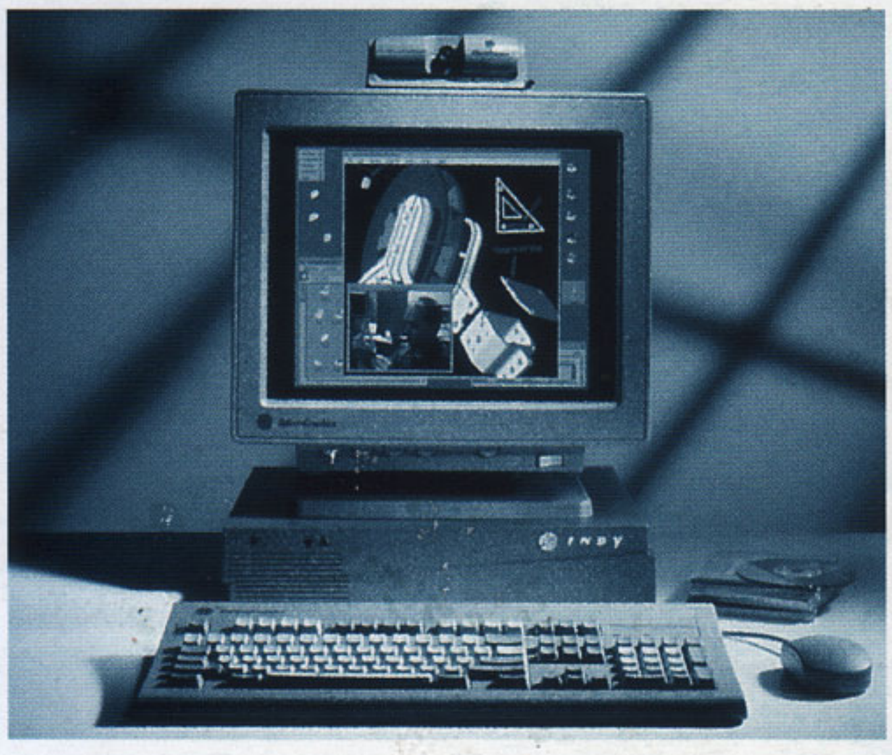
SiliconGraphics
Computer Systems

Indy™
IndyGraphics



Graphics Options to Fit Your Needs

The Indy™ workstation from Silicon Graphics delivers the most advanced visual computing technology directly to your desktop. Indy offers a variety of graphics options to users ranging from MCAD designers and graphic artists to scientists and medical professionals. Indy XZ provides hardware-accelerated 3D performance for power graphics users, while Indy XL subsystems are optimized for running CPU-based graphics at blazing speed.

Outstanding Performance

Experience incredible application performance with 3D and 2D graphics. The power of Indy is based on a high bandwidth 64-bit system architecture featuring the newest and fastest processors in the MIPS® RISC R4000® CPU technology family, a 267MB/sec system bus, and 400MB/sec memory bus.

Indy XZ – Accelerated 3D with an Attitude

The Indy XZ graphics subsystem uses Silicon Graphics® Geometry Engine® graphics accelerators to manipulate large 3D models and images. With 128 MFLOPS of dedicated graphics compute performance fed by a high throughput system bus, your 3D graphics and imaging applications will run with amazing speed. Indy XZ is a full 24-bit color system with a 24-bit Z buffer. This subsystem is ideal for those who require affordable access to accelerated 3D.

Indy 24-Bit XL – True Color with Advanced Imaging

The Indy 24-bit XL graphics subsystem incorporates preeminent graphics technology, moving up to 58M pixels/sec and drawing up to 1.6M X lines/sec. It supports advanced features like alpha blending, texture mapping, and anti-aliased RGB lines and points. The Indy 24-bit XL subsystem provides high-speed true color image and graphics manipulation at an affordable price for publishing, compositing, and paint applications, making it perfect for the graphic arts, medical, and film and video markets.

Indy 8-Bit XL – 3D CAD and General Computing

The Indy 8-bit XL graphics subsystem supports Virtual 24™ color (8-bit dithered) and up to 1.6M X11 line performance. Delivering up to 800K 3D vectors/sec and 79K Tmesh/sec, Indy 8-bit XL is ideal for enterprise 3D CAD systems as well as for general scientific computing.

For the 24-bit graphics XL and 8-bit XL subsystems, Indy uses the CPU and system memory for 3D geometry capabilities and Z-buffering to deliver unmatched features and functionality without increasing system price.

Flexible and Expandable

Multiple CPU and graphics modules are available to choose from, and memory and disk are upgradable. You can invest in the technology you need today and still retain future upgrade paths.

Plays in Many Fields

Over 1,800 applications that are binary compatible with Silicon Graphics systems, and a rich feature set, make Indy ideal for many markets:

- CAD
- Color Publishing
- CASE
- Film and Video
- Media Authoring
- GIS

Technical Specifications

Graphics

Advanced Features	Alpha blending
	Accumulation buffer
	Anti-aliased RGB lines & points
	Texture mapping
	Fog
	Lighting features
	Spot lighting
	8 light sources
	Two-sided lighting
	Ambient, diffused, & specular
	Arbitrary clipping planes
	Depth cueing
	Sub-pixel positioning
	Stenciling
	Stereo graphics
	Pan and zoom
	Sphere rendering
	X11 pixel operations
Color Maps	4 (256 colors each) IRIS Indigo®
	2 (4096 colors each)
IRIS GL™ Display Modes	
	RGB double buffer
	RGB single buffer
	Color index double buffer
	Color index single buffer
	Stereo viewer port
Graphics	8-bit XL planes
	1280x1024/1024x768
	up to 76Hz refresh
	(upgradable to 24 or XZ)
	24-bit XL planes
	1280x1024/1024x768
	up to 76Hz refresh
	(upgradable to XZ)
	XZ
	1280x1024
	up to 76Hz refresh
Pop-Up/Overlay Planes	8-bit XL: 2-bits/none
	24-bit XL: 2-bits/8-bits
	XZ: 4-bits/4-bits

Hardware Features

CPU module	R4600™ PC @ 133MHz
	R4600 SC @ 133MHz
	R4400™ SC @ 175MHz
Monitor	Color 20-inch
	1280x1024 resolution
	50 - 76Hz refresh rates
	Color 17-inch
	1280x1024 resolution
	50 - 76Hz refresh rates
	Color 15-inch
	1024x768 resolution
	70Hz refresh rate
	Indy Presenter™ flat panel 12-inch
	LCD display
	1024x768 resolution
	(supported on 24-bit XL and XZ only)
Input/Output	2 serial, 1 parallel
	1 Ethernet™ (10-baseT or AUI)
	Fast SCSI-2, ISDN
	Stereovision
	(16" and 19" monitor only)
Memory	16MB to 256MB
Mass Storage	2 internal devices:
	(3.5" x 1" form factor)
	21MB Floptical Drive
	535MB Hard Disk
	1GB Hard Disk
	2GB Hard Disk
GIO Expansion	2 GIO-32 slots
	(one contains video slot)
	(Indy XZ takes both slots)
Input Devices	PS/2™ style keyboard & mouse
	Analog microphone
	IndyCam™: full color CCD
	640x480 resolution
Warranty	One year hardware

Audio

Input	4 analog channels
	Mono/Stereo microphone
	(mono microphone incl.)
	Line-level stereo analog
	AES/EBU digital stereo
Output	4 analog channels
	External volume controls
	Stereo headphone
	Mono internal speaker
	Line-level stereo analog
	AES/EBU digital stereo
Sampling Rates	48, 44.1, 32KHz, and many lower rates
	Independent input/output sampling rates
	Simultaneous input/output
Converters	2 stereo audio codecs
	16-bit, delta-sigma
	64x-oversampling
Connectors	Five 1/8 inch (3.5 mm) stereo jacks

Video

	Independent input video bus
Input	2 analog video-in ports
	(S-Video and Composite)
	NTSC and PAL support
	1 digital video-in port

Software Features

IRIX™ 5.3	IEEE POSIX 1003.1, FIPS 151-1 UNIX® System V.4, 4.3 BSD enhancements, SVID Issue 3, X11R5 Window System™, OSF/Motif™ Toolkit 1.2, Display PostScript®, IRIS GL, OpenGL™
Indigo Magic™	Media User Interface, IRIS Showcase™ 3.0, Media Tools, MediaMail™, PhotoCD™ support

Physical Environment

Relative Humidity	10% to 80% operating
	no condensation
	5% to 95% non-operating
	no condensation
Altitude	10,000' operating
	40,000' non-operating
Vibration	0.02 inches, 5-19Hz
	0.25 G, 5-500Hz
Noise	36 dB (A) in typical operating position

Regulatory Agency Approvals

Electromagnetic Emission	FCC Class B
	Canada DOC. Class B
	CISPR 22 Class B
	Germany VDE Class B
	VCCI Class 2
Product Safety	CSA 22.2 No. 950
	IEC 950
	EN 60950
	Class 1 SELV
Ergonomic/Health	Germany ZH1/618
	ISO 9241

Performance Chart for XL8 and XL24-bit Subsystems

CPU	R4600™PC @133 MHz	R4600™SC @133 MHz	R4400™SC @175 MHz
Cache (primary)	16kd/16ki	16kd/16ki	16kd/16ki
Cache (secondary)	–	.5MB	1MB
SPECint92	84.9	113.5	122.6
SPECfp92	61.0	73.7	115.5
AIM	75.4	107.2	118.4
XLines/sec	1.4M	1.5M	1.6M
3D Vectors/sec	563K	573K	801K
Tmesh/sec (z)	38K	53K	79K
Screen Clear	3msec	3msec	3msec
DMA Pixel Transfer			
8-bit	53M	54M	58M
24-bit	41M	44M	46M

Performance Chart for Indy XZ Subsystem

3D lines/sec	920K
3D lines GouraudZ, Depth Cued/sec	446K
Tmesh, Flat NO-Z/sec	402K
Tmesh, GouraudZ, Lit/sec	180K
Quads, FlatZ/sec	127K
Quads, GouraudZ, Lit/sec	91K
Characters/sec	240K
Screen Clear	9msec
Rectangle Fill Rate/sec (500 x 500)	40M pix

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For more information please call:

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Indy-Graph-DS (02/95)