Channel Service Units (CSUs)

Kentrox Network Access Solutions

- Products
- Support
- Training

Data Service Units (DSUs)

Kentrox Care Support

KENTROX

About Kentrox

Since 1967, Kentrox has been an industry leader in high quality and highly reliable network access equipment. We have a rich history of product innovation and leadership as well as exceptional customer service.

The reputation of Kentrox was built on our Data Service Unit/Channel Service Unit (DSU/CSU) product line. Leveraging our experience supplying CSUs and cross-connects to wireless networks since 1989, Kentrox developed the CrossPATH® for deployment in high-density wireless base stations.

Kentrox headquarters, including our customer service and technical support teams, is located in Beaverton, Oregon and Dublin, Ohio, with regional sales offices located throughout the United States. Kentrox solutions are sold through a network of VARs, distributors, carriers, and system integrators.

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800-733-5511
www.kentrox.com

Kentrox Network Access Products

Kentrox Care Service and Support

	T3/E3 IDSUs	T1 DSU/CSUs	CrossPATH
Installation			
Onsite/Phone	✔	✔	✔
Support Plans			
Onsite 7x24x4	✔	✔	✔
Onsite 5x8x4	✔	✔	✔
Onsite 7x24xNBD	✔	✔	✔
Onsite 5x8xNBD	✔	✔	✔
Basic 7x24xNBD	✔	✔	✔
Exchange NBD	✔	✔	✔
Technical Training (Kentrox campus, customer site, or web-based)	✔	✔	✔

NBD = Next Business Day

Data Service Units (DSUs)

- DataSMART
- Satellite
- M-PATH 537

DSU/CSU Solutions from Kentrox

Managed DSU/CSUs

Take active control of your network – from anywhere in your network – with Kentrox managed DSU/CSUs. These products include in-band access for simplified remote management, Ethernet and front-panel LCD for easy local management, and standards-based SNMP management.

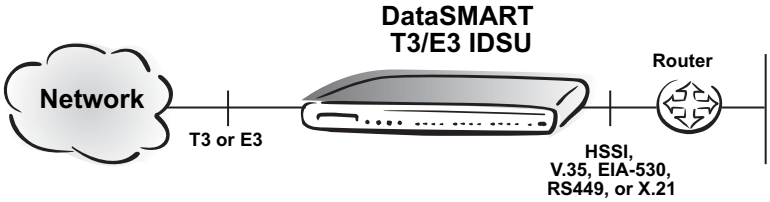
PRODUCT	PART NO.	WAN SPEED	FORM	ADD/ DROP	DATA PORTS	PAGE
DataSMART T3/E3 IDSU, AC	15951	T3 or E3	Standalone	-	1 V.35/EIA-530/HSSI	5
DataSMART 658	72658	T1	Standalone	Yes	1 V.35	6
DataSMART 656	72656	T1	Standalone	-	1 V.35	6
DataSMART 558 w/Ethernet	72558	T1	Plug-in	Yes	1 V.35/EIA-530/RS449	7
M-PATH 537	77537	T1	Plug-in	Yes	1 V.35/EIA-530/RS449	10

Basic DSU/CSUs

When all you need is highly reliable termination, the Kentrox line of Satellite DSU/CSUs are your most economical solution. Our basic DSU/CSUs are ideal for networks where there are no requirements for remote diagnostics or centralized management.

PRODUCT	PART NO.	WAN SPEED	FORM	ADD/ DROP	DATA PORTS	PAGE
Satellite 651 T1, AC	72651	T1	Standalone	-	1 V.35	8

DataSMART T3/E3 Intelligent DSU

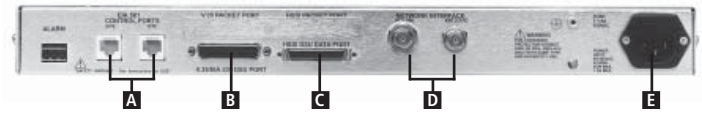


- **Enterprise network backbone connectivity**
- **HSSI and V.35/EIA-530 data ports**
- **Selectable data port clock rates for flexible connectivity**
- **5-year warranty**

The DataSMART T3/E3 IDSU provides economical and flexible access for bandwidth-intensive Frame Relay and high-speed, router-based applications, such as Internet access and corporate LAN traffic.

For maximum flexibility, the DataSMART IDSU data ports support full T3/E3 bandwidth and variable clock rates in Nx.5 Mbps increments, allowing you to connect a variety of data or video equipment to your network.

DataSMART T3/E3



BACK PANEL AND CABLE GUIDE

A To Control Terminal	
EIA-561 to EIA-561 (EIA-232D), 14 Feet	93014241*
DB25P to RJ45 Jack Adapter	78892
DE9S to RJ45 Jack Adapter	78899*
B To Data Equipment (EIA-530 port)	
DB25P to MRAC34P	950xx054
DB25P to MRAC34S Adapter Cable, 1 Foot	95001074
DB25P to MRAC34S Adapter	78904
C To HSSI	
HSSI Plug to HSSI Plug	960xx011
D To Network, *2 cables required*	
BNC Plug to BNC Plug	960xx010
E Power Source *(AC options available)*	
US Power Cord	90000*
EC Power Cord	90001
Italy Power Cord	90003

** Ships with product*

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

Description	Part No.
DataSMART T3/E3 IDSU, AC	15951
Remote Management Modem Kit	78907

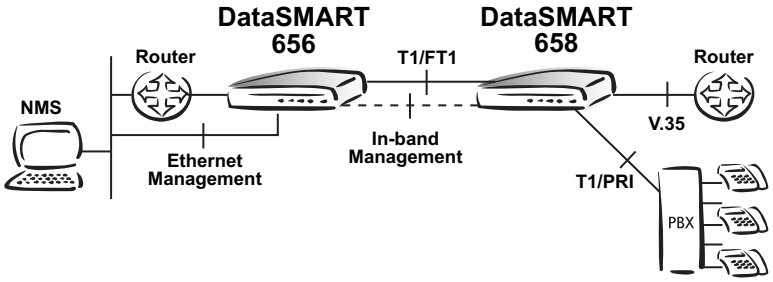
Kentrox Care Support Plans and Training

See page 32 for a full list of available support plans.

SPECIFICATIONS

Power	
AC	100-240VAC, 24 Watts nominal, 30 Watts Max
T3 Network Interface	
Line Rate	44.736 Mbps
Framing	M13 or C-bit Parity
Line Code	B8ZS
Input Signal	+6.2 dBm to –11.7 dBm
Output Signal	DSX-3
Impedance	75 ohm coax
Connector	BNC socket or 1.6/5.6 DIN
E3 Network Interface	
Line Rate	34.368 Mbps
Framing	per ITU-T G.751
Line Code	HDB3
Input Signal	per ITU-T G.703
Output Signal	per ITU-T G.703
Impedance	75 ohm coax
Connector	BNC socket or 1.6/5.6 DIN
Synchronization	Network or internal clock
Physical	
Dimensions	1.7" H x 16.75" W x 11.00" D 4.32 cm H x 42.55 cm W x 27.94 cm D

DataSMART 656 T1 Single-port
DataSMART 658 T1 Single-port Add/Drop



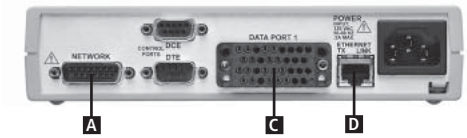
- **Internet access or LAN/WAN connectivity**
- **Economical integration of data and voice traffic**
- **Remote management with in-band access**
- **Ethernet connection and front-panel LCD for simplified local management**
- **5-year warranty**

Take active control of your network—from anywhere in your network. The DataSMART® 656 T1 Single-port DSU/CSU and DataSMART 658 T1 Single-port Add/Drop DSU/CSU includes in-band access for simplified remote management, an integrated Ethernet port and front-panel LCD for easy local management and standards-based SNMP management.

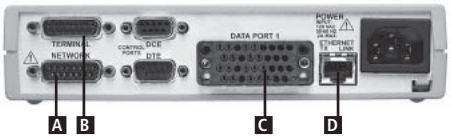
An SNMP agent, with an enterprise MIB available in standard ANS.1 format, provides complete management of every feature of the DataSMART DSU/CSU. These DSU/CSUs provide a helpful menu interface, Telnet, and our popular and powerful DataSMART Installer for setup and diagnostics.

The DataSMART 656 is designed for remote sites that require high-speed data or video access to T1/FT1 networks. With the DataSMART 658, businesses can integrate voice traffic from a T1/PRI PBX and data or Internet traffic onto a single T1/FT1 line, reducing monthly WAN access charges.

DataSMART 656



DataSMART 658



BACK PANEL AND CABLE GUIDE

A To Network

DA15S to DA15P	930xx091
DA15S to Stub	930xx111
RJ48C Plug to RJ48C Plug	930xx143
DA15S to RJ48C Plug	930xx151
DA15S to RJ48C Jack Adapter	77891*

B To Terminal Equipment (DataSMART 658)

DA15P to Stub	930xx101
DA15P to DA15S	930xx091
DA15P to RJ48C Plug	930xx121
DA15P to DA15P	930xx131
DA15P to DA15P, DCE to DCE, 10 Feet	93010132
RJ48C Plug to RJ48C Plug	930xx143
DA15P to RJ48C Jack Adapter	77892*

*Ships with unit.

C To Data Equipment (V.35)

MRAC34P to MRAC34P	950xx052

BACK PANEL AND CABLE GUIDE

D To 10Base-T LAN

RJ45 Plug to RJ45 Plug, Cat. 5E UTP, 6 Feet	93006212

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

Description	Part No.
DataSMART 656 T1 DSU/CSU	72656
DataSMART 658 T1 Add/Drop DSU/CSU	72658
Shelves and Mounting Accessories	
Universal 19" rack mounting tray	78480

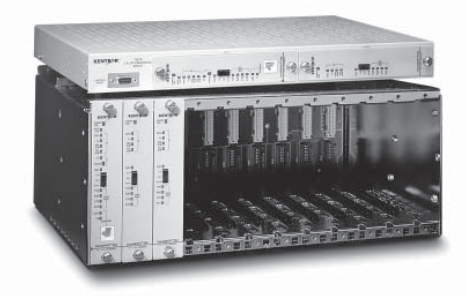
Kentrox Care Support Plans and Training

See page 32 for a full list of available support plans

SPECIFICATIONS

Power	
AC	120VAC, 60 Hz, 8W
Network Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Input Signal	DS1 from 0 dB to -27 dB, typical
Output Signal	DS1 with LBO 0, -7.5, -15 dB (selectable)
Mechanical	DA15 plug
Terminal Interface (DataSMART 658)	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Input Signal	DSX-1 to -10 dB
Output Signal	DSX-1 with equalization
Mechanical	DA15 socket
Physical	
Usage	Desktop or tray mount
Dimensions	7.75" W x 1.65" H x 11.5" D

DataSMART 558 T1 Single-port Add/Drop Plug-in M-PATH 537 T1 Single-port Add/Drop Plug-in

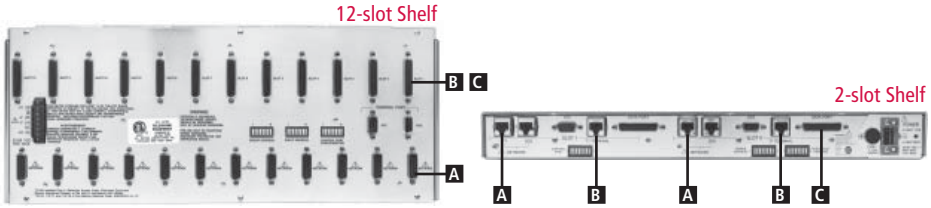


- **Optimized for high-density sites**
- **Standards-based management with embedded SNMP**
- **Manage multiple shelves with a single Ethernet port**
- **Supports leased-line, Frame Relay and Internet services**
- **5-year warranty**

Manage and grow your enterprise network with the DataSMART 558 and the M-PATH 537 T1 Single-port Plug-in DSU/CSUs. These DSU/CSUs are designed for high-density T1/FT1 network installations. They support rapid expansion capabilities and comprehensive management options appropriate for central offices, corporate and government networks.

The DataSMART and M-PATH Plug-ins offer auto-configuration for fast provisioning of additional circuits in rapidly growing environments. Combined with the DataSMART Installer, this eliminates the need for highly skilled installation technicians.

The DataSMART 558 includes an add/drop port for T1/PRI PBX and data traffic integration, and an Ethernet port for management. DataSMART Plug-ins and remote DataSMARTs can be managed over an Ethernet connection to the DataSMART 558 unit. SNMP and Telnet access are available to all local and remote DataSMART DSU/CSUs.



BACK PANEL AND CABLE GUIDE

A To Network, 12-slot Shelf	
DA15S to Stub	930xx111
DA15S to RJ48C Plug	930xx151
DA15S to RJ48C Jack Adapter	77891
To Network, 2-slot Shelf	
RJ48C Plug to RJ48C Plug	930xx143
RJ48C Plug to RJ48C Plug, crossover	930xx144
B To Terminal Equipment, 12-slot Shelf	
DB25P to RJ48C Jack Adapter	77890
To Terminal Equipment, 2-slot Shelf	
RJ48C Plug to RJ48C Plug	930xx143
RJ48C Plug to RJ48C Plug, crossover	930xx144
C To Data Equipment (EIA-530 port) *(12-slot Shelf requires split cables to access both data and terminal equipment. See Price section for models)*	
V.35	
DB25P to MRAC34S, 1 Foot	95001074
DB25P to MRAC34S Adapter	78904
To 10Base-T LAN (DataSMART 558)	
RJ45 Plug to RJ45 Plug, Cat. 5E UTP, 6 Feet	93006212

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

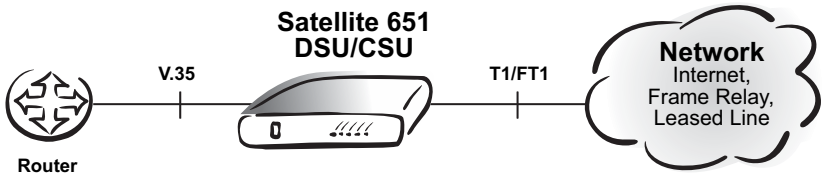
ORDERING INFORMATION

Description	Part No.
DataSMART 558 T1 Add/Drop Plug-in DSU/CSU w/Ethernet	72558
M-PATH 537 T1 Add/Drop Plug-in DSU/CSU	77537
Shelves and Mounting Accessories	
Universal Shelf, 12 slots, DC	78270
Universal Shelf, 2 slots, DC	78070
Blank Plug-in Panel	78271
Kentrox Care Support Plans and Training	
See page 32 for a full list of available support plans.	
Power Supplies *120 VAC to:*	
48VDC, 100 W (1 Shelf)	72073
48VDC, 100 W x2 (2 Shelves) or 100 W redundant (1 Shelf)	72075

SPECIFICATIONS

Power	
DC	24-48VDC, 7.5W
Network Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Input Signal	DS1 from 0 dB to -27 dB, typical
Output Signal	DS1 with LBO 0, -7.5, -15 dB (selectable)
Mechanical	DA15 plug (12-slot Shelf) RJ48C Jack (2-slot Shelf)
Terminal Interface (DataSMART 558)	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Input Signal	DSX-1 to -10 dB
Output Signal	DSX-1 with equalization
Mechanical	Special DB25 cable (12-slot Shelf) RJ48C Jack (2-slot Shelf)
Physical	
12-slot Shelf	17" W x 7" H x 12" D
2-slot Shelf	17" W x 1.75" H x 12" D

Satellite 651 T1 DSU/CSU

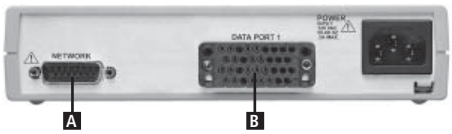


- **Low-cost, remote office access**
- **Remote performance monitoring and diagnostics**
- **Local control with front-panel LCD and LEDs**
- **Supports T1/FT1 leased-line, Internet and Frame Relay services**
- **5-year warranty**

The Satellite 651 DSU/CSU is the low-cost solution for T1/FT1 networks. For simple installation, the Satellite 651 ships with default settings for ESF framing and B8ZS line coding — the most common configurations. For changes to these settings, configuration can easily be accomplished via the front-panel LCD.

With a Kentrox DataSMART DSU/CSU at the central office, you can configure the far-end Satellite, collect performance statistics, view system status and generate loopbacks. Management and control of the Satellite is achieved via the ESF FDL link on a T1 circuit.

Satellite 651



BACK PANEL AND CABLE GUIDE

A To Network	
DA15S to Stub	930xx111
DA15S to RJ48C Plug	930xx151
DA15S to RJ48C Jack Adapter	77891*
To Data Equipment (V.35)	
B RAC34P to MRAC34P	950xx052

** Ships with unit*

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

Description	Part No.
Satellite 651 T1/FT1 DSU/CSU	72651
Universal 19" rack mounting tray	78480

Kentrox Care Support Plans and Training

See page 32 for a full list of available support plans.

SPECIFICATIONS

Power	
AC	120VAC, 50-60 Hz, 8W
Network Interface	
Line Rate	T1 (1.544 Mbps)
Framing	SF, ESF
Line Code	AMI, B8ZS
Input Signal	DS1 from 0 dB to -27 dB, typical
Output Signal	DS1 with LBO 0, -7.5, -15 dB, (selectable)
Mechanical	DA15 plug
Physical	
Usage	Desktop or tray mount
Dimensions	7.75" W x 1.65" H x 11.5" D

Channel Service Units (CSUs)

- M-PATH
- T-SMART
- T-SERV II
- Satellite 932
- CrossPATH

M-PATH 537 T1 CSU Plug-in with 2-slot Shelf DataSMART 558 T1 Single-port Add/Drop Plug-in

- **In-band management eliminates most onsite maintenance costs**
- **Extended temperature range for M-PATH 537**
- **Compact design minimizes space requirements**
- **5-year warranty**

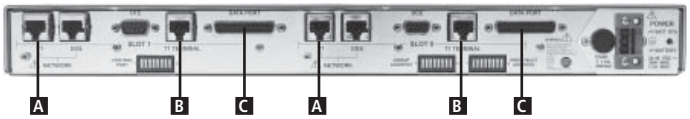
The M-PATH T1 ICSU saves money by minimizing on-site technician visits to remote base stations in wireless networks. Ideal for installation in the rugged, compact environment of outdoor cabinets, it operates at an extended temperature range and requires minimal space.

Via the in-band management path, T1 performance information gathered by the M-PATH can be used to proactively manage the network. M-PATH performance reports identify potential T1 line failures in advance. An embedded SNMP agent allows the wireless provider to select from a wide range of standard management platforms. Additonally, software upgrades can be accomplished in-band.

The M-PATH CSU plug-in cards can be installed in various shelf-mounting systems, for use in large and small-sized base station sites. The available data port in the M-PATH CSU integrates messaging equipment traffic and voice traffic onto a single T1 line. The data port can also transport management traffic for other base station equipment to the network operations center.

The M-PATH is available in a stand-alone or a plug-in version for the 2-slot and 12-slot Universal Shelf.

2-slot Shelf



BACK PANEL AND CABLE GUIDE

A To Network	
RJ48C Plug to RJ48C Plug	930xx143
B To Terminal Equipment	
RJ48C Plug to RJ48C, Crossover DCE to DCE	930xx144
C To Data Equipment (EIA-530 port) V.35	
DB25P to MRAC34S, 1 Foot	95001074
DB25P to MRAC34S Adapter	78904

(For cables to connect data equipment only, contact Kentrox.)

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

Description	Part No.
M-PATH 537 T1 Plug-in CSU, DC	77537
DataSMART 558 T1 Add/Drop Plug-in DSU/CSU with Ethernet	72558
Universal Shelf, 2-slot, DC	78070

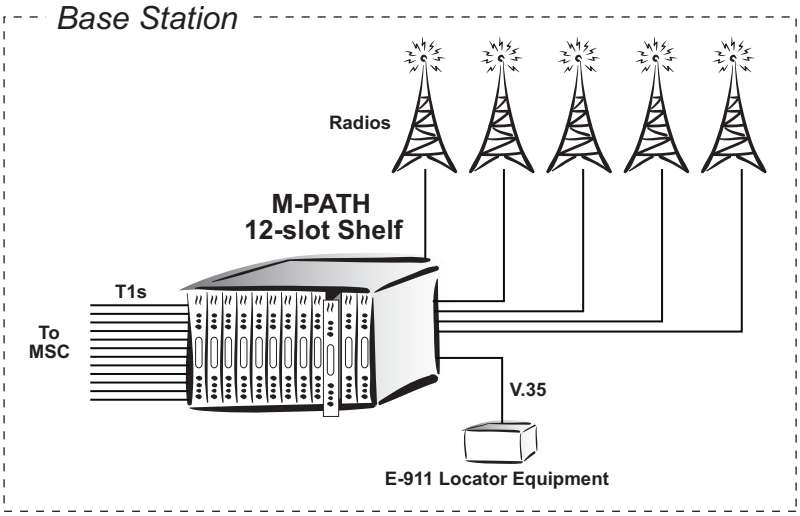
Kentrox Care Support Plans and Training

See page 32 for a full list of available support plans.

SPECIFICATIONS

Network Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Mechanical	RJ48 Jack (2-slot Shelf);
System Timing	Internal, loop, terminal
Terminal Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Input Signal	DSX-1 to -10 dB
Output Signal	DSX-1 with equalization
Mechanical	RJ48C socket
Power	
DC	24-48VDC, 8 watts
AC	120VAC, 10 watts
Physical	
2-slot Shelf	17" W x 1.75" H x 12" D 1 rack unit height
Stand-alone	8" W x 1.93" H x 11.25" D
Environment	
Operating	-20° to 60° C (M-PATH 537) 0° to 50° C (DataSMART 558) 5% to 90% RH, non-condensing

M-PATH T1 CSU Plug-in with 12-slot Shelf DataSMART 558 T1 Single-port Add/Drop Plug-in



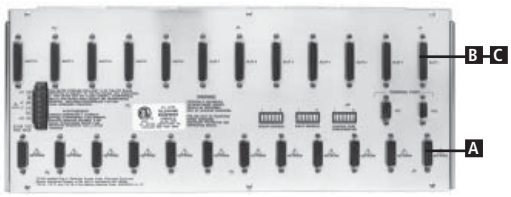
- **Auto-configuration via DataSMART 558 shelf controller module**
- **12-slot shelf for high-density sites**
- **Ethernet port manages one shelf, multiple shelves, or your entire network**
- **5-year warranty**

The M-PATH Plug-ins offer auto-configuration for fast provisioning of additional circuits in rapidly growing environments. Combined with DataSMART Installer, this eliminates the need for highly skilled on-site technicians.

You can manage all M-PATH Plug-ins and remote M-PATHs over a native Ethernet connection on the DataSMART 558 unit. With multiple SNMP or TELNET sessions to a shelf, precious time can be saved at the network control center by allowing multiple operators to troubleshoot problems concurrently.

The DataSMART 558 controller card loads complete configuration information to new M-PATH 537 Plug-in cards when they power up—pre-assigning T1 network parameters, allocating bandwidth to the data port, initializing system information, and activating the embedded SNMP agent.

12-slot Shelf



BACK PANEL AND CABLE GUIDE

A To Network	
DA15S to Stub	930xx111
DA15S to RJ48C Plug	930xx151
DA15S to RJ48C Jack Adapter	77891
B To Terminal Equipment	
DB25P to RJ48C Plug *(to terminal equipment only)*	950xx094
DB25P to RJ48C Adapter	77890
C To Data Equipment (EIA-530 port)	
DB25P to MRAC34S Adapter	78904

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

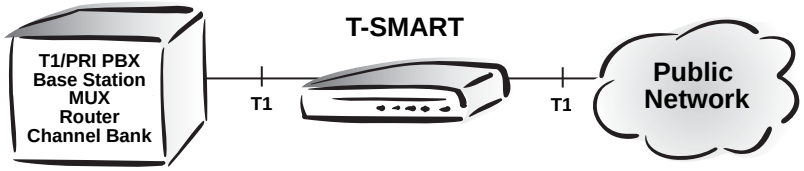
Description	Part No.
M-PATH 537 T1 Plug-in CSU, DC	77537
DataSMART 558 T1 Add/Drop Plug-in DSU/CSU w/Ethernet	72558
Universal Shelf, 12-slot, DC	78270
Blank Plug-in Panel	78271
Power Supplies, *ordered separately, 120 VAC to:*	
48 VDC, 100 W (1 Shelf)	72073
48 VDC, 100 W x2 (2 Shelves) or 100 W redundant (1 Shelf)	72075

Kentrox Care Support Plans and Training
See page 32 for a full list of available support plans.

SPECIFICATIONS

Shelf Power	
DC	24-48VDC, 8 watts per DSU plus plug-in; Dual-power input
Network Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Mechanical	DA15 plug (12-slot shelf)
System Timing	Internal, loop, terminal
Terminal Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF, Ericsson
Line Code	AMI, B8ZS
Input Signal	DSX-1 to -10 dB
Output Signal	DSX-1 with equalization
Mechanical	DB25 socket
Shelf Physical	
Usage	Rack mount (19″ or 23″)
12-slot Shelf	17″ W x 7″ H x 12″ D 4 rack unit height
Environment	
Operating	-20° to 60° C (M-PATH 537) 0° to 50° C (DataSMART 558) 5% to 90% RH, non-condensing

T-SMART T1 Intelligent CSU

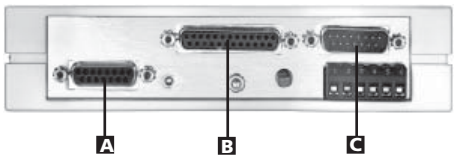


- **Intelligent local management of T1 circuits**
- **In-service performance monitoring**
- **Alarm reporting and diagnostics**
- **Stand-alone or shelf plug-ins**
- **Extended temperature range**
- **5-year warranty**

The market-proven T-SMART ICSU provides in-service monitoring of both ESF and SF (D4) networks for early detection, isolation and diagnosis of problems. The T-SMART can automatically dial up, via modem, your network management center to report alarm conditions. Problems can be further isolated and diagnosed with user-selectable loopback tests and a built-in test signal generator.

Network and terminal sites can be independently configured for ESF or SF standards. The T-SMART CSU automatically converts signals as necessary. The T-SMART CSU is fully compatible with industry standards for T1 ISDN PRI service, safety and environmental. The Shelf Interface Unit (SIU) provides control access to large numbers of T-SMART CSUs in shelf installations.

T-SMART



Front and rear view of 12-slot and 4-slot CSU shelves

BACK PANEL AND CABLE GUIDE

A To Terminal Equipment	
25-Pair RJ48H Plug/Socket	930xx061*
25-Pair RJ48H Plug/Stub	930xx071*
25-Pair RJ48H Plug/Plug (for terminal 77830 only)	930xx171*
DA15P to Stub	930xx101
DA15P to RJ48C Plug	930xx121
RJ48H Socket to 12x RJ48C Socket	77830*
RJ48H Plug to 12x DA15S	77840*
DA15P to RJ48C Jack Adapter	77892
B To Control Terminal	
DB25P to DB25P	950xx061
C To Network	
25-Pair RJ48H Socket/Plug	930xx061*
25-Pair RJ48H Socket/Stub	930xx081*
DA15S to Stub	930xx111
DA15S to RJ48CP	930xx151
RJ48H Socket to 12x RJ48C Jack	77830*
DA15S to RJ48C Jack Adapter	77891

**12-slot Shelf only*

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

Description	Part No.
T-SMART Plug-in CSU	77120
T-SMART Stand-alone CSU	77961
Shelf and Mounting Accessories	
Blank Plug-in Panel	77070
Shelf Interface Unit (SIU)	77101
CSU standard Shelf, 12 slots	77020
CSU Mini Shelf, 4 slots	77030
Universal 19" rack mounting tray (1-2 stand-alone)	78480
Power Supplies, *ordered separately, 120 VAC to:*	
24 VDC Wall Mount, 6 W, 1 Unit	77995
48 VDC, 100 W, (2 Shelves)	72073
48 VDC, 100 W x2 (4 Shelves) or 100 W redundant (2 Shelves)	72075

Units are shipped DC-ready. For AC operation, a power supply must be ordered.

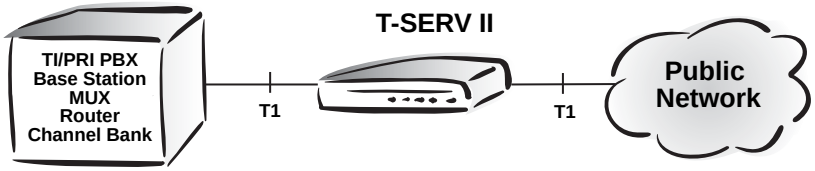
Kentrox Care Support Plans and Training

See page 32 for a full list of available support plans.

SPECIFICATIONS

Power	
DC	24-48VDC, 3.5 Watts
Network Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF (selectable)
Line Code	AMI, B8ZS (selectable)
Input Signal	DS1 from 0 dB to -27 dB typical
Output Signal	DS1 with LBO 0, -7.5, -15, or -22.5 dB (selectable)
Mechanical	DA15 Plug 15-pin (S/A, 4-slot Shelf) RJ48H Plug 50-pin telco connector (12-slot Shelf)
Signal Monitor	Low Pulse Density and Keep Alive
Configuration	Maintained in non-volatile memory
Terminal Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	SF, ESF (selectable)
Line Code	AMI, B8ZS (selectable)
Input Signal	DSX-1 to -6 dB
Output Signal	DSX-1 to 655 feet equalized
Mechanical	DA15 Socket 15-pin (S/A, 4-slot Shelf) RJ48H Socket 50-pin telco connector (12-slot Shelf)
Configuration	Maintained in non-volatile memory
Environment	
Operating	-20° to 60° C
Physical	
Stand-alone	6.75" W x 1.625" H x 10.5" D
4-slot Shelf	19" W x 3.5" H x 10.5" D
12-slot Shelf	19" W x 6.75" H x 10.5" D

T-SERV II T1 CSU

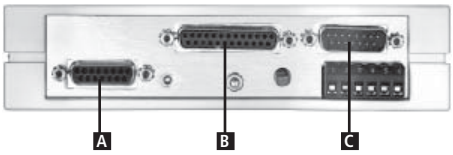


- **Economical choice for T1 line termination**
- **Easy to install and use**
- **Stand-alone or shelf plug-in versions**
- **Extended temperature range**
- **5-year warranty**

The market-leading T-SERV II CSU offers performance monitoring and conditioning of T1 and ISDN PRI service lines. It meets all FCC and carrier requirements for a standard interface between the user and the network. The T-SERV II is NRTL listed to UL1950.

All basic CSU functions are contained in the T-SERV II CSU, including bipolar violation (BPV) correction, line build-out (LBO), loop-code generator for fault isolation, front-panel LED status indicators, test jacks, power options and automatic keep-alive signal generation. Its transparent operation passes the T1 bitstream unaltered.

T-SERV II



Front and rear view of 12-slot and 4-slot CSU shelves

BACK PANEL AND CABLE GUIDE

A To Terminal Equipment	
25-Pair RJ48H Plug/Socket	930xx061*
25-Pair RJ48H Plug/Stub	930xx071*
25-Pair RJ48H Plug/Plug (for terminal 77830 only)	930xx171
DA15P to Stub	930xx101
DA15P to RJ48C Plug	930xx121
RJ48H Socket to 12x RJ48C Socket	77830
RJ48H Plug to 12x DA15S	77840*
DA15P to RJ48C Jack Adapter	77892
B Not Used	
C To Network	
25-Pair RJ48H Plug/Socket	930xx061*
25-Pair RJ48H Socket/Stub	930xx081*
DA15S to Stub	930xx111
DA15S to RJ48CP	930xx151
RJ48HS to 12x RJ48C Adapter Plug	77830*
DA15S to RJ48C Jack Adapter	77891

**12-slot Shelf only*

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

Description	Part No.
T-SERV II Plug-in CSU	77115
T-SERV II Stand-alone CSU	77965
Shelf and Mounting Accessories	
CSU Standard Shelf, 12 slots	77020
CSU Mini Shelf, 4 slots	77030
Blank Plug-in Panel	77070
Universal 19" rack mounting tray (1-2 stand-alone)	78480
Power Supplies, *ordered separately, 120 VAC to:*	
24 VDC Wall Mount, 6 W, up to 4 Units (Stand-alone only)	77995
24 VDC Wall mount, 12 W, up to 8 Units (Stand-alone or 4-slot Shelf only)	77094
48 VDC, 100 W (5 Shelves)	72073
48 VDC, 100 W x2 (10 Shelves) or 100 W redundant (5 Shelves)	72075

Units are shipped DC-ready. For AC operation, a power supply must be ordered.

Kentrox Care Support Plans and Training
See page 32 for a full list of available support plans.

SPECIFICATIONS

Power	
DC	24-48VDC, 1.5 Watts
Network Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	Transparent-passes unframed, SF, ESF
Line Code	Transparent-passes AMI, B8ZS, ZBTSI
Input Signal	DS1 from 0 dB to -27 dB
Output Signal	DS1 with LBO 0, -7.5, -15, or -22.5 dB (selectable)
Mechanical	DA15 Plug 15-pin (S/A, 4-slot Shelf) RJ48H Plug 50-pin telco connector (12-slot Shelf)
Terminal Interface	
Line Rate	T1/PRI (1.544 Mbps)
Framing	Transparent-passes unframed, D4, SF, ESF
Line Code	Transparent-passes AMI, B8ZS, ZBTSI
Input Signal	DSX-1 to -27 dB
Output Signal	DSX-1
Mechanical	DA15 Socket 15-pin (S/A, 4-slot Shelf) RJ48H Socket 50-pin telco connector (12-slot Shelf)
Environment	
Operating	-20° to 60° C
Physical	
Stand-alone	6.75" W x 1.625" H x 10.5" D
4-slot Shelf	19" W x 3.5" H x 10.5" D
12-slot Shelf	19" W x 6.75" H x 10.5" D

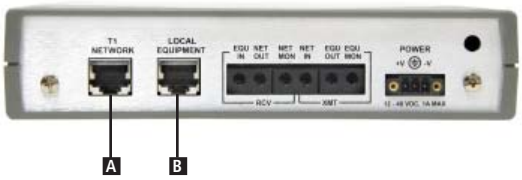
Satellite 932 T1 CSU

- **Economical choice for T1 or ISDN PRI line termination**
- **Switch settings for easy configuration and diagnostics**
- **Front-panel status LEDs**
- **T1 loopbacks for circuit diagnosis**
- **Test jacks for monitoring**
- **5-year warranty**

The Satellite 932 CSU conditions T1 service lines using a transparent operation that regenerates the T1 bitstream from the public network to a variety of high-speed applications. The Satellite 932 also monitors the signal level of the T1 line and can identify degrading circuits before they fail, saving you downtime and proactively preventing outages.

The Satellite 932 includes line build-out LED status indicators, monitor jacks, power options, and automatic keep-alive signal generation. It also features regenerators for both the incoming signals from the network and from local customer equipment toward the network. By continually monitoring the status of the T1 lines, the Satellite 932 can detect when T1 signal levels begin degrading.

Satellite 932



BACK PANEL AND CABLE GUIDE

A To Network	
RJ48C Plug to RJ48C Cable, 10 Feet	93010143*
RJ48C Plug to RJ48C Cross-over Cable	930xx144
B To Local Equipment	
RJ48C Plug to RJ48C Cable	930XX143

**Ships with unit*

NOTE: xx denotes length of cable, contact factory for available lengths. P = Plug (male); S = Socket (female).

ORDERING INFORMATION

Description	Part No.
Satellite 932 T1 CSU with DC Power Supply	77932DC
Satellite 932 T1 CSU with AC Power Supply	77932AC
Satellite 932 Spare AC Power Supply	77995
Universal 19" rack mounting tray (1-2 units)	78480

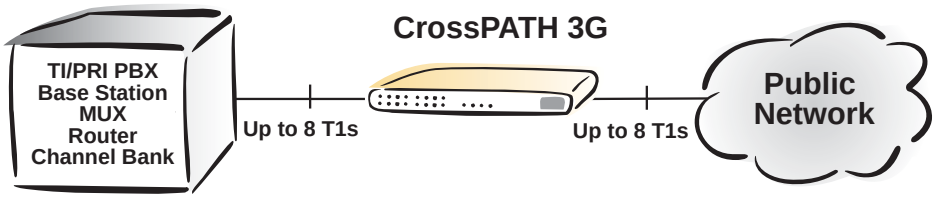
Kentrox Care Support Plans and Training

See page 32 for a full list of available support plans.

SPECIFICATIONS

Network Interface	
Line Rate	1.544 Mb/s +/- 50 bps)
Framing	Transparent
Line Code	Transparent
Mechanical	RJ48C Jack
Equipment Interface	
Line Rate	Line rate source from NI
Framing	Transparent
Input Signal	DSX-1 to 27.0 dB
Output Signal	DSX-1 at connector
Mechanical	RJ48C socket
Power	
DC	24-48VDC
Physical	
Dimensions	1.65" H x 7.75" W x 11.5" L
Weight	Approximately 1 lb.
Environment	
Storage	-20° to 70° C (5% to 65% RH)
Operating	0° C to 50° C
Relative Humidity	5% to 90% RH, non-condensing

CrossPATH

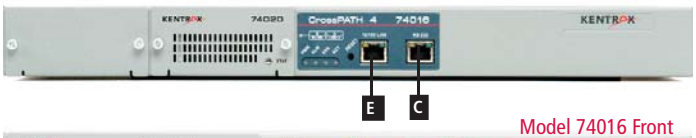


- **Up to 8 T1 CSUs in 1 RU**
- **T1 signal level monitoring**
- **Built-in graphic reports and diagnostics**
- **Embedded Graphical User Interface**
- **T1 performance monitoring**
- **Integrated router for Ethernet connectivity**
- **SNMP and traps support existing management systems**
- **Integrated CSU functionality on all T1 ports**
- **Front-panel ports and LEDs enable easy access**

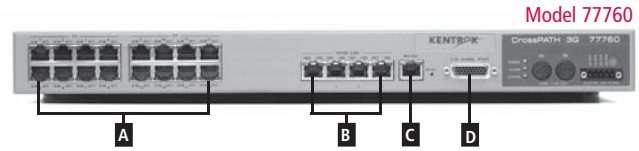
CrossPATH is a high-density CSU for multiple T1 applications. It offers T1 signal level monitoring to notify technicians of degrading T1s before an outage occurs. CrossPATH also provides T1 performance monitoring by recording all bit errors on a T1 line so corrective action can be taken before failure of a T1 line.

With its web-based Graphical User Interface (GUI), CrossPATH dramatically simplifies installation, configuration and network management. The built-in graphical reports and diagnostics help identify and diagnose current or potential problems. Historical and real-time reports can easily show current status and trends over time. Enhanced T1 reports and event logs help troubleshooting by identifying service problems quickly. The integrated Quality of Service (QoS) router supports Ethernet connectivity and management.

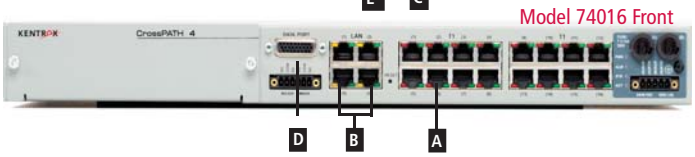
Model 74016 Rear



Model 77760



Model 74016 Front



BACK PANEL AND CABLE GUIDE

A Network Ports (T1)	
RJ48C Plug to RJ48C Plug (network)	930xx143
RJ48C Plug to RJ48C Plug Crossover (user)	930xx144
RJ48C Plug to stub	930xx146
B Ethernet Ports	
RJ45 Plug to RJ45 Plug, Cat 5E (UTP568B), 6 feet	93006212*
C Control Port	
RJ45 Socket to DE9S Adapter	77910*
D Data Port	
DA26M to DB25S, 10 feet	93010213
E Ethernet Management Port	
RJ45 Plug to RJ45 Plug, Cat 5E (UTP568B), 6 feet	93006212*

For additional data port cable options, contact Kentrox Applications Support.

**Ships with unit.*

NOTE: xx denotes length of cable, contact factory for available lengths. P=Plug (male); S=Socket (female).

ORDERING INFORMATION

Description	Part No.
CrossPATH 4	74016
CrossPATH 4 Power Supply, 24/48 DC	74020
CrossPATH 3G 16 T1	77760

For additional option modules, IP features, or ATM features, contact Kentrox.

Kentrox Care Support Plans and Training

See page 32 for a full list of available support plans.

SPECIFICATIONS

Power	
DC	24-48VDC, 40 Watts, 2 Amp max
Physical	
Mounting	1 RU high in 19" rack (19" & 23" brackets included)
Dimensions	1.7" H x 17" W x 11.9" D
Environment	
Operating	-40° to 65°C 5% to 95% RH (non-condensing)
Interfaces	
T1	16 ports, DS1, DSX-1 (RJ48)
10/100 LAN	Four-port 10/100Base-Tx switch; auto-sensing, auto-polarity (RJ45)
RS-232	One serial management port (RJ45)
V.35	One serial data port for e911 locator equipment (DA26)

Service and Support

- Customer Care
- Support Plan Decision Tree
- Kentrox Care Support Plans
- Technical Training

Kentrox Commitment to Customer Care

Kentrox is dedicated to the highest quality of customer service, delivered with a sense of friendliness and helpfulness, with the end result always being customer satisfaction. Our goal is to provide you peace of mind and the best customer care in the industry.

Customer Service

As a Kentrox customer, you will benefit from our excellent customer service throughout your purchasing cycle. Our friendly support staff is standing by and ready to assist you with easy access to pricing, order placement and delivery dates. You can contact this group for:

- Evaluation units
- Repairs (in- and out-of-warranty) and returns
- Questions about Kentrox Care Support Plans
- Quotes for standard Kentrox product configurations
- Pricing and order placement (for direct customers)

You may contact Customer Service at 800-733-5511 or sales_support@kentrox.com.

Pre-Sales Applications Support

If you have specific application or network configuration questions, don't hesitate to call or email our Applications Support team. Our team of experts can:

- Identify solutions specifically related to your business needs
- Answer technical questions about Kentrox products to verify interoperability with your existing equipment
- Provide technical data, technical narratives, and related network diagrams
- Prepare product and service quotes based on suggested solutions

Contact Applications Support at 800-733-5511 or info@kentrox.com.

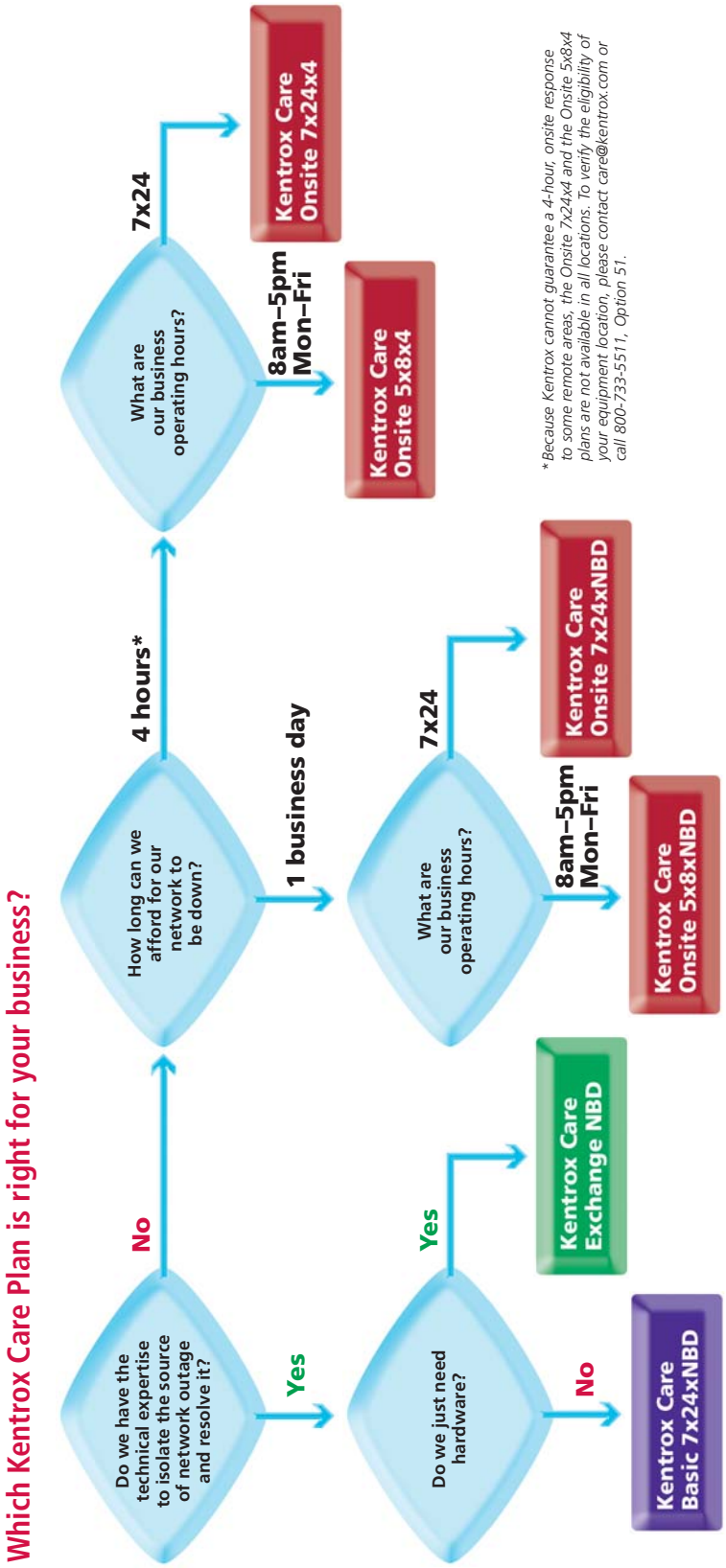
Technical Assistance Center

The professional experts in our Technical Assistance Center (TAC) are able to answer a broad range of questions if you have a warranty-related event. They are available from 6:00 a.m. to 5:00 p.m. Pacific time, and for emergencies 24 hours-a-day, 7 days-a-week. The Kentrox TAC can:

- Troubleshoot network problems relating to Kentrox access equipment
- Provide answers to a variety of specific issues via their robust Knowledge Base (www.kentrox.com/kb)

Contact TAC at 800-733-5511 or support@kentrox.com.

Kentrox Care Support Plan Decision Tree



** Because Kentrox cannot guarantee a 4-hour, onsite response to some remote areas, the Onsite 7x24x4 and the Onsite 5x8x4 plans are not available in all locations. To verify the eligibility of your equipment location, please contact care@kentrox.com or call 800-733-5511, Option 51.*

Kentrox Care Support Plans

Kentrox offers a wide range of support beyond that offered in our standard, limited warranty. While the Kentrox standard warranty protects you against product defects, you may need quicker problem resolution than is provided in the standard warranty.

Kentrox Care Support Plans are designed to maximize your company and employee productivity, as well as your return-on-investment in Kentrox equipment. These plans meet a variety of business requirements, whether you need 4-hour or next-business-day (NBD) support, onsite or remote. These plans will enable you to:

- Select support levels that meet your business requirements - you pay only for what you need
- Protect your investment in your Kentrox products
- Make budgeting easy, with fixed costs that can include parts and labor
- Ensure support is there when you need it through professional, technical experts

Kentrox Care Plan	Onsite Support[2]	Advance Replacements[2,3]	Toll-free Technical Phone Support	Phone Response	Software Updates Online Support	Kentrox-campus Training Discount	Annual List Price and Part Number: DSU/CSUs	T3/E3 IDSU	CrossPATH
Kentrox Care Onsite 7x24x4	4 hours	4 hours	7 days x 24 hours[4]	< 30 minutes	Yes	30%	**$425** *14203*	**$1,100** *13703*	**$1,459** *13903*
Kentrox Care Onsite 5x8x4	4 hours[5]	4 hours[5]	6am-5pm Pacific time	< 30 minutes	Yes	30%	**$359** *14213*	**$999** *13713*	**$1349** *13913*
Kentrox Care Onsite 7x24xNBD	1 business day[6]	1 business day[6]	7 days x 24 hours[4]	< 60 minutes	Yes	30%	**$275** *14202*	**$725** *13702*	**$849** *13902*
Kentrox Care Onsite 5x8xNBD	1 business day[6]	1 business day[6]	6am-5pm Pacific time	< 60 minutes	Yes	30%	**$205** *14212*	**$559** *13712*	**$659** *13912*
Kentrox Care Basic 7x24xNBD	Not included	1 business day[6]	7 days x 24 hours[4]	< 60 minutes	Yes	30%	**$150** *14204*	**$425** *13704*	**$499** *13904*
Kentrox Care Exchange NBD	Not included	1 business day[6]	Not included	n/a	Yes	Not included	**$89** *14209*	**$149** *13709*	**$179** *13909*
Kentrox Care Onsite Installation	*Visit www.kentrox.com/services for detailed description*						**$600** *14103*	**$600** *13700*	**Call*** *13920*
Kentrox Care Phone Installation	*Visit www.kentrox.com/services for detailed description*						n/a	n/a	n/a

1. Because Kentrox cannot guarantee a 4-hour, onsite response to some remote areas, the Onsite 7x24x4 and Onsite 5x8x4 plans are not available in all locations. To verify the eligibility of your equipment location, please contact care@kentrox.com or call 800-733-5511.
2. Onsite support and advance replacements are for equipment failures only.
3. Telephone support available at no charge outside of normal business hours for service-affecting problems only. Normal business hours are defined as 6:00 a.m. to 5:00 p.m. Pacific time, excluding weekends and holidays.
4. Call must be received by 1:00 p.m. local time, excluding weekends and holidays.
5. Call must be received by 1:00 p.m. Pacific time, excluding weekends and holidays.

NBD = Next Business Day
* Call Customer Service at 800-733-5511 for current pricing.
** Outside normal business hours.

Kentrox Technical Training

Kentrox offers a variety of training courses on our network access solutions. Classes combine informative lectures and demonstrations with hands-on applications. Participants learn how to install, configure and troubleshoot products using live equipment.

Courses are offered for Kentrox DSU/CSUs and CrossPATH. We offer regularly scheduled public classes, web-based classes, as well as custom training for your company.

Training at the Kentrox campus

Enjoy our state-of-the art, dedicated training center, located outside of Columbus, Ohio

Customer site training

If you have a group of employees that need training, bring a Kentrox course to your location. For one all-inclusive price, our instructor will work with you to tailor the class to your company's needs. Your employees receive full, hands-on access and dedicated time with the instructor to understand how your Kentrox products will work in your network.

Web-based training

Want to save time and money but still receive valuable knowledge on Kentrox products? Take our instructor-led web-based training. These include hands-on virtual labs and printed workbooks to improve the learning experience.

For more information or a quote for training, contact Kentrox Technical Training at 800-733-5511, via email at training@kentrox.com, or register online at www.kentrox.com/support/training.aspx.

TYPE OF CLASS	DESCRIPTION	DURATION
CrossPATH	This half day course offers the participants a detailed look inside the features and functions of the Kentrox CrossPATH. The class begins with an overview of cell site technology and the features and applications for the CrossPATH. The remainder of the day moves into instructor-let classroom lecture and extensive hands-on labs for installation, configuration, management techniques and troubleshooting of T1 network problems using CrossPATH. The class includes reinforcement quizzes and a final practice lab.	Half day
DSU/CSU	This two-day course offers the participants a detailed look inside the features and functions of the various Kentrox DSU/CSU products. Day One begins with an overview of CSUs and DSU/CSUs, a review of T1 network technology, and an examination of the various Kentrox T1 CSU and DSU/CSU products. The remainder of the course moves into instructor-led classroom lecture and extensive hands-on labs for installation, configuration, management techniques, and troubleshooting of T1 network problems using various Kentrox DSU/CSU platforms. Includes reinforcement quizzes and a final practical lab.	Two days

Price List

- Access Equipment
- Services and Support
- Technical Training
- Cables, Accessories

Kentrox Products and Services Price List

- ✔ Products in this guide are listed in order numerically, with the exception of:
  - Kentrox Care Support Plans, Installation, and Training prices listed on page 23
  - Cable prices listed on page 24
- ✔ A "misc." in the page number column means that this specific item is listed on multiple pages
- ✔ Prices are U.S. list price and are current as of the print date of this catalog. To verify pricing, call Customer Service at **800-733-5511** or (outside the U.S.) **+1 503-643-1681.**

PART NO.	DESCRIPTION	PRICE	PAGE
15951	DataSMART T3/E3 IDSU, AC	$4,595.00	5
72071	Power Supply for Universal Power Tray, 100 Watts	$450.00	misc
72073	48 VDC, 100 W (1 shelf)	$475.00	misc
72075	48 VDC, 100 W x2 (2 shelves) or 100 W redundant (1 shelf)	$900.00	misc
72558	DataSMART 558 T1 Single-port, Add/Drop, Plug-in DSU/CSU	$1,995.00	7
72651	Satellite 651 T1/FT1 DSU/CSU	$579.00	8
72656	DataSMART 656 T1 DSU/CSU with Ethernet	$1,229.00	6
72658	DataSMART 658 T1 Add/Drop DSU/CSU with Ethernet	$1,995.00	6
74016	CrossPATH 4 - 16 T1	Call	15
74020	CrossPATH 4 Power Supply Module	Call	15
77020	CSU Standard Shelf, 12 slots	$800.00	misc
77030	CSU Mini Shelf, 4 slots	$600.00	misc
77070	Blank Panel for CSU shelves (empty slots)	$30.00	misc
77101	T-SMART Shelf Interface Unit	$220.00	12
77102	T-SMART Group Controller Unit	$995.00	12
77115	T-SERV II CSU Plug-in	$1,000.00	13
77120	T-SMART CSU Plug-in	$1,950.00	12
77537	M-PATH 537 DSU/CSU Plug-in	$1,950.00	misc
77760	CrossPATH 3G 16 T1	Call	15
77830	Adapter; RJ48H Socket to 12x RJ48C Socket	$160.00	misc
77840	Adapter; RJ48H Plug to 12x DA15S	$225.00	misc.
77850	Adapter; RJ48H Socket to 12x DA15P	$225.00	misc.
77890	Adapter; DB25P to RJ48C Socket	$50.00	misc.
77891	Adapter; DA15S to RJ48C Socket	$20.00	misc.
77892	Adapter; DA15P to RJ48C Socket	$20.00	misc.
77910	Adapter; RJ45 Socket to DE9S Adapter	$10.00	misc.
77932DC	Satellite 932 T1 CSU with DC power	$455.00	14
77932AC	Satellite 932 T1 CSU with AC power	$470.00	14
77961	T-SMART Stand-alone CSU	$2,550.00	12
77965	T-SERV II Stand-alone CSU	$1,200.00	13
77995	Power supply - 120 VAC to 24VDC, .25 A, rack mount	$35.00	misc
78070	Universal Shelf, 2 slots, DC	$350.00	misc
78270	Universal Shelf, 12 Slots, DC	$995.00	misc
78271	Universal Shelf Blank Plug-in, 2-slot/12-slot	$35.00	misc
78480	Universal 19" mounting tray	$65.00	misc
78892	Adapter; DB25P to RJ45S	$20.00	misc
78899	Adapter; DE9S to RJ45S	$20.00	misc
78900	Adapter; DB25P to MRAC34S	$20.00	misc
78901	Adapter; DB25P to DC37S	$20.00	misc
78904	Adapter; DB25P to MRAC34S (p/i only)	$30.00	misc
78907	Remote Management Modem Kit	$825.00	misc
90000	Power Cord, U.S.	$25.00	misc
98101	Optional PCMCIA Card, 10Base-T	$300.00	misc

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PART NO.	DESCRIPTION	PRICE	PAGE

Kentrox Care Installation

13700	Kentrox Care Onsite Installation: T3/E3 IDSU	$600.00	19
14103	Kentrox Care Onsite Installation: 56/64k, T1 and E1 DSU/CSUs	$600.00	19

Kentrox Care Support Plans

13702	Kentrox Care Onsite 7x24xNBD: T3/E3 IDSU	$725.00	19
13703	Kentrox Care Onsite 7x24x4: T3/E3 IDSU	$1,100.00	19
13704	Kentrox Care Basic 7x24xNBD: T3/E3 IDSU	$425.00	19
13709	Kentrox Care Exchange NBD: T3/E3 IDSU	$149.00	19
13712	Kentrox Care Onsite 5x8xNBD: T3/E3 IDSU	$559.00	19
13713	Kentrox Care Onsite 5x8x4: T3/E3 IDSU	$999.00	19
13902	Kentrox Care Onsite 7x24xNBD: CrossPATH 3G T1 CSU	$849.00	19
13903	Kentrox Care Onsite 7x24x4: CrossPATH 3G T1 CSU	$1,459.00	19
13904	Kentrox Care Basic 7x24xNBD: CrossPATH 3G T1 CSU	$499.00	19
13912	Kentrox Care Onsite 5x8xNBD: CrossPATH 3G T1 CSU	$659.00	19
13913	Kentrox Care Onsite 5x8x4: CrossPATH 3G T1 CSU	$1,349.00	19
14202	Kentrox Care Onsite 7x24xNBD: T1 DSU/CSUs	$275.00	19
14203	Kentrox Care Onsite 7x24x4: T1 DSU/CSUs	$425.00	19
14204	Kentrox Care Basic 7x24xNBD: T1 DSU/CSUs	$150.00	19
14209	Kentrox Care Exchange NBD: T1 DSU/CSUs	$89.00	19
14212	Kentrox Care Onsite 5x8xNBD: T1 DSU/CSUs	$205.00	19
14213	Kentrox Care Onsite 5x8x4: T1 DSU/CSUs	$359.00	19

Technical Training

133111	Customer Site: CrossPATH 3G Setup, Configuration and Troubleshooting, 3 hours, up to 6 students	$1595.00	20
133131	Customer Site: CrossPATH 4 Setup, Configuration and Troubleshooting, 3 hours, up to 6 students	$1595.00	20
133151	Kentrox Campus: CrossPATH 3G Setup, Configuration and Troubleshooting, 3 hours, per student	$295.00	20
133161	Kentrox Campus: CrossPATH 4 Setup, Configuration and Troubleshooting, 3 hours, per student	$295.00	20
133511	Customer Site: DSU Setup, Configuration and Troubleshooting, 1 day, up to 6 students	$3,500.00	20
133512	Customer Site: DSU Setup, Configuration and Troubleshooting, 2 day, up to 6 students	$6,500.00	20
133552	Kentrox Campus: DSU Setup, Configuration and Troubleshooting, 2 day, per student	$695.00	20

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Cable Price List

"xx" in the part number indicates this cable is available in various lengths. For cables of varying length, only the shortest one is listed. Call Customer Service at 800-733-5511 for other lengths and prices.

PART NO.	DESCRIPTION	PRICE
CABLES-930 Series		
930xx061	25-Pair RJ48H Plug/Socket (Available in the following lengths)	
93002061	25-Pair RJ48H Plug/Socket, 2 Feet	$68.00
93005061	25-Pair RJ48H Plug/Socket, 5 Feet	$80.00
93010061	25-Pair RJ48H Plug/Socket, 10 Feet	$100.00
93025061	25-Pair RJ48H Plug/Socket, 25 Feet	$160.00
93050061	25-Pair RJ48H Plug/Socket, 50 Feet	$260.00
930xx071	25-Pair RJ48H Plug/Stub (Available in the following lengths)	
93010071	25-Pair RJ48H Plug/Stub, 10 Feet	$75.00
93025071	25-Pair RJ48H Plug/Stub, 25 Feet	$135.00
93050071	25-Pair RJ48H Plug/Stub, 50 Feet	$235.00
930xx081	25-Pair RJ48H Socket/Stub (Available in the following lengths)	
93010081	25-Pair RJ48H Socket/Stub, 10 Feet	$75.00
93025081	25-Pair RJ48H Socket/Stub, 25 Feet	$135.00
93050081	25-Pair RJ48H Socket/Stub, 50 Feet	$235.00
930xx101	DA15P to Stub (Available in the following lengths)	
93010101	DA15P to Stub, 10 Feet	$40.00
93015101	DA15P to Stub, 15 Feet	$50.00
93025101	DA15P to Stub, 25 Feet	$70.00
93050101	DA15P to Stub, 50 Feet	$120.00
930xx111	DA15S to Stub (Available in the following lengths)	
93010111	DA15S to Stub, 10 Feet	$40.00
93025111	DA15S to Stub, 25 Feet	$70.00
93050111	DA15S to Stub, 50 Feet	$120.00
930xx121	DA15P to RJ48C Plug (Available in the following lengths)	
93005121	DA15P to RJ48C Plug, 5 Feet	$45.00
93010121	DA15P to RJ48C Plug, 10 Feet	$55.00
93025121	DA15P to RJ48C Plug, 25 Feet	$85.00
93050121	DA15P to RJ48C Plug, 50 Feet	$135.00
930xx143	RJ48C Plug to RJ48C Plug (Available in the following lengths)	
93010143	RJ48C Plug/Plug, 10 Feet	$35.00
93025143	RJ48C Plug/Plug, 25 Feet	$57.50
930xx144	RJ48C Plug to Plug, Crossover (Available in the following lengths)	
93010144	RJ48C Plug/Plug, Crossover, 10 Feet	$35.00
93025144	RJ48C Plug/Plug, Crossover, 25 Feet	$57.50
930xx146	RJ48C Plug to Stub (Available in the following lengths)	
93005146	RJ48C Plug/Stub, 5 Feet	$25.00
93010146	RJ48C Plug/Stub, 10 Feet	$30.00
930xx151	DA15S to RJ48C Plug (Available in the following lengths)	
93005151	DA15S to RJ48C Plug, 5 Feet	$45.00
93010151	DA15S to RJ48C Plug, 10 Feet	$55.00
93015151	DA15S to RJ48C Plug, 15 Feet	$65.00
93025151	DA15S to RJ48C Plug, 25 Feet	$85.00
93050151	DA15S to RJ48C Plug, 50 Feet	$135.00
930xx171	25 Pair RJ48H Plug to Plug (Available in the following lengths)	
93002171	25 Pair RJ48H Plug to Plug, 2 Feet	$68.00
93005171	25 Pair RJ48H Plug to Plug, 5 Feet	$80.00
93025171	25 Pair RJ48H Plug to Plug, 25 Feet	$160.00
93006212	RJ45 Plug to RJ45 Plug, Cat 5E (UTP568B), 6 Feet	$8.00
93010213	DA26M to DB25S, 10 Feet	$60.00
93014241	RJ45 to RJ45 Flat Modular, 14 Feet	$6.00
93301001	DB25S to DB25S CSU Shelf Interconnect Cable, 1 Foot	$30.00
CABLES-950 Series		
95001074	DB25P to MRAC34S (V.35) Adapter, 1 Foot	$40.00
CABLES-960 Series		
960xx010	BNC Plug to BNC Plug (Available in the following lengths)	
96010010	BNC Plug to BNC Plug, 10 Feet	$45.00
96025010	BNC Plug to BNC Plug, 25 Feet	$67.50
96050010	BNC Plug to BNC Plug, 50 Feet	$105.00
96010011	HSSI Plug to HSSI Plug, 10 Feet	$84.00

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