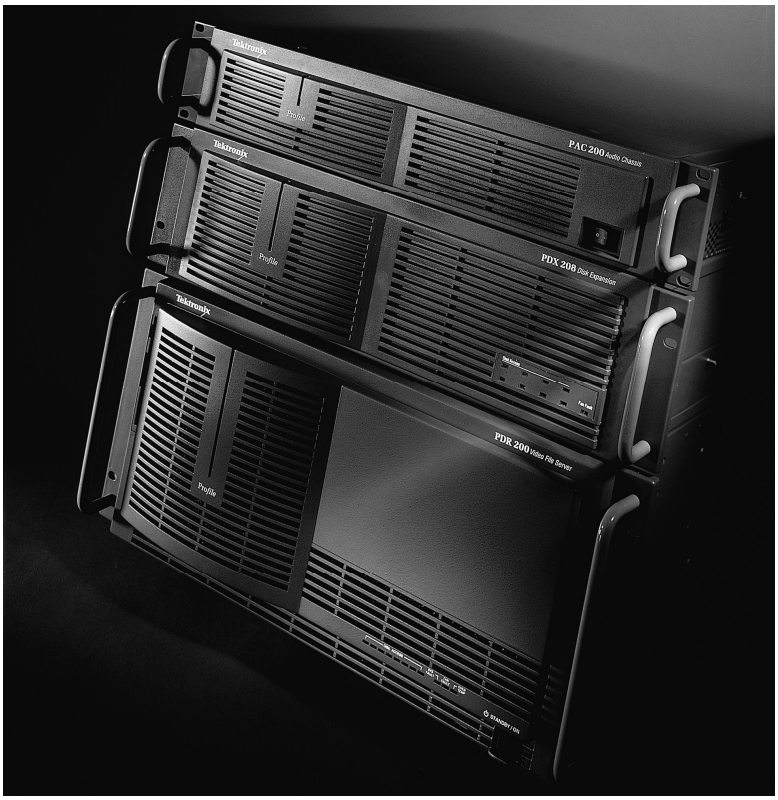
PDR200
Pro*file*® Networked Video File Server



Fibre Channel Networking with Faster than Real-Time Data Transfer

2 or 4 Channels of Broadcast-Studio Quality Video

Serial Digital I/O, Analog Composite I/O, and Analog Component Inputs

AES/EBU, Embedded Serial Digital or High Quality Analog Audio

Up to 96 Hours of RAID Protected Storage

18 Hours of Low Cost Storage

Modular Design, Easy Upgrades

Open Systems Platform

The Profile PDR200 is a fully featured, network ready video file server. The PDR200 family replaces the industry leading PDR100 and offers expanded capability, better upgradability, and more bandwidth to support future growth while retaining full software compatibility with PDR100 applications. It can be used in a broad range of applications — from editing to on-air replay — that require the recording, storage, manipulation, transfer, or playback of video. Profile disk recorder technology is transforming the broadcast industry through increased productivity, lower costs, greater reliability, and a better on-air look than VTR-based systems.

The Profile PDR200 networked video file server builds on the capabilities of the Tektronix PDR100. The PDR200 features larger 9 GB Ultra-SCSI disk drives, AES/EBU digital audio, 30 MB/s internal bandwidth, increased external storage, and the ability to share digitally compressed data over a Fibre Channel network. The PDR200 not only fits smoothly into existing PDR100 applications, but unlocks the benefits of tomorrow's digitally networked facilities.

Applications

Since Profile disk recorders allow up to four channels of simultaneous access to the disk array, one or more channels of video information can be written to the array while other channels are reading. This multi-tasking capability allows one PDR disk recorder to do the work of up to four VTRs. Profile PDR disk recorders make editing, program delay, store and forward, Near Video on Demand, and on-air spot playout simpler, faster, and far more reliable.

The PDR200's ability to share digital video files with other Profile disk recorders over an integrated network expands its possibilities. Sharing video over a Fibre Channel network streamlines everyday operation and allows last second changes in commercial schedules, sports and news programs. The PDR200 is able to work with — and increase — the productivity of existing equipment, even while it is delivering on the promise of a digitally networked studio.

Fibre Channel Video Network

In a typical broadcast environment, from field production to air time, a single video clip undergoes numerous reviews and changes during the production process. It will be edited, often several times, and moved on tape from the field, to the edit room, and to storage before being dubbed into a cart for on-air playback.

Fibre Channel is the general name of an integrated set of standards developed by ANSI. It describes the physical interface, a means to connect devices, provides for high speed transfer of large amounts of data, and separates the transported logical protocol from the physical interface. When used between networked Profile devices, Fibre Channel connections allow the user to move compressed digitized video between Profile PDRs in different editing suites, or from one editing suite PDR to the play-to-air PDR in a control room, at faster than real-time speeds. For instance, a 15 minute clip could be moved in 3 to 4 minutes, and because it is a data transfer, there is no need to QA the clip at its destination. Fibre Channel networking lets users create a virtual server where clips can be accessed by any PDR on the network without tying up Profile video and audio channels or the plant router.

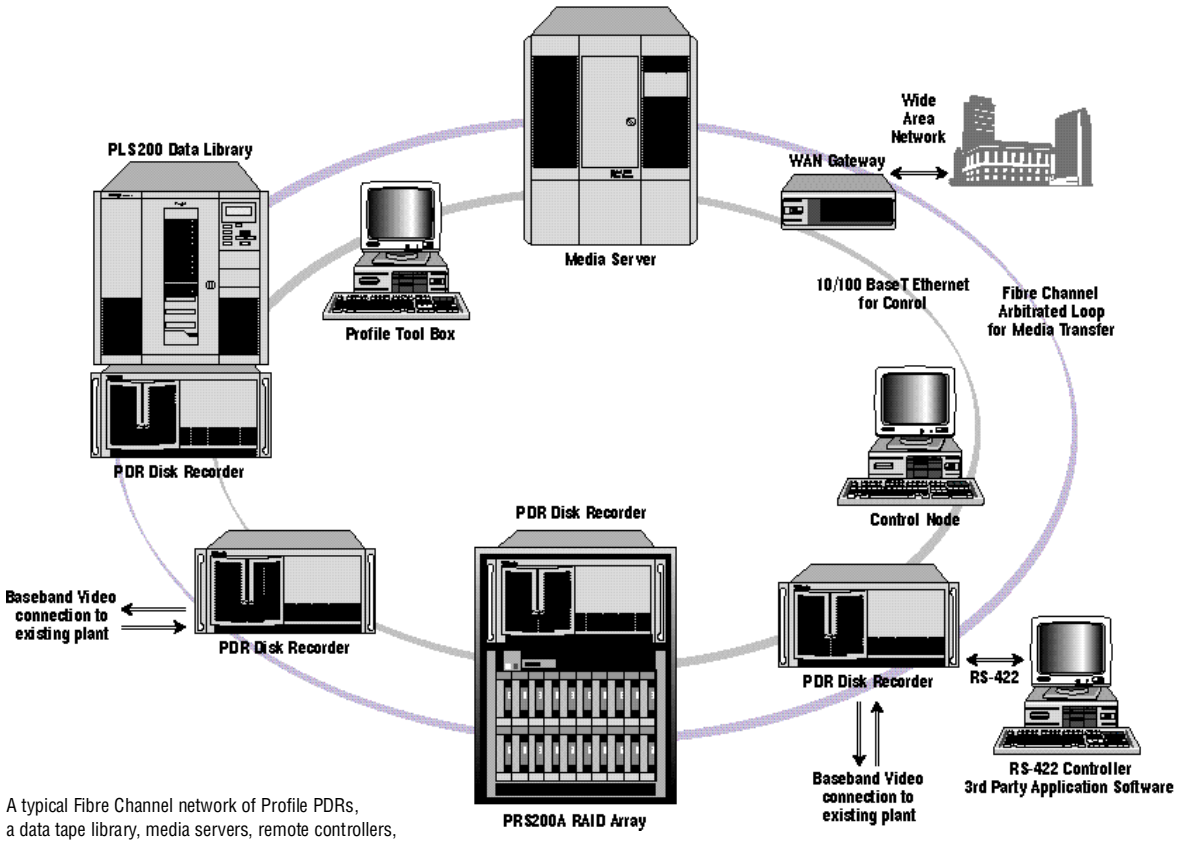
The Fibre Channel option is a single card in which data transfers from the network to the disk drive over a high speed PCI bus. This transfer is independent of the video CODECs, which ensures that the on-air channels will never be impacted by network activity.

Digital Audio Standard

Digital audio editing and digital audio effects are becoming more important as facilities make the transition to digital and as the processes of production and on-air play move closer together. In some applications, such as post-production, digital audio is already a primary requirement. With five high speed floating point DSP processors, the PDR200 is a powerful platform for audio production. New applications supporting these features will soon be available from Profile software developers.

Sixteen channels of digital audio are standard inside the PDR200. High quality analog audio is also available with an optional PAC208/PAC216 Analog/Digital Interface chassis. The PDR200 can be configured to operate with analog, AES/EBU digital, or embedded audio.

A unique feature of the PDR200 is its ability to support all three audio formats without external conversion equipment. Users can choose the required audio format per video channel, enabling analog audio on one channel, embedded on another, and AES/EBU on the rest.



A typical Fibre Channel network of Profile PDRs, a data tape library, media servers, remote controllers, and gateways. Data is transferred over the Fibre Channel network while control is through the Ethernet network. Gateways can be used to transfer data to external networks.

New Analog I/O Capability

Although most facilities are moving to serial digital I/O throughout the facility, there is still a tremendous amount of analog equipment that must be interfaced to a digital video server. New in the PDR200 is a two channel Analog Composite I/O card which enables up to four Analog Composite I/O channels (PDR 204A). In addition, the PDR200 can have up to two Analog Component inputs, or four Serial Digital I/O channels (combinations limited by available slots — see configuration guide).

Another new option is a four channel analog monitor card for in-studio monitoring of the four Profile channels. This card has the option of timecode display, or it can be programmed with a character display to indicate what is being monitored (on-air channel, satellite east, preview, etc.). With these I/O options, the PDR200 is the most versatile video server on the market today to support the transition from analog to digital for both video and audio.

Profile User Interfaces

The PDR200 standard VDR Panel software interface allows users to operate the disk recorder as if it were four interconnected VTRs. PDR disk recorders can be controlled by Profile protocol (an open API interface available to developers) as well as standard remote operation protocols (such as Louth, Odetics, or BVW emulation) that allow them to be used with third party application software.

Profile Tool Box

Optional Profile Tool Box software enhances the easy integration of Profile Disk Recorders by solving many of the labor intensive operational problems that broadcasters face each day.

The Profile Tool Box consists of a set of integrated applications. The Tool Box Editor provides basic, cuts-only editing and assembly edits. The Tool Box List Manager provides simple automation functions by allowing program events to be scheduled on a time line.

Comparison of PDR200 to PDR100

	PDR100 System	PDR200 Networked System
Audio	16 ch, 16-bit analog standard Opt. embedded audio (625 only)	16 ch, digital standard, AES/EBU, embedded; Analog optional
Audio Interfaces* (Digital)	None	XLR216 Breakout Box BNC216 Breakout Box
Audio Interfaces (Analog)	XLR100 (16 ch)	PAC208 (8ch), PAC216 (16ch)
Mainframe Bandwidth	24 MB/s (approx.)	30 MB/s (approx.)
Video Channels	2 or 4	2 or 4
Video Networking*	Fibre Channel (upgradable)	Fibre Channel (optional)
Ethernet*	10 BaseT	10/100 BaseT
Internal Storage* (@ 24 Mb/s)	(8) 4 GB SCSI drives (3 hours)	(8) 9 GB Ultra-SCSI drives (6 hours)
Expansion Storage * (@ 24 Mb/s)	PDX103 w/ 4 GB drives (add 6 hr, 9 hr total)	(2) PDX208 w/ 9 GB drives (add 12 hr, 18 hr total)
RAID Support	PRS200A (6–96 hours)	PRS200A (6–96 hours)
CPU*	133 MHz Pentium® or 66MHz 486	133 MHz Pentium
User Interface	VDR Panel, Tool Box optional	VDR Panel, Tool Box optional
Control Panels	PRC100, LVS100	PRC100, LVS100
Library/Archive	PLS200	PLS200

* PDR100 upgrade kit available to add this PDR200 capability.
Check with your local sales specialist to discuss upgrading your PDR100.

Users can record, store, and forward programs and commercials for automated play.

PDX208 Expansion Storage

The PDR200 Disk Recorder mainframe array of 9 GB Ultra-SCSI disk drives can be configured to provide over 6 hours of broadcast quality media storage, and expanded by adding one or two optional PDX208 external 8-drive expansion units. With two PDX208s, the PDR200 system can provide 18 hours of storage at Betacam SP quality, or 9 hours at Digital Betacam quality.

PRS200A RAID Storage

The optional Profile PRS 200A RAID Storage system provides both increased storage — up to 96 hours — and data protection. The PRS200A uses RAID-3 technology and is capable of rebuilding video information on-the-fly if an individual drive fails. The faulty drive can be replaced and the missing information reconstructed all without taking the Profile PDR offline. The data protection created by the PRS200A can be crucial to on-air and other mission critical applications.

PLS200 Data Tape Library

The optional Profile PLS200 Library System increases storage up to 1.6 terabytes. The PLS200 is a robotic data tape library that stores information on inexpensive digital cassettes. This small (12 RU), low cost system can provide storage for almost 5000 spots, which when combined with a Profile makes a cost-effective spot insertion system.

Product Support

Tektronix is dedicated to making the Profile PDR200 exceptionally reliable and easy to maintain. The PDR200 Disk Recorder features an open platform design and uses off-the-shelf components whenever possible. Its TekCare support begins with a one year hardware and software warranty that includes Technical Hotline Support 12 hours a day/5 days a week, Advanced Module Exchange, Return-to-Depot Repair, and Product Support Training.

Tektronix Service offers Profile PDR200 users a full set of options to expand their basic support. Technical Hotline Support, for example, can be upgraded to 24 hour coverage, 7 days a week. Other options cover on-site service, upgrades, troubleshooting and repair, software updates, and extended warranty coverage. Each user can decide what level of service is most cost-effective for their operation.

PDR200 Profile Networked Video File Server

System

133 MHz Pentium, 32 MB memory, 800 MB system disk, SVGA video, keyboard, mouse

Mainframe Bandwidth

30 MB/s (approx.) bandwidth is dependent upon number of disk drives.

Network

Fibre Channel
1 Gb/s

10/100 BaseT Ethernet

Video Channels (CODECs)

2 or 4

Reference Genlock (standard)

Locks to nominal NTSC or PAL color black signal

Time Code I/O (standard)

Longitudinal — LTC
4 separate read/write channels

Vertical Interval — VITC
Each video input has a VITC reader and each output has a VITC inserter

Time Code Generators (standard)

Four time code generators that can be set to values, locked to a video source, and routed to disk recorder channels or outputs.

RS-422 Ports (standard)

Eight RS-422 ports provided in a 1 RU chassis. Four can be used to control the PDR using one of the supported protocols (Profile, BVW 75, Louth, Odetics). The remaining ports can be used by applications to control external devices.

Power Supply

1184 VA (750 W)

User Interface

VDR panel (standard)

Tool Box Software (optional)

Control Panels

LVS100, PRC100

Audio Specifications

ADSP Module
- 8 pairs of AES/EBU digital audio, or
- 16 ch embedded audio (SMPTE272), or
- 8 or 16 ch analog audio (balanced 24 dBm, 20-bit resolution), or
- any combination of the above in groups of 4 channels

Audio Processing
Audio processed in floating point @ 48 kHz

Audio Storage
16 bits @ 48 kHz (20 bits will be supported in later software releases)

Audio Clocking
- AES inputs may be individually clocked in groups of 4 from 30–50 kHz
- Any source locked to video
- Output clocking is synchronous to a selected reference
- Sample rate conversion to 48 kHz on AES inputs

Serial Digital Video I/O
(with embedded audio)
Contains 2 input and 2 output serial digital component video channels.
- 625 and 525 lines rates supported
- Video input at 270 MHz (CCIR 601)
- Audio output is 20-bit AES/EBU
- Audio input at 48 kHz (SMPTE 272M level A format)
- Supports 8 ch of embedded audio (4 pairs) per video channel

Audio Analog Options

PAC208 — 8 Analog Audio Channels
The PAC208 is comprised of the PAC200 Profile Audio Chassis which contains A/D and D/A converters for converting analog audio to AES/EBU digital audio. It connects to the PDR200 through a 62-pin connector. The PAC200 contains 16 XLR connectors for 8 analog input and output channels. Additionally it provides 4 stereo pairs of AES/EBU digital I/O on 8 XLR connectors.
Size: 2 RU (3.5" H, 18" D, 17" W)

PAC216 — 16 Analog Audio Channels
The PAC216 is comprised of the PAC200 Profile Audio Chassis and a small breakout panel. The breakout panel contains 16 XLR connectors for 8 analog input and output channels for a total of 16 analog channels. Additionally it provides 8 stereo pairs of AES/EBU digital I/O on 8 XLR connectors for a total of 8 stereo pairs. This small breakout panel can reside behind the PAC200 in a rack.
Size: 2 RU (3.5" H, 4" D, 17" W)

Audio Breakout Panel Options

XLR216
AES/EBU digital audio connector box. Contains 16 XLR connectors and a cable to the ADSP board.
Size: 2 RU (3.5" H, 4" D, 17" W)

BNC216
AES/EBU digital audio connector box. Contains 16 BNC connectors and a cable to the ADSP board.
Size: 1 RU (1.75" H, 4" D, 17" W)

PDX208

The PDX208 is a 3 RU expansion mainframe which houses 8 caddie based 9 GB Ultra-SCSI drives. Two PDX208s can be connected to a PDR100 or a PDR200. The PDX208 has been designed to house drives in caddies so they can be easily changed. The PDX208 has no options.

Size
3 RU (5.25" H, 17.75" W, 20" D)

Drives
9 GB Ultra-SCSI

Capacity
8 drives for a total capacity of 72 GB

Storage @ 24 Mb/s
6 hours

Fibre Channel (Opt 1F)

10/100 BaseT Ethernet Card

Connections
9-pin DB connector for connection to a copper Fibre Channel cable (5 meter cable included)

Performance
1 Gb/s loop transfer speeds, approximately 144 Mb/s effective transfer rate per PDR

Profile PDR Connections
16–24 Profile PDRs on a single Fibre Channel loop is recommended (128 maximum)

Opt 1F Accessories

9 Channel Copper Fibre Channel Hub
(PNFCHUB)

Copper Cables
5 m (PNFC05)
25 m (PNFC25)

Optical Cable
100 m (PNFO100)

Media Interface Adapter
Optical to copper converter (PNFOMIA) (requires 2 to connect PDR200 to copper Fibre Channel hub)

10/100 BaseT Ethernet ISA Card (Opt 1L)

10/100 BaseT Ethernet ISA Card

Opt 1L Accessories

8 Channel 10 BaseT Ethernet Hub
(PNETHUB)

Ethernet Cables
Category 5 unshielded twisted pair cables
5.49 m (PNET05)
25 m (PNET25)

Ordering Information

There are 6 basic PDR200 systems. They are either 2 or 4 channel systems and either Serial Digital, Analog Composite, or Analog Component.
All system options use the same option numbers, but not all options are available on each system.
The table below shows what is standard in each system and the available options.
The systems have been configured so you can select a variety of feature combinations.

To Configure Your System

1) Choose the system that is your primary video format (Serial Digital, Analog Composite, or Analog Component).
2) Choose a 2 or 4 channel version. PDR202x = 2 channel system, PDR204x = 4 channel system.
3) Choose the storage option. For external RAID storage do not pick any internal options.
4) Choose any additional video I/O options.
5) Choose any other options (Fibre Channel, Ethernet, Mix Effects).
6) Choose the desired format (525 NTSC or 625 PAL). All PDR200s are dual format, but all specifications are verified to only one format. Verification of both formats is available as an extra charge option.
7) Choose the audio option. All 6 systems come standard with 16 channels of digital audio. Options are required for analog audio and AES/EBU digital audio.
8) Select External Parallel Port CD-ROM player. It is recommended to have one per site. The CD-ROM does not stay attached to the PDR200; it is only connected to load software.

Option	Name	Description	System			
			Serial Digital		Analog Composite	
	Standard		PDR202D	PDR204D	PDR202A	PDR204A
		Serial Digital Input and Output Channels	2	4		
		Analog Composite Input Channels			2	4
		Analog Composite Output Channels			2	4
		Analog Component Input Channels	Opt.	Opt.	Opt.	Opt.
		Internal Audio Channels	16	16	16	16
	Options					
Storage	04	Add 4 Internal 9 GB Drives (36 GB)	x		x	
↓	08	Add 8 Internal 9 GB Drives (72 GB)	x	x	x	x
Video I/O	21	Add 2 Ch Composite Analog Input/Output	x	x		
	22	Add 4 Ch Composite Analog Output	x	x		
	23	Add 4 Ch Monitor Output w/ Timecode Burn-in	x	x	x	x
	25	Add 1 Ch Component Analog Input	x	x	x	x
	26	Add 2nd Additional Component Analog Input			x	x
↓	30	Add 2 Ch Serial Digital I/O			x	x
Networking	1F	Add Fibre Channel Connection (incl. 10/100 BaseT LAN)	x	x	x	x
↓	1L	Add 10/100 BaseT LAN	x	x	x	x
Mix Effects	ME	Add Mix Effects Board	x	x	x	x
Test	DS	Test for 625/PAL and 525/NTSC Formats	x	x	x	x
	NT	Setup and Test for 525/NTSC Format	x	x	x	x
↓	PL	Setup and Test for 625/PAL Format	x	x	x	x
Power Cords	A0–A3	International Power Cords	x	x	x	x
Audio		16 Ch AES/Embedded XLR Dig. Audio Breakout Panel	XLR216	XLR216	XLR216	XLR216
		16 Ch AES/Embedded BNC Dig. Audio Breakout Panel	BNC216	BNC216	BNC216	BNC216
		8 Ch Analog/Digital Audio w/ Ext. Audio Chassis	PAC208	PAC208	PAC208	PAC208
↓		16 Ch Analog/Digital Audio w/ 2 Ext. Audio Chassis	PAC216	PAC216	PAC216	PAC216
CD ROM		Add External Parallel Port CD-ROM Device	PDRFCD	PDRFCD	PDRFCD	PDRFCD

Disk Drive Capacity	18 Mb/s	24 Mb/s[1]	36 Mb/s[2]	48 Mb/s[3]
4 Internal	4 hr	3 hr	2 hr	1.5 hr
8 Internal	8 hr	6 hr	4 hr	3 hr
16 (w/ 1 PDX208)	16 hr	12 hr	8 hr	6 hr
24 (w/ 2 PDX208s)	24 hr	18 hr	12 hr	9 hr

[1] Comparable to Betacam SP
[2] Comparable to D2
[3] Comparable to digital Betacam
Times are approximations and will vary depending on the number of audio channels and the video being compressed.

PDR200 Profile Networked Video File Server

Physical Dimensions

Size (H x W x D)
8.72 x 19 x 24.812 inches
218.44 x 482.25 x 630.33 mm
5 RU

Weight
65 lb (29.55 kg)

Power Supply
1184 VA (750 W)

Environmental Characteristics

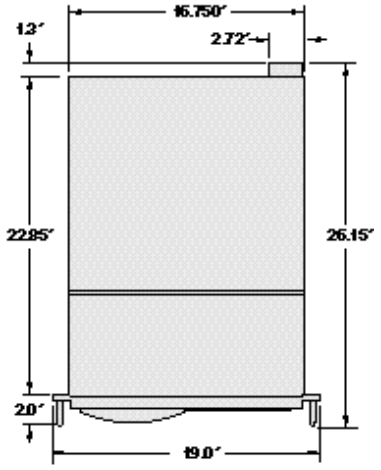
Operating Temperature
0 to +40°C

Storage Temperature
-40 to +75°C

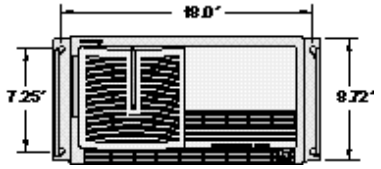
Operating Altitude
Up to 15,000 feet (4572 m)

Storage Altitude
Up to 50,000 feet (15,240 m)

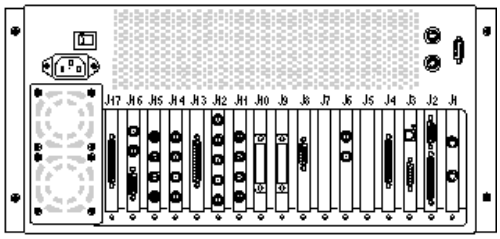
Warranty
One year parts and labor,
includes hardware and software



Top View

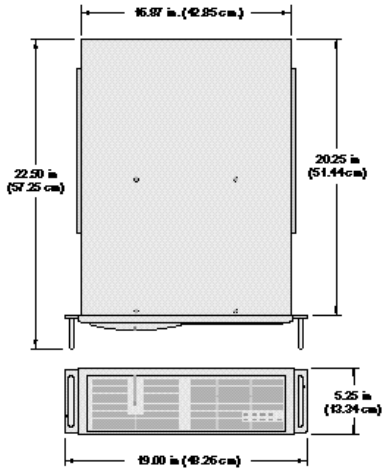


PDR200



Sample Backplane Configuration

J1 System CPU (keyboard, mouse)
J2 SVGA, Parallel Port
J3 10/100 BaseT LAN
J4 System SCSI
J6 Analog Composite In
J8 Fibre Channel
J9 Master Disk Recorder, SCSI A
J10 Slave Disk Recorder, SCSI B
J11 Serial Digital I/O (2 channels)
J12 Analog Composite Out (4 ch, monitor)
J13 Digital AES/EBU Audio
J16 Reference (analog video, timecode)
J17 Remote RS-422 I/O



PDX208

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ISO 9001

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