connected to the Public Switched Telephone Network:
  - Manufacturer: *Communications Test Design, Inc.*
  - Model Number: *Refer to the nameplate on the bottom of the unit*
  - FCC Registration #: *Refer to the nameplate (bottom of the unit)*
  - Ringer Equivalence Number (REN): *Not applicable*
  - Facility Interface Code (FIC):
    - *04DU9-BN* for 1.544 Mbps, D4
    - *04DU9-DN* for 1.544 Mbps, D4 and B8ZS
    - *04DU9-1KN* for 1.544 Mbps, ANSI ESF
    - *04DU9-1SN* for 1.544 Mbps, ANSI ESF and B8ZS
  - Service Order Code (SOC): *6.0N*
  - Telephone plug(s): *RJ48C, RJ48H or RJ48M*

## Problems, Repair and Warranty

Should you experience trouble with these telephone equipments or for repair or warranty information, please contact Communications Test Design, Inc. (refer to "Support from CTDI" in this manual)

If an equipment is causing harm to the telephone network, the telephone company may request that you disconnect this equipment from the line network until the problem

## 3. Industry Canada Statements

These digital equipments do not exceed Class B limits for radio noise emissions for digital apparatus, set out in Radio Interference Regulation of the Industry Canada. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps necessary to correct the interference.

These products meet the applicable Industry Canada technical specifications.

The Industry Canada label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective, operations, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by a Communications Test Design, Inc. authorized maintenance facility. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

#### **4. Notice d'Industrie Canada**

Ces équipements ne dépassent pas les limites de Classe B d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par l'Industrie Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions de radio et de télévision, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

Le présent matériel est conforme aux spécifications techniques applicables d'Industrie Canada.

L'étiquette d'industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par Communications Test Design, Inc. L'entreprise

de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause d'un mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.



L'utilisateur ne doit pas tenter de faire les raccordements lui-même, mais doit avoir recours à un service d'inspection d'installations électriques ou d'un électricien.

### Making changes or modifications



Any changes and modifications not expressly approved by CTDI will void any compliance and regulatory approval, and will void the user's authority to operate the equipment.

### Safety warnings and Precautions



Warning  
Warnung  
Avertissement

<p>Access to the interior of this unit shall be made only by a qualified technician</p>	<p>Der Zugang ins Innere des Gerätes ist nur einem fachlich qualifizierten Techniker gestattet.</p>	<p>Seul un spécialiste devrait avoir accès à l'appareil</p>
<p>To ensure adequate cooling of the equipment, a 2.0-inch unobstructed space must be provided around all sides of the unit.</p>	<p>Um die Kühlung des Gerätes nicht zu beeinträchtigen, ist es notwendig, an allen Seiten des Gerätes ca 5 cm Raum zu lassen</p>	<p>Afin de ne pas nuire au processus de refroidissement, il est nécessaire de laisser un espace d'environ 5 cm de chaque côté de l'appareil.</p>
<p>The AC Power Socket shall be installed near the equipment and shall be easily accessible Remove power plug from the power socket before performing any service on the unit.</p>	<p>Stellen Sie das Gerät in der Nähe eines geerdeten Schutzkontaktsteckers so auf, dass der Stecker leicht erreichbar und zugänglich ist.</p>	<p>Placez l'appareil près d'une prise de courant facilement accessible</p>
<p>Remove power plug from the power socket before performing any service on the unit</p>	<p>Vorm Öffnen des Gerätes muss der Netzstecker vom Stromnetz getrennt werden!</p>	<p>Débranchez l'appareil avant de l'ouvrir</p>

# TerraBoss & TerraUno T1/E1 DSUs

## Getting Started Guide

We at CTDI would like to thank you for purchasing the TerraBoss or TerraUno DSU. We are very excited about these products, which set new standards for ease of installation and use for a T1 or E1 DSU.

First off, we've developed the **LineLearn™** function, which makes installation as easy as a plug-and-play analog modem. **LineLearn™** reads the line characteristics from a live T1 or E1, and configures your DSU to match. In most cases, you simply connect cables and push a couple of buttons to get your TerraBoss or TerraUno up and running. Everything you need to know is in this **Getting Started Guide**.

Of course, additional features such as the management interfaces and Graphical Test Set require a little more explanation and setup. The full capabilities of TerraBoss and TerraUno are described in the **User's Reference Manual** P/N TBOS-5101-003 available on the CTDI Web site at: [www.ctdi.com/ProductsPortfolio/tabid/2475/Default.aspx](http://www.ctdi.com/ProductsPortfolio/tabid/2475/Default.aspx).

# Installation Checklist

After unpacking your TerraUno or TerraBoss and its accessories from the box, check the contents against the following list:

- TerraUno or TerraBoss DSU
- Universal mounting base
- Power supply (for 110-120 Vac, a single assembly; for 100-240 Vac, separate transformer and power cable; see *Table A*)
- E1/T1 cable (14-foot RJ48, or 1-foot RJ48 plus 75-ohm balun adapter for BNC connections; see *Table 2-A*)
- Small plastic bag containing: a) ferrite-core EMI suppressor, a plastic-covered metal cylinder which clamps onto the RJ48 cable; b) power cable clamp, a small strip of plastic with a hole at each end, plus a small Phillips-head screw
- Multi-connector ribbon cable (TerraBoss only)
- *Getting Started Guide* and *User's Reference Manual*

TerraUno and TerraBoss are packaged with different accessories for different parts of the world, as indicated in *Table A*, so be sure that you have the proper power supply and E1/T1 line cable before proceeding. If you have not received all of the correct accessories, contact your distributor.

## ***What You'll Need To Provide***

There are many different ways to connect your TerraBoss or TerraUno to a router or other device. You'll need to determine and obtain the appropriate data cable for connecting to TerraBoss's **DATA** Port. For cable requirements, contact your router manufacturer or distributor.

If you plan to use the Terminal and/or Web Interfaces, you'll need the appropriate serial and/or 10 Base-T cable, as described later in this chapter. If you plan to mount the unit on a wall, you'll also need to supply appropriate mounting screws and anchors.

## Tools You'll Need

If you are not wall-mounting the unit, the only tool you're likely to need is a small screwdriver for tightening cable connectors. For wall-mounting, you'll probably need a drill and other tools, depending on the particulars of your installation.

**Table A. TerraUno and TerraBoss Model Numbers**

Model	Power	Line Connection
TerraUno NA1	110-120 V ac	RJ48 network cable (14 feet)
TerraUno NA2	110-120 V ac	75-ohm balun adapter (with 1-foot RJ48 cable)
TerraUno EU1	100-240 V ac with European-style cable	RJ48 network cable (14 feet)
TerraUno EU2	100-240 V ac with European-style cable	75-ohm balun adapter (with 1-foot RJ48 cable)
TerraUno UK1	100-240 V ac with UK-style cable	75-ohm balun adapter (with 1-foot RJ48 cable)
TerraBoss NA1	110-120 V ac	RJ48 network cable (14 feet)
TerraBoss NA2	110-120 V ac	75-ohm balun adapter (with 1-foot RJ48 cable)
TerraBoss EU1	100-240 V ac with European-style cable	RJ48 network cable (14 feet)
TerraBoss EU2	100-240 V ac with European-style cable	75-ohm balun adapter (with 1-foot RJ48 cable)
TerraBoss UK1	100-240 V ac with UK-style cable	75-ohm balun adapter (with 1-foot RJ48 cable)

# Putting Your DSU Where You Want It

Your TerraBoss or TerraUno comes with a universal mounting base that lets you place it just where you want it—as a single unit on a flat surface, as interlocked units on a flat surface, or on a wall.

**CAUTION:** *Whether the unit is mounted on a flat surface or on a wall, be sure that the air vents are always clear to ensure adequate ventilation and prevent possible overheating.*

## Placing TerraBoss or TerraUno in Its Base

To mount a free-standing desktop unit:

1. Gently press the unit down on the base as shown in part A of Figure 1.
2. Slide it toward the back of the base until it locks into place as shown in part B of Figure 1.

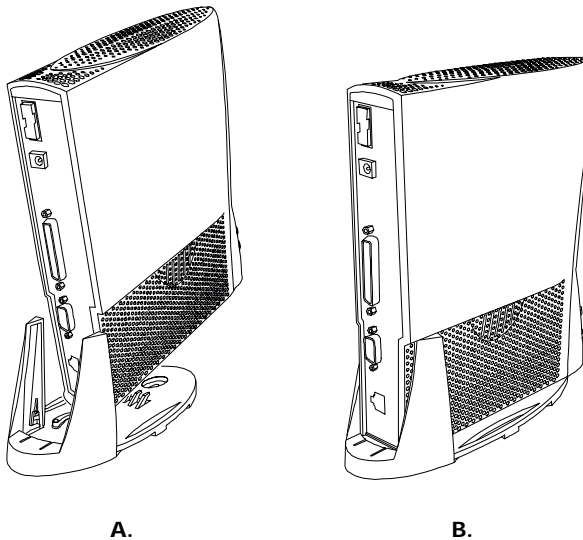


Figure 1. Inserting Your TerraBoss or TerraUno Into Its Base

## Interlocking Several Units

If you're desktop-mounting two or more TerraBoss and/or TerraUno DSUs at one location, you can interlock their bases for optimum stability:

1. Insert all units into their bases as described previously.
2. Set one unit next to another, with both facing the same direction.
3. Insert the semicircular tab on the base of one unit into the groove on the base of the other unit.
4. Repeat until the bases of all units are interlocked.

## Wall Mounting

As an alternative to desktop mounting, you can attach the base of your TerraBoss or TerraUno to a wall, and then insert the DSU into the base. You'll need two screws and perhaps two screw anchors to do this, depending on the type of wall.

**CAUTION:** *Be sure that the anchoring method you use will support a load of at least 10 pounds.*

To wall-mount your TerraBoss or TerraUno:

1. Orient the mounting base as shown in *Figure 2*, and hold it against the wall where you want to mount the unit. (*Be sure you're within reach of an electrical outlet.*)
2. If necessary, drill holes and/or install anchors to match the two circular mounting holes in the base.
3. Install two screws through the two circular holes in the base. Slide the base down so it rests on the screws, and tighten the screws so the base is held firmly to the wall.
4. Position the DSU as shown in *Figure 2 (following page)*, lining up the five prongs on the base with the five slots in the unit's side.
5. Place the DSU against the side of the base so the prongs on the base insert into the unit.
6. Press down gently but firmly until the two nibs on the base's support arms snap into the two holes on the bottom of the unit.



## Cables and Connections

To put TerraBoss or TerraUno into action, you need to make the right connections: to the T1 or E1 line, to your local network's router or other data source, and to ac power. You make these connections to the **LINE**, **DATA**, and **POWER** connectors on the rear of unit.

For management connections to the **TERM**, **10BASE-T**, and **BUS** connectors, see *Chapter 2* of the *User's Reference Manual*.

### Connecting to the T1 or E1 Line

The way you connect to the network depends on whether your connection is T1 or 120-ohm E1 (RJ48) or 75-ohm E1 (BNC).

#### T1 and 120-ohm E1 Line Connections

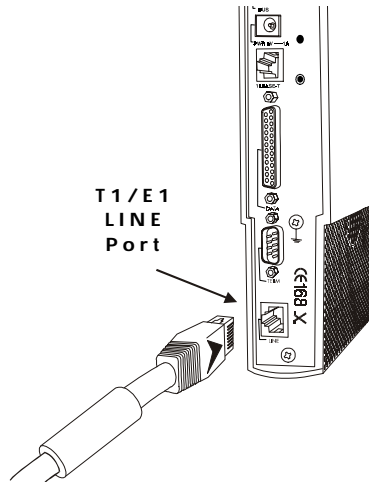
Your TerraBoss or TerraUno package includes a 14-foot RJ48 cable for your T1 or E1 connection, along with a ferrite-core EMI suppressor (a plastic-covered metal cylinder which clamps onto the RJ48 cable) for emissions control. *If you use an RJ48 cable other than the one supplied with your TerraBoss or TerraUno, take note of the following:*

**CAUTION:** *To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.*

**ATTENTION:** *Pour réduire le risque d'incendie, utiliser uniquement des conducteurs de télécommunications 26 AWG ou de section supérieure.*

To connect to the T1 or E1 line:

1. Connect one end of the RJ48 cable to the RJ48 jack that the service provider installed for the T1 or E1 line.
2. Connect the other end of the cable to the **LINE** jack on the rear panel of your TerraBoss or TerraUno, as shown in *Figure 3*.
3. Install the EMI suppressor on the RJ48 cable (about 1 inch or 2.5 cm from the connector on the TerraUno/TerraBoss end) by snapping it shut around the cable.



**Figure 3. RJ48 T1 or E1 Line Connection**

### *75-ohm E1 Line Connections*

Your 75-ohm E1 package includes a 75-ohm “balun” adapter, a 1-foot RJ48 cable, and a ferrite-core EMI suppressor (a plastic-covered metal cylinder which clamps onto the RJ48 cable) for emissions control.

To use the balun adapter to connect to the E1 line:

1. Plug one connector of the one-foot RJ48 cable into the RJ48 **LINE** jack on the TerraUno or TerraBoss rear panel.
2. Plug the other connector of the one-foot RJ48 cable into the RJ48 jack on the balun adapter.
3. Install the EMI suppressor on the RJ48 cable (about 1 inch or 2.5 cm from the connector on the TerraUno/TerraBoss end) by snapping it shut around the cable.
4. Obtain two coaxial cables of the necessary length, with BNC connectors on both ends.
5. Connect the cables between the service provider’s BNC connectors and the BNC connectors on the balun adapter.  
*Be careful to connect the **TX Out** BNC connectors together, and the **RX In** connectors together.*



## Connecting the Power Supply

You connect your TerraUno or TerraBoss to an ac power source using the transformer and cable included with the unit (unless you are installing your TerraUno or TerraBoss in a chassis).

***Note:** There is a green grounding screw, labeled **CHS GND**, on the rear panel next to the **TERM** connector. If you wish, you can connect **CHS GND** to earth ground in your building. However, you do not need to make any ground connection to this screw.*

### IMPORTANT SAFETY INSTRUCTIONS:

*When using your telecommunication equipment, always follow basic safety precautions to reduce the risk of fire, electrical shock, and injury.*

**Do not use this product near water.**

*Bei Benützung Ihres Fernmeldeapparates sollen immer die nötigen Sicherheitsvorkehrungen getroffen werden, um die Gefahr von Feuer, elektrischen Schlag, und Verletzung zu verringern.*

**Benützen Sie dieses Produkt nicht in der Nähe von Wasser.**

*Certaines mesures de sécurité doivent être prises pendant l'utilisation des telecommunication afin de réduire les risques d'incendie, de choc électrique et de blessures.*

**Ne pas utiliser l'appareil près de l'eau.**

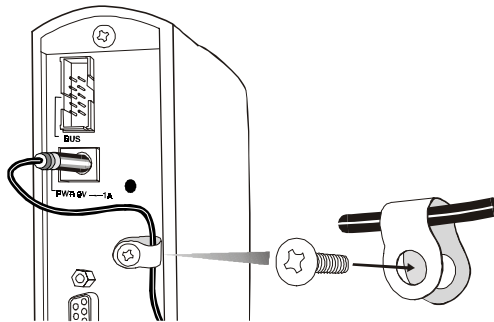
To plug in the power supply and secure the cable to the unit:

1. For 100-240 V ac supplies, connect the transformer and power cable sections together.
2. Plug the transformer cable's connector into the **POWER** socket on TerraUno or TerraBoss rear panel, as shown in *Figure 5*.

**CAUTION:** *Do not connect TerraUno or TerraBoss to a power supply that exceeds the provided power supply's rating of 1 amp at 9 V dc.*

3. Remove the plastic cable-clamp strip and metal screw from the accessory packet included with your TerraUno or TerraBoss.
4. Bend the plastic strip around the cable, lining up the holes at each end of the strip.
5. Insert the Phillips screw through the lined-up holes; then insert the screw in the rear-panel hole as shown in *Figure 5* and tighten.
6. Plug the power supply cable into a standard ac outlet. (If the power supply cable does not match the electrical outlet, you probably have the wrong power supply. See *Table 2-A*.)

**CAUTION:** *The power cable is the means for removing power from the TerraBoss or TerraUno. To insure that power can be disconnected rapidly and safely in an emergency, install the TerraBoss or TerraUno near an easily accessible mains socket outlet.*



**Figure 5. Connecting and Securing the Power Cable**

When you plug in the power, the TerraUno or TerraBoss powers up. On power-up, the **UNIT** LED will be amber and then will turn green.

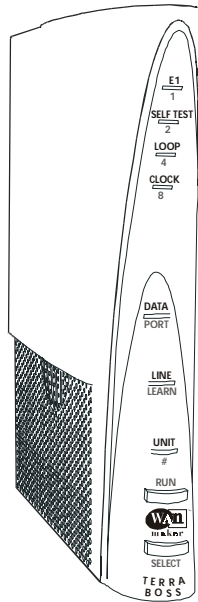
*Note: If the **UNIT** LED flashes red, the unit has not powered up properly. Try running the self-test. If the unit still fails to power up properly, contact your distributor or the CTDI Customer Service.*

*If no LEDs light after you have connected power, check your power source by plugging something else into the outlet you used for the TerraUno or TerraBoss. If this other device doesn't work, the power outlet is probably out of service or defective. Try connecting the TerraUno or TerraBoss to an outlet that you know works correctly. If the LEDs remain unlit, contact your distributor to see about repair or replacement of the unit. For additional information about troubleshooting, repair, and replacement, see the CTDI Web site ([www.ctdi.com](http://www.ctdi.com))*

## Front-Panel Setup

One of the major advantages of the TerraBoss and TerraUno is that basic setup is *really* basic. In most cases, all you'll need to do is activate the **LineLearn™** function from the front panel. If your router uses an interface other than V.35, you'll also need to specify the interface type via the front panel.

Figure 6 shows the layout of the front panel, which includes the **SELECT** and **RUN** buttons and seven LEDs. For a full discussion of their functions, see Chapter 3 of the *User's Reference Manual*.



**Figure 6. Front-Panel Buttons and LEDs**

## Running LineLearn

All you need to run **LineLearn** is a T1 or E1 line signal for your DSU to learn from. If you don't have a "live" T1 or E1 yet, you'll need to talk to your network manager or service provider.

To activate the **LineLearn** function:

1. To determine that a line signal is present, verify that the **LINE** LED is not off.
2. Simultaneously press the **SELECT** and **RUN** buttons to put the unit in front-panel mode.
3. If the **LINE** LED is not lit red, repeatedly press **SELECT** until it is.

4. Press the **RUN** button. The **LINE** LED flashes green while your TerraUno learns the configuration. Wait until the **LINE** LED stays green, indicating that **LineLearn** is complete.

***Note:** If the DSU is unable to learn the line configuration, the red **LINE** LED flashes. Refer to the User's Reference Manual for information about completing the configuration via the Web or Terminal Interface.*

5. If your DTE does not use a V.35 interface, proceed to step 2 of the next procedure, *Specifying the Data Port Type*. Otherwise, simultaneously press the **SELECT** and **RUN** buttons to return the unit to the normal operating mode.

## **Specifying the Data Port Type**

The TerraBoss and TerraUno data port is factory-configured for a V.35 interface. If your router or other device uses an X.21 or RS449 interface, specify the data port type via the front panel as follows:

1. If the unit is not in front-panel mode, put it in front-panel mode by simultaneously pressing the **SELECT** and **RUN** buttons.
2. Repeatedly press the **SELECT** button until the **DATA** LED lights red.
3. Press the **RUN** button repeatedly until the top two LEDs specify the desired interface:
  - **1** lit for X.21
  - **2** lit for V.35
  - **1** and **2** lit for RS449
4. Press the **SELECT** button to implement the indicated interface.
5. Simultaneously press the **SELECT** and **RUN** buttons to return to normal operating mode.