



## iSAP5100

### Multiservice Access Multiplexer (4.5U)

The iSAP5100 is a 4.5U 19" 20 slots rack type STM1 / E1 Time Division Multiplexer for fractional E1 network access, which is designed for non-stop operation. There are 18 slots available for hot-swappable iSAP5100 I/O cards. Two slots are provided for CPU Controller cards and two slots are provided for power supplies. Uplink supports STM1 fiber and E1 copper, two types of connection, maximum up to 144x E1 cross connect for Voice and Data. The iSAP5100 accommodates up to two separate power supplies, which may derive power from AC (110/220) or DC (-36~72V) power sources. When two power supplies are installed, the modules provide complete power redundancy and are hot swappable even during the E1 cards' transmission. The iSAP5100 provides STM1 fiber and E1 copper uplink with a the maximum E1 support of up to 96 E1 channels with cross connection for Voice and Data or interface including RS232, V.35, FXS, FXO, ET100 and E&M. CTC Union also provides and maintains our own SmartView EMS (Element Management System) which is a Java based client/server manager for monitoring , configuration, maintenance, or troubleshooting a large number of network elements over a long period of time.

### Line Cards

- Control card: 5100-MS-DM-96, 5100-MS-DM-155
- E1 card: iSAP-8E1, iSAP-16E1

### Features

- Supports MAX. 96xE1 with full cross-connect, Supports DS0 cross-connect
- Supports 16 channel Main E1 LTU card
- Supports E1 time slot broadcast function
- Modular design for Voice I/O card, the voice I/O card has two sub-module, each sub-module supports 4-port FXO/FXS
- All modules and cards support hot-swapping
- DCE card types included N x 64K, RS232(Sync/Async), ET100, E&M, FXO, FXS...etc.
- Supports Console, Telnet, SNMP and GUI management
- Available types of power built-in : AC+AC, AC+DC, DC+DC
- Modular design, 5U 19", 18-slot for I/O cards

### Specifications

<b>5100-MS-DM-96</b>	
<b>Interface</b>	10/100Base-TX Ethernet RJ45 port
<b>Console</b>	RS232
<b>E1 Cross Connect</b>	144xE1 Transparent cross connect , Supports E1 time slot mapping / broadcast function
<b>CAS Cross Connect</b>	Supports 16 time slot CAS follow voice time cross connect
<b>5100-MS-DM-155</b>	
<b>Interface</b>	Supports 1-port STM-1 155M SFP Slot on CPU card, CPU redundancy (1+1)
<b>NMC</b>	10/100Base-TX
<b>Console</b>	RS232
<b>E1 Cross Connect</b>	155M fiber to 63E1 and 144xE1 cross connect, supports E1 /time slot mapping/broadcast function
<b>CAS Cross Connect</b>	Supports time slot 16 CAS follow voice time cross connect
<b>STM-1/E1 Drop/Insert</b>	Supports STM-1 63E1 x 32TS to E1/IO slot 128E1 x 32TS connection
<b>iSAP-8E1/iSAP-16E1</b>	
<b>Interface</b>	Supports 8E1/16E1 interface
<b>Line Impedance</b>	120 / 75 ohms
<b>Frame format</b>	CAS (PCM30)/CCS (PCM31)
<b>Connector</b>	RJ45
<b>iSAP-RS232</b>	
<b>Data rate</b>	≤38.4kbps Async or 64/128kbps Sync
<b>Ports</b>	6-port
<b>Interface</b>	RS232
<b>iSAP-V35</b>	
<b>Interface types</b>	V.35
<b>Connector</b>	HD68F (female) with cable adapter
<b>Line code</b>	NRZ
<b>Data rate</b>	Nx64kbps

<b>iSAP-ET100</b>	
<b>Standards</b>	IEEE 802.3, 802.3u
<b>MDI/MDIX</b>	Auto
<b>Data rate</b>	10/100Mbps
<b>Encapsulation</b>	HDLC
<b>Ports</b>	4-port
<b>Connector</b>	RJ45
<b>iSAP-E&amp;M</b>	
<b>Loop current</b>	25 mA, maximum 70mA
<b>Ports</b>	8-port
<b>Connector</b>	RJ45
<b>iSAP-FXS</b>	
<b>ITU-T Standard</b>	G.712/G.713/G.714
<b>Line resistance</b>	600Ω
<b>Off-hook current</b>	25mA
<b>Line distance</b>	2km
<b>Ports</b>	8-port
<b>On-hook current</b>	10mA+/-3mA
<b>Effective Ring</b>	Frequency: 25Hz, Voltage: 75V, peak to peak110V MAX line resistance: 1500Ω
<b>Connector</b>	RJ45
<b>iSAP-FXO</b>	
<b>ITU-T Standard</b>	G.712, G.713, G.714
<b>Line resistance</b>	600Ω
<b>Line distance</b>	2km
<b>Ports</b>	8-ports
<b>Caller ID</b>	Supports DTMF, FSK Standard
<b>Electrical &amp; Mechanical</b>	
<b>Dimensions</b>	350 x 440 x 187 mm (D x W x H)
<b>Environmental</b>	Operating: 0~60°C Storage:-25~70°C Humidity: 10~90%, non-condensing
<b>Power</b>	AC 220V : 165~265V, 50~60Hz, DC -48V:-36~-72VDC
<b>Power Consumption</b>	< 90W

## Application

Figure1 : Point to Multi-points 16E1 aggregation

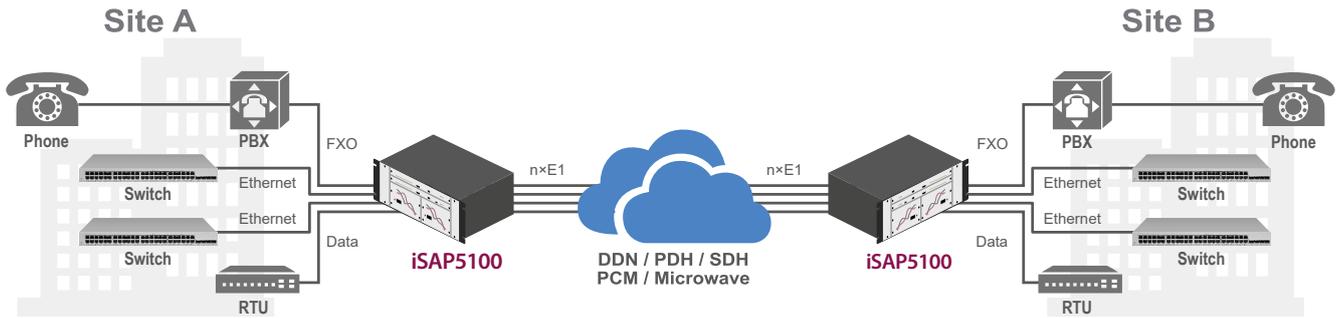
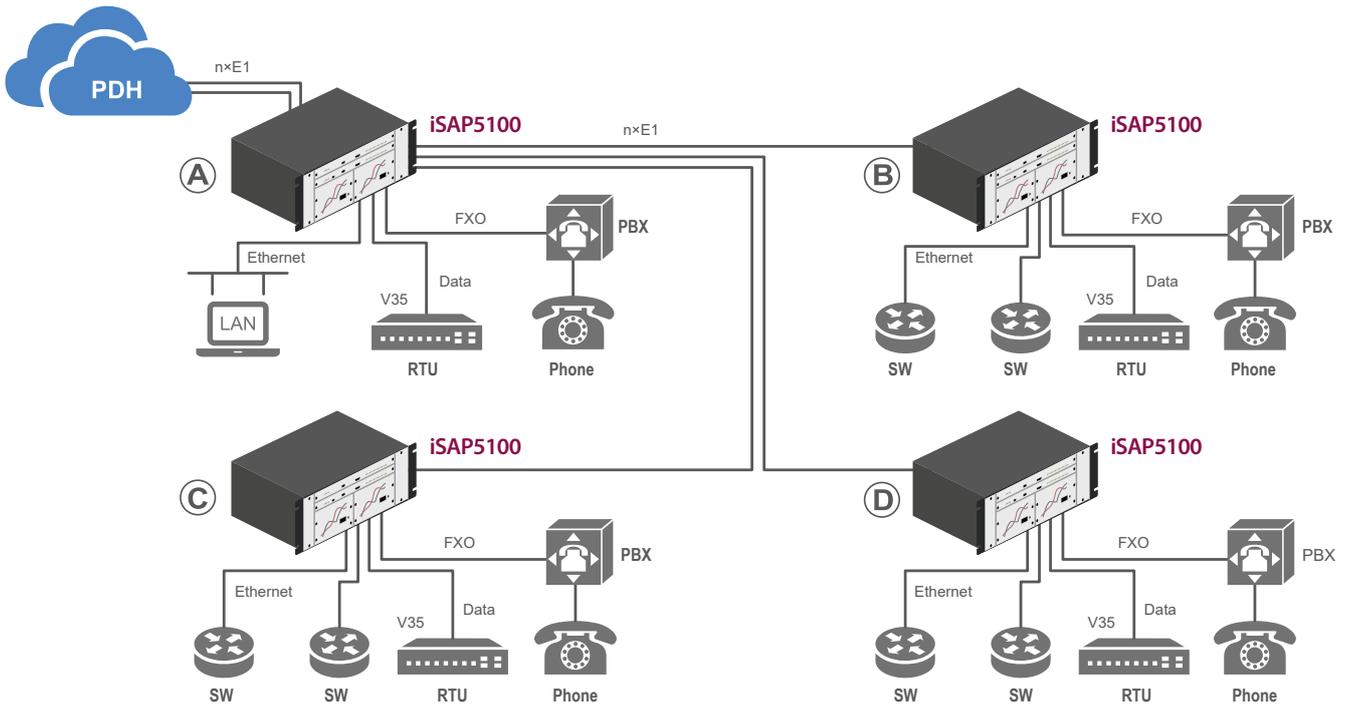


Figure2 : Point to Multi-points 63E1 aggregation over STM-1



## Control Card



### iSAP510-MS-DM-96 iSAP510-MS-DM-155

CPU Control SNMP  
Management Card

The iSAP510 require a CPU Controller (iSAP510-MS-DM-96 and iSAP510-MS-DM-155) card which must be installed into the front panel of two CPU slots of chassis. The CPU Controller card allows a network administrator the ability to configure and monitor the status of the blades. Management can be achieved locally over RS232, or over the network by Telnet, Web GUI or SNMP. The iSAP510-MS-DM-155 also supports one 155M SFP slot and two CPU cards with two SFP fiber ports for 1+1 fiber link protection.

## Features

- RS-232 port for dumb terminal at 9.6k, 8bit, no parity
- SNMP V1 and V2C support
- MIB file compliant to MIB-II ASN.1
- Firmware upgrade by TFTP
- Hot swappable

## Specifications

<b>Electrical Interface</b>	Console RS-232 port NMS LAN 10/100Base-TX
<b>Fiber Interface</b>	STM-1 155Mbps (MS-DM-96) SFP-LC (MS-DM-155)
<b>Network Management</b>	Telnet, SNMP, EMS, local console port
<b>Dimensions</b>	340 × 145 × 32mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs

## Line Cards



**iSAP-8E1R**  
**iSAP-16E1R**  
Main E1 Cross Connect  
Aggregate Card

### Features

- Available in 8,16 E1 channels
- Supports PCM31 or PCM30 framed/unframed
- Path / Card Redundancy / Hot Swappable
- E1 timeslots can support cross-connect function
- E1 channel can act as Sub-E1 for drop & insert

### Specifications

<b>Frame format</b>	CAS(PCM30)/CCS(PCM31); CRC on/off, framed/unframed
<b>Bit rate</b>	2.048Mbps
<b>Line codes</b>	HDB3/AMI
<b>Rx sensitivity</b>	0 ~ -43dB
<b>Tx driver</b>	1.5km over 0.5mm E1 cable
<b>Line impedance</b>	75 ohms (unbalanced) 120 ohms (balanced)
<b>Pulse amplitude</b>	nominal 2.37V (75ohm) nominal 3.00V (120ohm)
<b>Pulse shape</b>	According to ITU-T G.703
<b>Dimensions</b>	23 × 181 × 197mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs



**iSAP-RS232**  
RS232 Sync/Asyn Card

### Features

- Six independent channels
- N x 64 setting from any E1 channel
- Transparent asynchronous rates up to 115.2kbps
- Synchronous 64 or 128Kbps, DCE mode
- Diagnostic loop backs
- Hot swappable

### Specifications

<b>Datcom interfaces</b>	ITU-T V.24 compliant Multiplexing Nx64K data onto E1 time-slot
<b>Data speed</b>	N × 64K (N=1 to 2)
<b>Data access</b>	RS-232, supplied with corresponding interface cable
<b>Access mode</b>	DCE
<b>Diagnostics</b>	Local / Remote / Bi-directional Loop
<b>Dimensions</b>	23 × 181 × 197mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs



**iSAP-Data**  
N x 64 Synchronous Serial Card

### Features

- Four independent Synchronous channels
- N x 64 setting from any E1 channel
- Each channel operates in native DCE mode
- Diagnostic loop backs
- LED indicators for Power, Alarm, RD/TD activity
- Hot swappable

### Specifications

<b>Datcom interfaces</b>	ITU-T and ANSI compliant Multiplexing Nx64K data onto E1 time-slot
<b>Data speed</b>	N × 64K (N=1 to 30, or 31)
<b>Data access</b>	RS-530, RS-449, V.35, X.21, supplied with corresponding interface cable
<b>Access mode</b>	DCE
<b>Diagnostics</b>	Local / Remote / Bi-directional Loop
<b>Dimensions</b>	23 × 181 × 197mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs



**iSAP-ET100**  
Fast Ethernet Bridge Card

### Features

- Four independent Ethernet over E1 channels
- Utilizes HDLC WAN encapsulation
- MAC Address learning table with 5 minute aging
- Auto-MDIX and Auto-Negotiation
- Hot swappable

### Specifications

<b>Standards</b>	IEEE 802.3, IEEE 802.3u
<b>Ports</b>	4-port RJ45
<b>Throughput latency</b>	1 frame
<b>MDI/MDIX</b>	Auto
<b>Buffer</b>	4K bits
<b>Encapsulation</b>	HDLC
<b>Data rate</b>	10/100Base-TX
<b>Packet side</b>	64 ~ 1522 bytes
<b>Dimensions</b>	23 × 181 × 197mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs



## iSAP-E&M E&M Voice Card

### Features

- Eight independent channels
- 2/4 wire independent setting
- 1x 64 setting from any E1 channel
- E&M Signaling PBX trunks
- Provides E line, M line, SB (battery) and SG (ground) lines
- Supports types I, II, III, IV or V
- G.711 Codec
- LED indicators for Power, Alarm, activity
- Hot swappable

### Specifications

<b>Loop current</b>	5~30 mA, maximum 70 mA
<b>Return loss</b>	300-600Hz >12dB (2W), 600-3400Hz >15dB (2W), 300-3400Hz >20dB (4W)
<b>Group delay</b>	@-10dBm0 <750uSec(2W) <600uSec(4W)
<b>Total Distortion</b>	according to ITU-T G.223
<b>Channel crosstalk</b>	< -65dB, 1020Hz@0dBm
<b>Noise</b>	< -65dBm0p weighted
<b>Dimensions</b>	23 × 181 × 197mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs



## iSAP-FXS FXS Voice Card

### Features

- Eight independent channels
- 2 wire independent setting
- G.711 Codec
- 1x 64 setting from any E1 channel
- Provides ring function
- Supports caller-ID forwarding
- PSTN extension or direct "Hot-line"
- Links telephone to telephone or extends POTS
- LED indicators for Power, Alarm, RD/TD activity
- Hot swappable

### Specifications

<b>Effective ring voltage</b>	AC 75VRMS +/-15V@25Hz +/-3Hz, <10% THD
<b>Ring voltage at 300mA load</b>	>50VACRMS
<b>Loop resistance</b>	<1.8K Ohms, including 300 Ohms for telephone
<b>On-hook current</b>	10mA +/-3mA
<b>Off-hook loop current</b>	18-50mA
<b>Channel crosstalk</b>	< -65dB, 1020Hz@0dBm
<b>Noise</b>	< -65dBm0p weighted
<b>Surge protection</b>	1000V, 10uSec transient response, decay to 50% in 700uSec 300VRMS for less than 200mSec; no component damage 220VRMS for 15 minutes; damage only local loop
<b>Dimensions</b>	23 × 181 × 197mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs



## iSAP-FXO FXO Voice Card

### Features

- Eight independent channels
- 2 wire independent setting
- G.711 Codec
- 1x 64 setting from any E1 channel
- PCM30 R2 Signaling PSTN trunks
- Links PBX to PBX or extends POTS
- LED indicators for Power, Alarm, activity
- Hot swappable

### Specifications

<b>On-hook DC resistance</b>	> 100K Ohms
<b>Ring AC resistance</b>	> 7.5K Ohms
<b>Ring power sensitivity</b>	< 50mW
<b>Off-hook DC resistance</b>	< 300 Ohms
<b>Max. Input Voltage</b>	70VDC
<b>Max. Input Current</b>	150mA
<b>Channel crosstalk</b>	< -65dB, 1020Hz@0dBm
<b>Noise</b>	< -65dBm0p weighted
<b>Return loss</b>	300-600Hz >12dB (2W) 600-3400Hz >15dB (2W) 300-3400Hz >20dB (4W)
<b>Dimensions</b>	23 × 181 × 197mm (W × D × H)
<b>Temperature</b>	0°C ~ 50°C
<b>Humidity</b>	5 ~ 95%
<b>MTFB</b>	65,000 hrs

## iSAP-EMS Network Management

As the network size grows year by year, the network can be a challenge for administrators to maintain and react the possible network failures promptly. Especially when hundreds of devices are spread across many sub networks in different locations. In order to simplify network management, CTC iSAP-EMS Platform provides a centralized remote management platform that allows administrators easily to monitor and control each device on the network from a single computer. This allows efficient network management and lightens the load off the administrators who can better use the time for other value-added tasks

### ▪ User-Friendly Operation Interface

With intuitive and user-friendly graphical user interface (GUI), CTC iSAP-EMS presents the graphical topology in the platform. Double-click an icon in the Device GUI interface to see the front panel graphical view and get real-time element status updates. Configuration templates reduces manual, repetitive configuration time. You can apply a template to multiple ports or devices. With the configuration changes are just simple mouse clicks away.

### ▪ Network Monitoring and Management

It is vital to monitor network traffic to be aware any abnormal activity. CTC iSAP-EMS allows you to monitor network traffic and generate graphical report down to the port level. In addition, event and alarm management tools can issue SNMP trap and log the event in detail for prompt alert. Event logs are displayed in different colors to indicate the event severity level. Actions can be triggered by trap automatically without manual initiation; thus leaves flexibility and convenience to network managers

### ▪ Screen-Based User Friendly Network Management

With CTC iSAP-EMS, network maintenance is just a few simple mouse clicks away. Multi-site network operation and maintenance become easier than ever before. You can remotely perform general device maintenance (such as firmware upgrade and configuration file backup/restore) on more than one device on the network

### ▪ Security Access Management

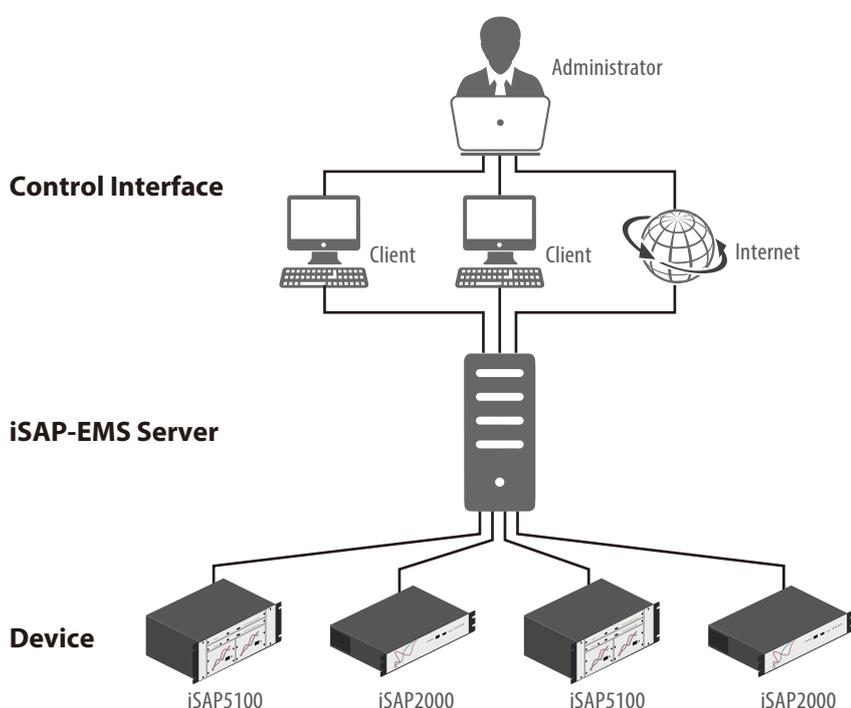
Remote access control is essential for a secure network. In the CTC iSAP-EMS, access to configuration screens and/or status screens are strictly based on user name, password, user's computer IP address and user account category. The three user categories give login accounts different administration authority. The CTC iSAP-EMS allows up to 15 users to log in at a time. Information such as the user ID, user group, IP address, configuration actions and time is logged for security reasons. So network managers know who logged in, when and did what.

## Features

- Remote access control for efficient configuration
- Traffic monitoring and management
- Alarm Trap and event log management
- On-line license key Access
- Allow up to 250 devices management
- Easy and User-Friendly Operation Interface

## Application

Figure1 : Network Scheme Diagram



## Ordering Information

Model Name	Type	Description
iSAP5100-CH	Chassis	5U 19" 20 slot Chassis, power modules not included (18-slot for I/O cards, 2-slot for CPU card)
iSAP5100/AC	Power	AC Power plug-in module (165 to 265 VAC)
iSAP5100/DC	Power	DC Power plug-in module ( $\pm 36$ to $\pm 76$ VDC)
iSAP-EMS	Software	EverLink2000 EMS software for iSAP5100 and iSAP2000
iSAP-8E1R	Main E1 card	8 channels Main-E1 LTU card: Fractional E1 RJ45
iSAP-16E1R	Main E1 card	16 channels Main-E1 LTU card: Fractional E1 RJ45
iSAP-CAB-RJ45/4BNC	Cable	2ch E1 RJ45 to 4BNC cable (1.5 meter)
iSAP5100-MS-DM-96	CPU-card	CPU card with console, SNMP management port
iSAP5100-MS-DM-155	CPU-card	CPU card with console, SNMP management port and STM1 fiber port
iSAP-FXO	Voice card	8 channels FXO interface card
iSAP-FXS	Voice card	8 channels FXS interface card
iSAP-E&M	Voice card	8 channels 2/4 wires E&M voice interface card
iSAP-RS232	RS-232 card	6 channels RS-232 interface card (V4.0), Low speed: 128kbps 19.2kbps Async
CAB-DB62DB25F6-232-LS	Cable	RS-232 adapter cable for low speed: DB62 Male to 6x DB25 Female, 1M
iSAP-ET100	FE card	4 channels 10/100Base-TX Ethernet Bridge card
iSAP-DATA	Data card	4 channels V.35/X.21/RS530/RS449 cards
CAB-HP68MB34F4-V35	Cable	V35 adapter cable for High speed: HP68 Male to 4x MB34 Female, 1M
CAB-HP68DB25F4-530	Cable	RS530 adapter cable for High Speed: HP68 Male to 4x DB25 Female, 1M
CAB-HP68DB15F4-X.21	Cable	X21 adapter cable for High speed: HP68 Male to 4x DB15 Female, 1M
CAB-HP68DB37F4-449	Cable	RS449 adapter cable for High Speed: HP68 Male to 4x DB37 Female, 1M