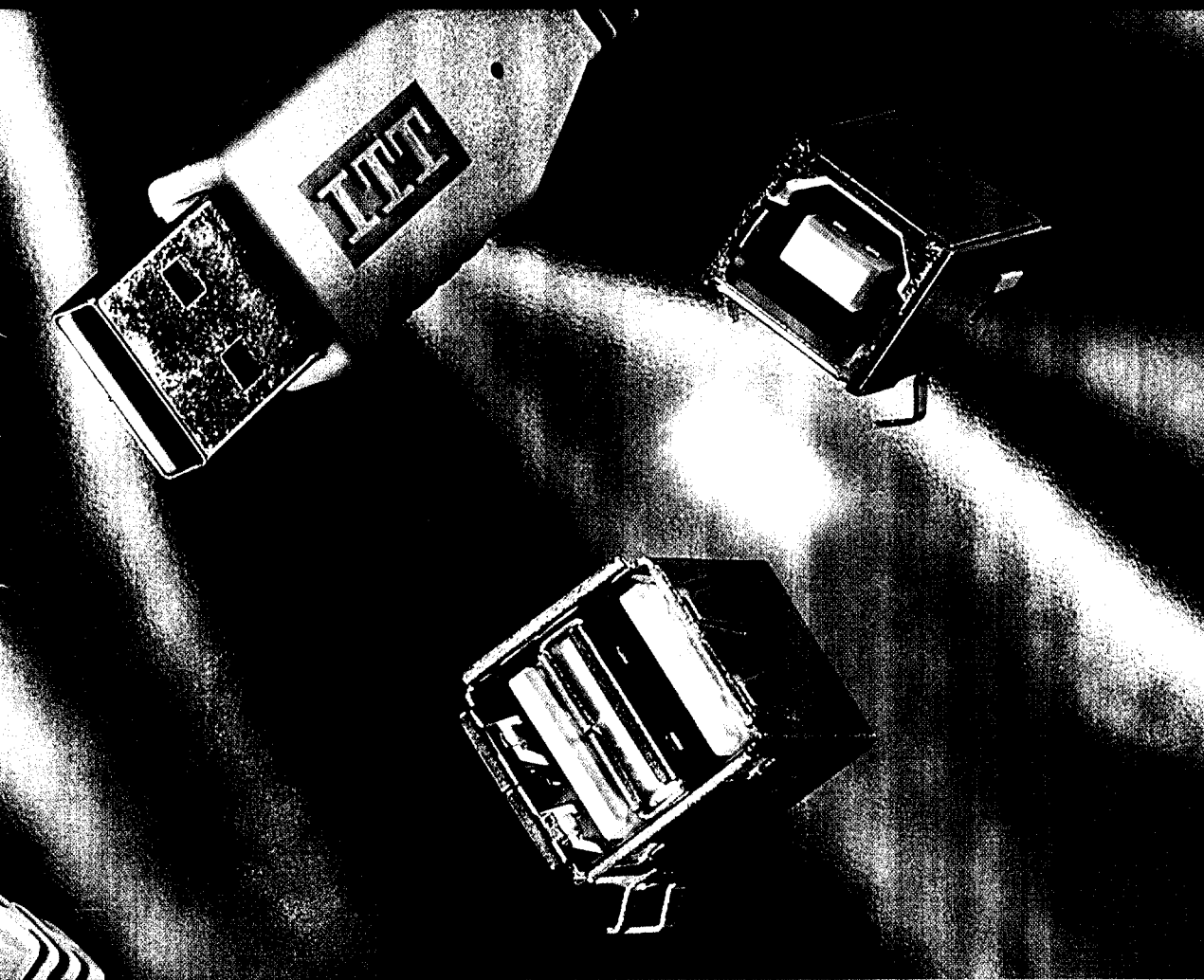


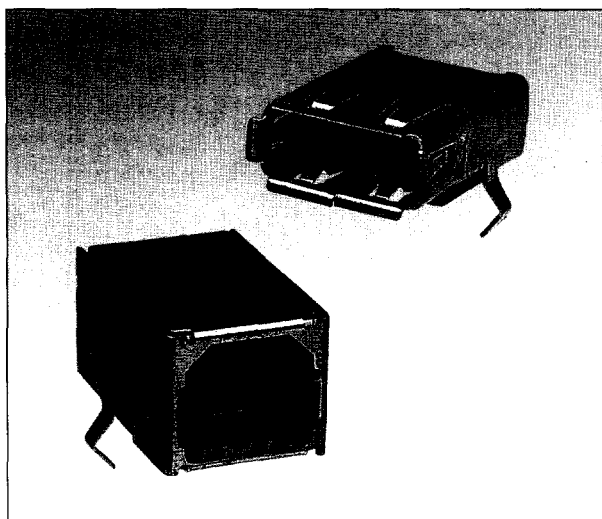
USB SERIES

Universal Serial Bus Connector



ITT Cannon

ITTC800025



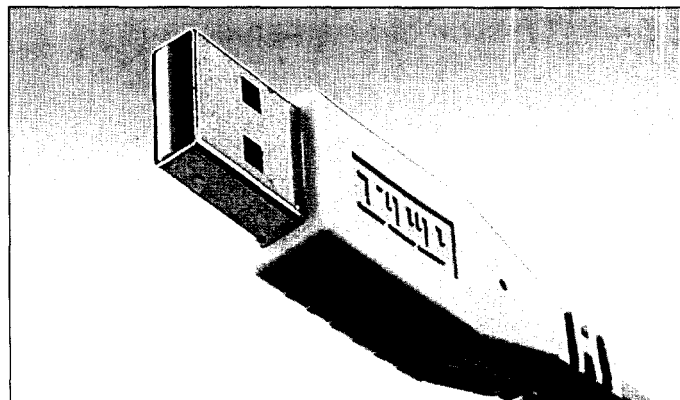
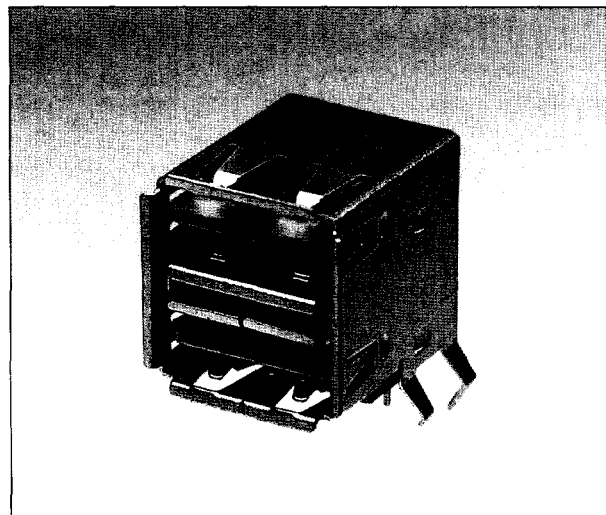
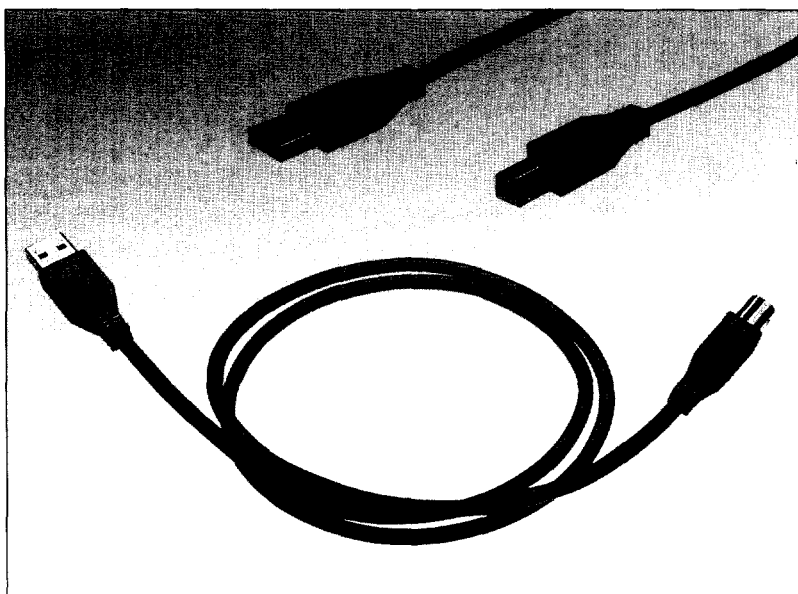
The world of multimedia and information & communications has struggled with the increasing complexity and multi-standard approach to computer interconnectivity. The PC to peripheral connection is often characterized as an unwieldy arrangement of entangled cables and wires often introducing confusion to end-users.

Now enter Universal Serial Bus (USB), a new computer interconnectivity standard which promises to rid manufacturers and end-users alike of this unwelcome annoyance. USB greatly simplifies the PC connection by requiring only one cable between peripheral units connected with a small, four-position connector. PC signals are transmitted over the serial bus architecture via IC multiplexing technology, thus permitting the simultaneous use of up to 127 different devices. Further, the new USB standard offers hot, plug-and-play functionality at an I/O data transfer rate of 12Mb per second.

In support of this new USB interconnectivity standard, ITT Cannon have introduced a family of USB interconnects and cable assemblies designed with enhanced contact and mateability characteristics best suited for today's PC systems. In accordance with the USB specification, ITT Cannon offers Series A and Series B plugs, receptacles, and cable assemblies.

Should your next device platform call for a reliable, robust USB interconnect, please give us a call. We at ITT Cannon are committed to providing utmost reliability and flexibility in meeting your requirements.

ITT Cannon was founded in 1915 in Los Angeles, California, by James H. Cannon. A division of ITT Industries, today ITT Cannon is a leading international supplier of electronic components, switches, test accessories, information card technology, and high speed structured cabling systems and services.



USB FEATURES

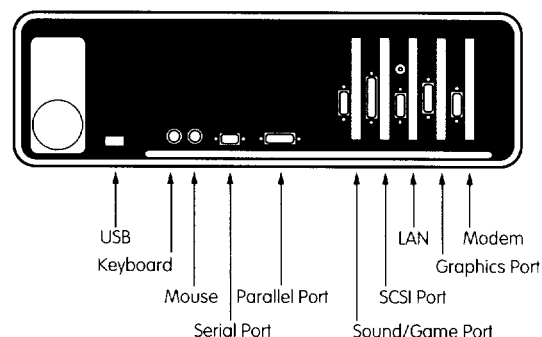
- A new PC serial bus architecture that allows multiple connections from a single PC port
- A standardized interconnect system used for peripheral devices: keyboard, mouse, modem, printer, scanner, etc.
- Data transmission speed: 12Mbps max.
- Supports up to 127 devices connected to one system
- Maximum 5m cable length between adjacent devices
- Allows peripheral devices to function as hubs, i.e. displays, keyboards, etc.
- Power supplied via USB cable and connectors. On/off status of peripheral devices has no affect on serial bus connectivity
- Low power devices can operate via power supplied via the USB architecture
- PCs will require only one to three connectors thus reducing cost and complexity of the overall system

BENEFITS

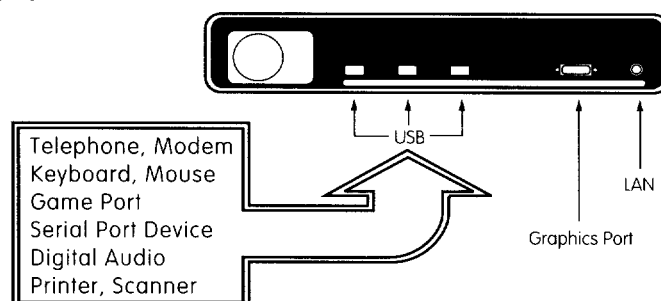
- Ease of use through plug and play
- Low cost
- Low insertion and withdrawal forces
- Robust and durable connection system (1500 mating cycles)
- USB icon on cable assemblies facilitates ease of mating
- Enhanced shielding characteristics offered for higher speed applications

PC CONNECTIVITY VISION

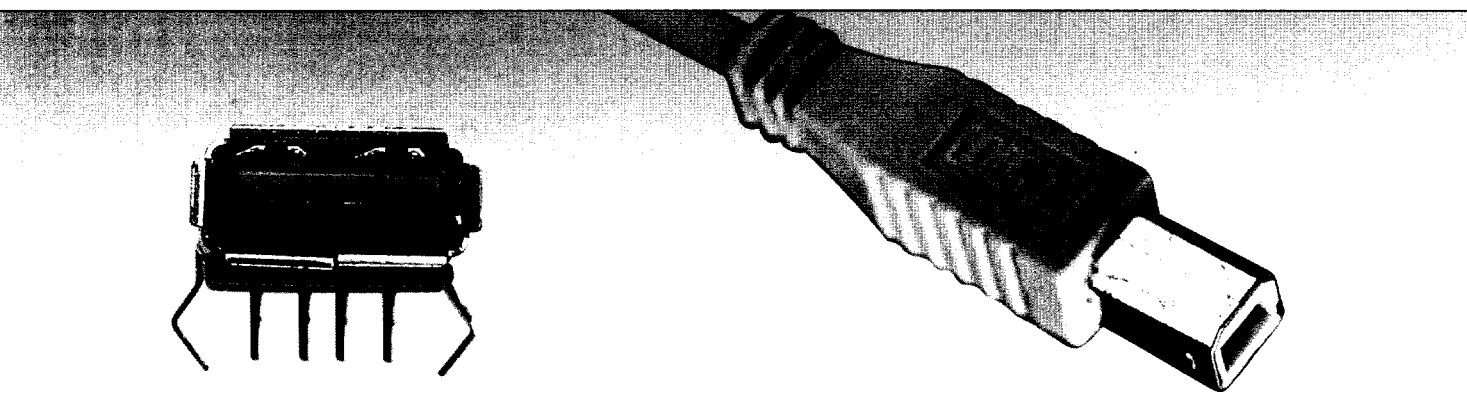
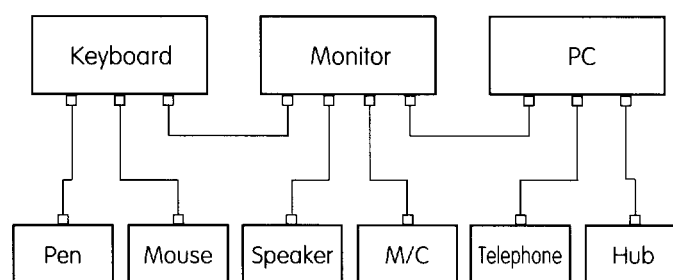
THE PRESENT SITUATION



FUTURE



USB CONNECTION



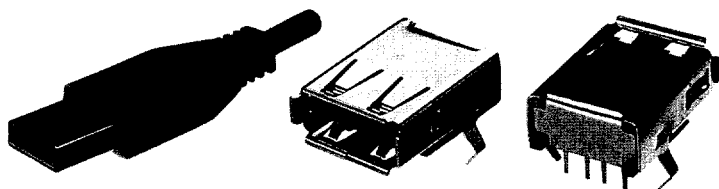
FEATURES

RECEPTACLES

- * Right-angle, through-hole, and solder mount
- * 4 gold-plated contacts
- * Detente style retention
- * First mate power contacts
- * 1500 durability cycles

PLUGS

- * Overmolded assembly
- * Solder termination
- * Four gold-plated contacts
- * Fully shielded
- * 28 AWG cable termination for signals
- * 20-28 AWG cable termination for power contacts
- * Detente style retention
- * 1500 durability cycle



SPECIFICATIONS

Data transmission speed:

- * 12Mbps (Telephone, audio speaker, scanner, printer)
- * 1.5Mbps (Keyboard, mouse, modem, stylus pen, joystick)

Node: 127 nodes

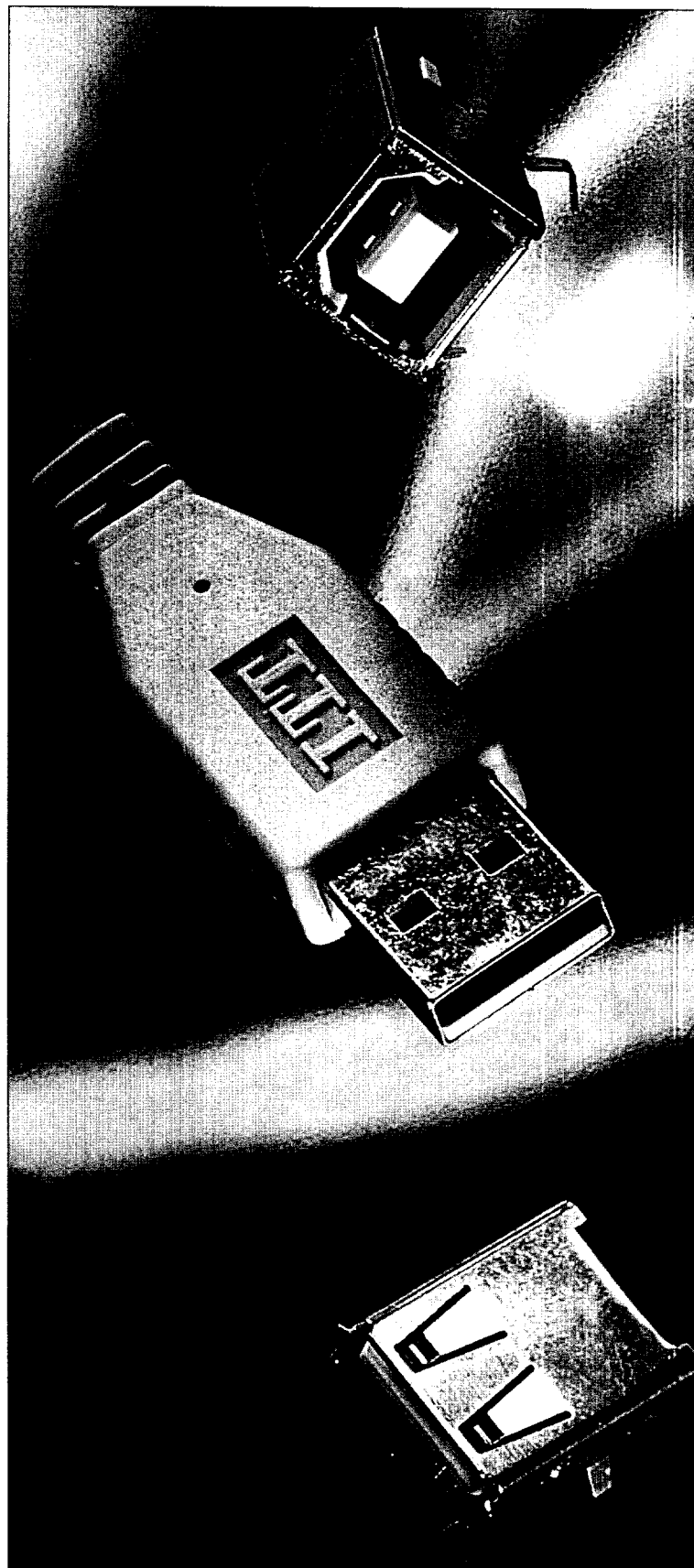
Node distance: Max. 5m each

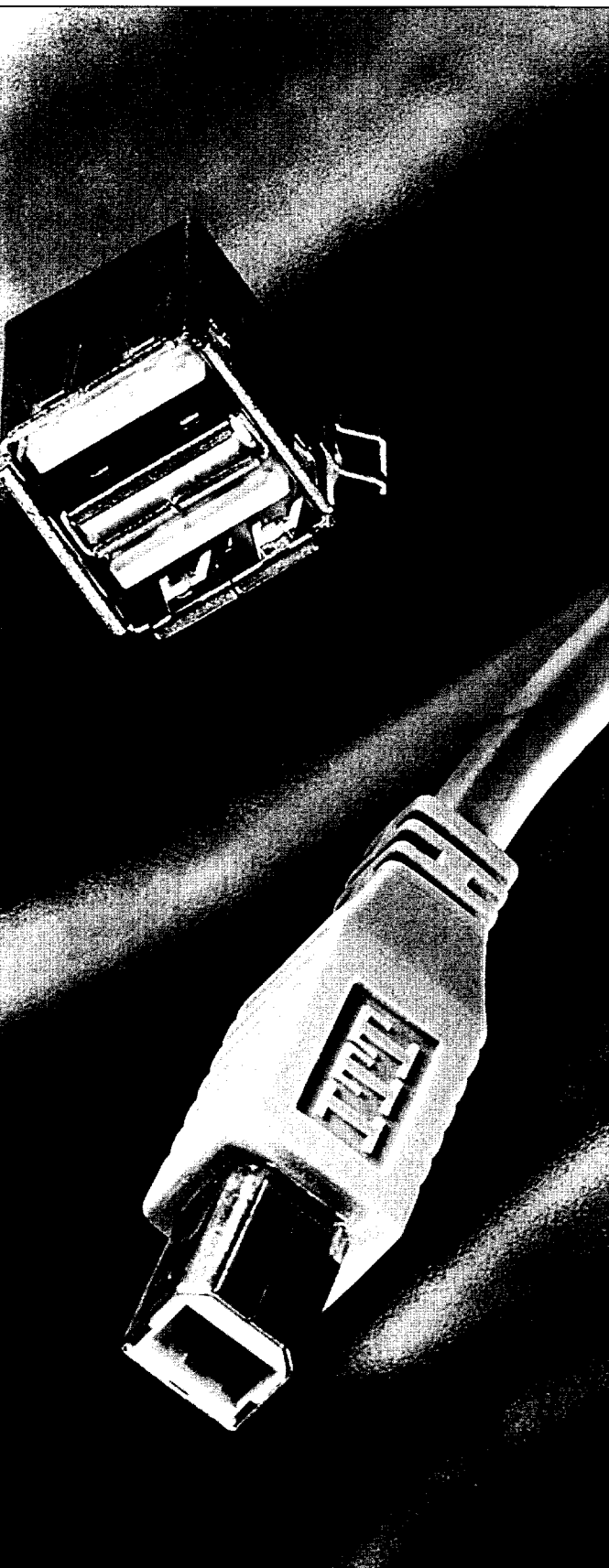
Controller (LSI): Host: 15,000 gates, Peripherals: 1,500 - 2,000 gates

Cable: Shielded twisted pair: for 12Mbps

Non-shielded: for 1.5Mbps

Connector: 4 pin (Data x 2, Power x 2)





GENERAL SPECIFICATIONS

ELECTRICAL SPECIFICATION:

Rated current:	1.0A
Rated voltage:	AC 30V rms
Insulation resistance:	1,000M Ohm or more
Contact resistance:	30M Ohm or less
Withstand voltage:	750VAC
Capacitance:	2pF or less

GENERAL SPECIFICATIONS:

Insulator:	Thermo-plastic (UL94V-0)
Contact:	Phosphor bronze
Mating force:	35N or less
Extraction force:	10N or more
Operation temperature:	0 to 40 C degree
Withstand soldering temperature:	260 +/- 5 C degree
Durability cycle:	1,500

FINISH:

Receptacle contacts:	Gold (0.3 micrometers) over Nickel (1.27 micrometers)
Plug contacts:	Gold (0.3 micrometers) over Nickel (1.25 micrometers)
Shell:	Solder plating over Nickel

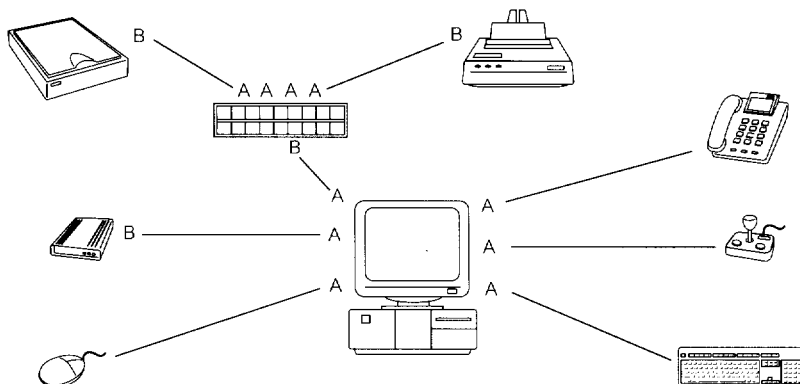
USB TOPOLOGY

SERIES A AND SERIES B

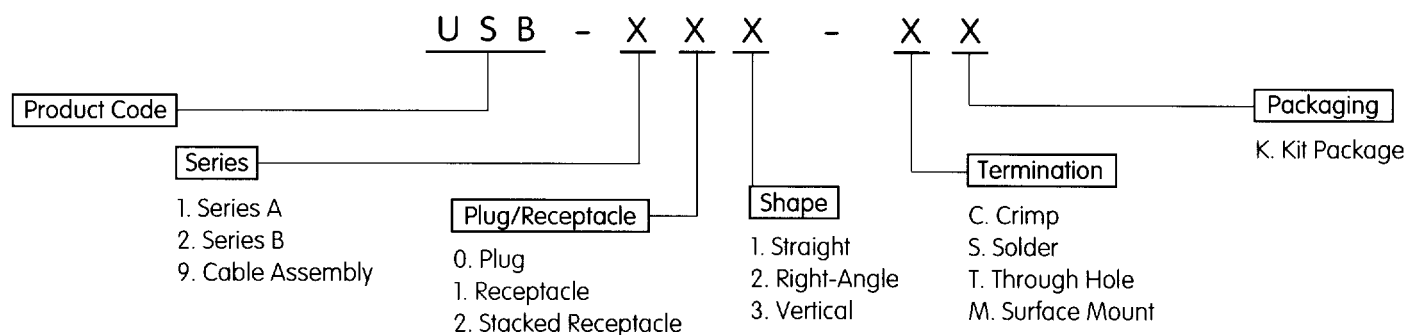
Series A: Out to downstream connection

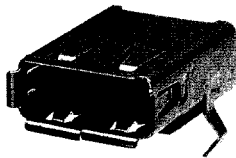
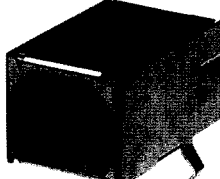
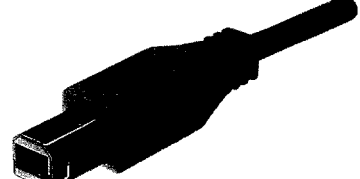
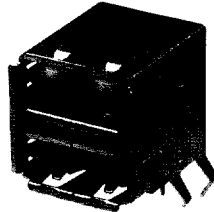
Series B: Out to upstream connection

Downstream signals from the PC and/or hub unit exit via a Series-A type connector and enter the downstream device via a Series-B type connector. All USB cable assemblies will consist of a Series-A type plug to a Series-B type plug. Hard-wired devices (i.e. mouse, joystick, etc.) terminate to an Series-A type plug.



ITT CANNON USB CONNECTOR NOMENCLATURE

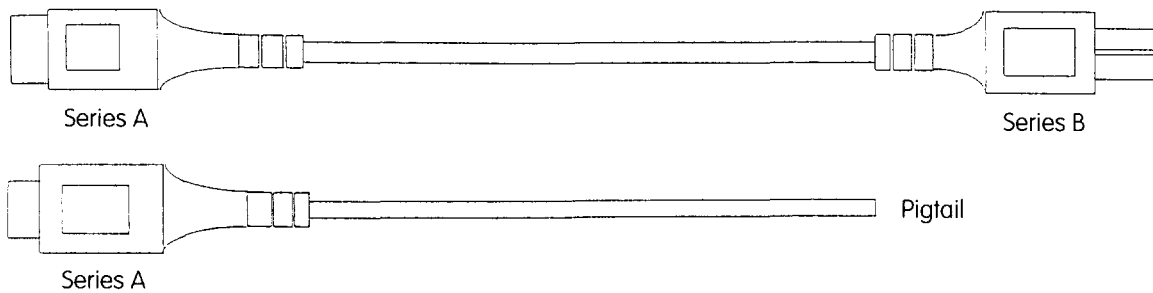
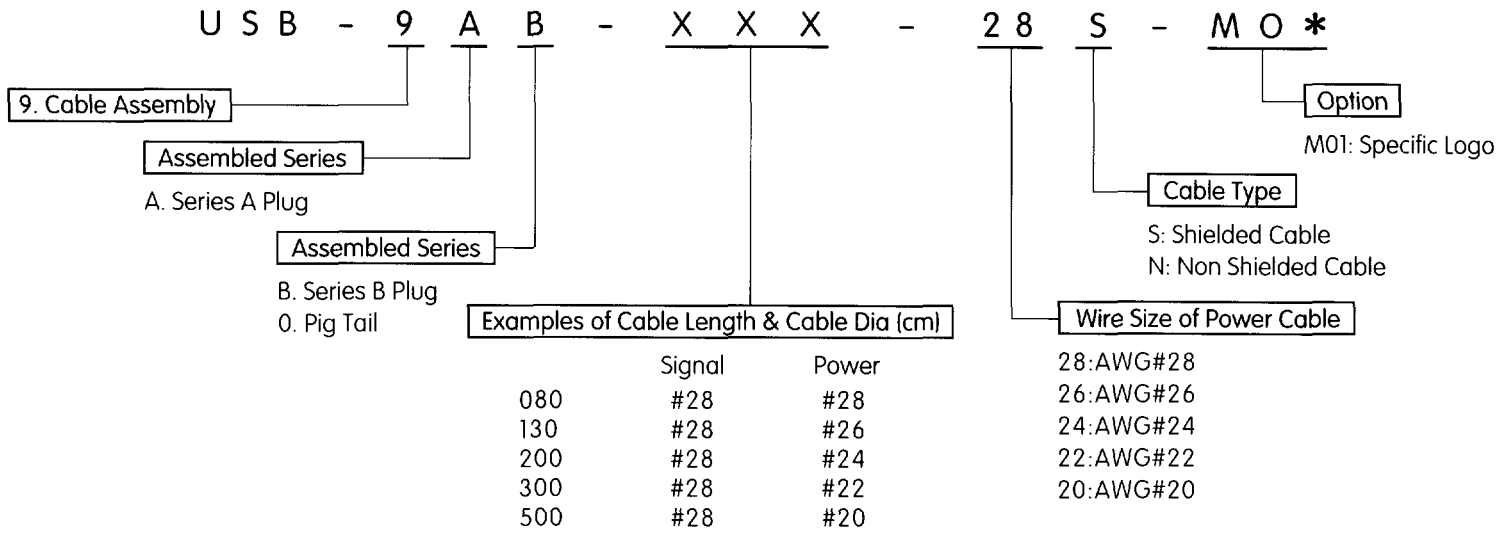


Series A Right-Angle Receptacle (USB-112-T)		Series A Cable Plug (USB-101-SK)	
Series B Right-Angle Receptacle (USB-212-T)		Series B Cable Plug (USB-201-SK)	
Series A Stacked, Right-Angle, Receptacle (USB-122-T)			

PRODUCT LIST

USB-112-T	(Series A, Right-Angle Receptacle)
USB-212-T	(Series B, Right-Angle Receptacle)
USB-122-T	(Series A, Right-Angle Stacked Receptacle)
USB-101-SK	(Series A, Cable Plug)
USB-201-SK	(Series B, Cable Plug)

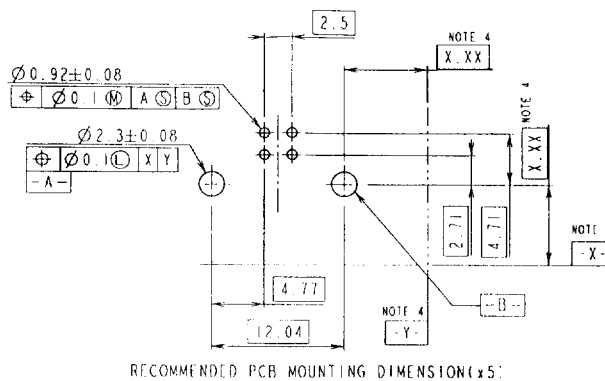
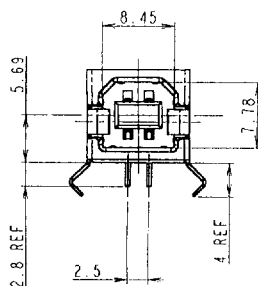
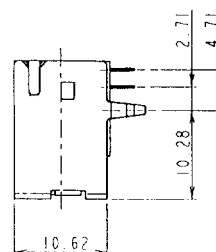
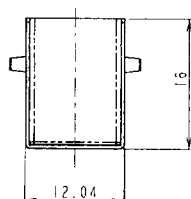
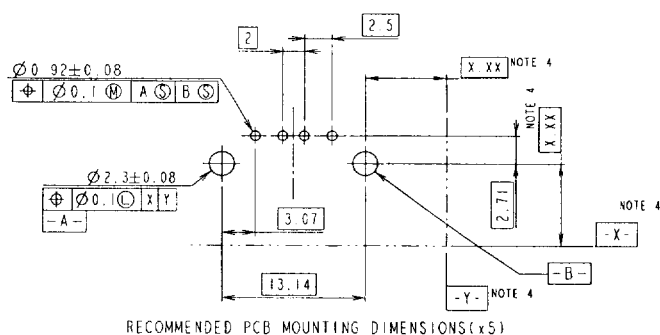
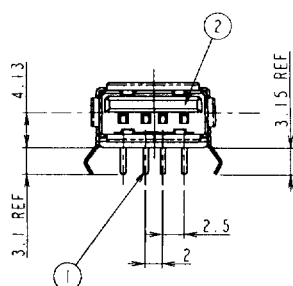
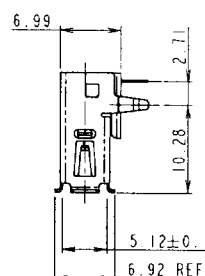
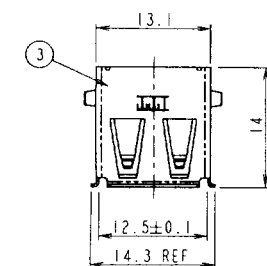
NOMENCLATURE OF CABLE ASSEMBLY TYPE



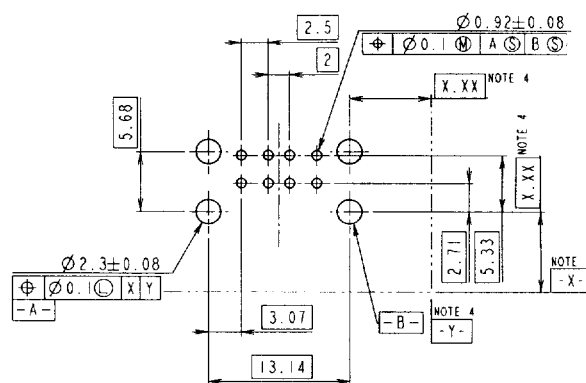
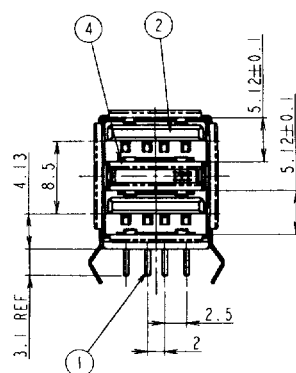
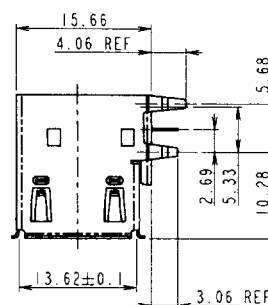
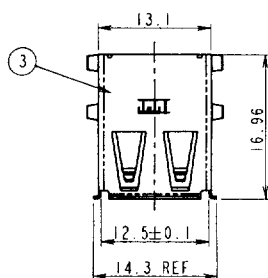
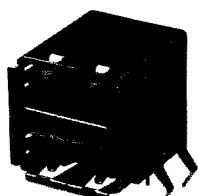
EXAMPLES OF CABLE ASSEMBLY PRODUCTS

Non Shielded Cable, Series A+B	Shielded Cable, Series A+B
USB — 9 A B — 0 8 0 — 2 8 N	USB — 9 A B — 0 8 0 — 2 8 S
USB — 9 A B — 1 3 0 — 2 6 N	USB — 9 A B — 1 3 0 — 2 6 S
USB — 9 A B — 2 0 0 — 2 4 N	USB — 9 A B — 2 0 0 — 2 4 S
USB — 9 A B — 3 0 0 — 2 2 N	USB — 9 A B — 3 0 0 — 2 2 N
USB — 9 A B — 5 0 0 — 2 0 N	USB — 9 A B — 5 0 0 — 2 0 N
Non Shielded Cable, Pig Tail with Series A	Shielded Cable, Pig Tail with Series A
USB — 9 A 0 — 0 8 0 — 2 8 N	USB — 9 A 0 — 0 8 0 — 2 8 S
USB — 9 A 0 — 1 3 0 — 2 6 N	USB — 9 A 0 — 1 3 0 — 2 6 S
USB — 9 A 0 — 2 0 0 — 2 4 N	USB — 9 A 0 — 2 0 0 — 2 4 S
USB — 9 A 0 — 3 0 0 — 2 2 N	USB — 9 A 0 — 3 0 0 — 2 2 S
USB — 9 A 0 — 5 0 0 — 2 0 N	USB — 9 A 0 — 5 0 0 — 2 0 S

* Various combinations of cable length & cable diameter will be available by request. Please contact sales staff.

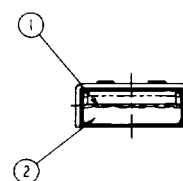
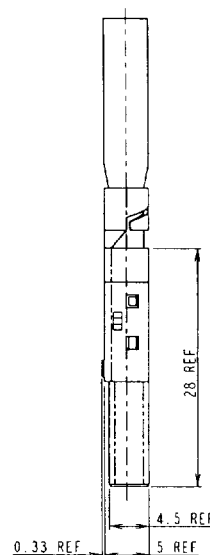
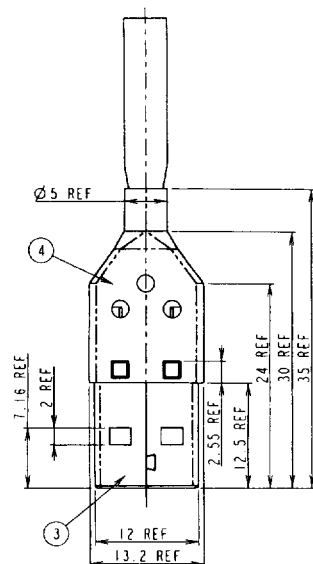


USB-122-T
Series A
Stacked, Right-Angle
Receptacle

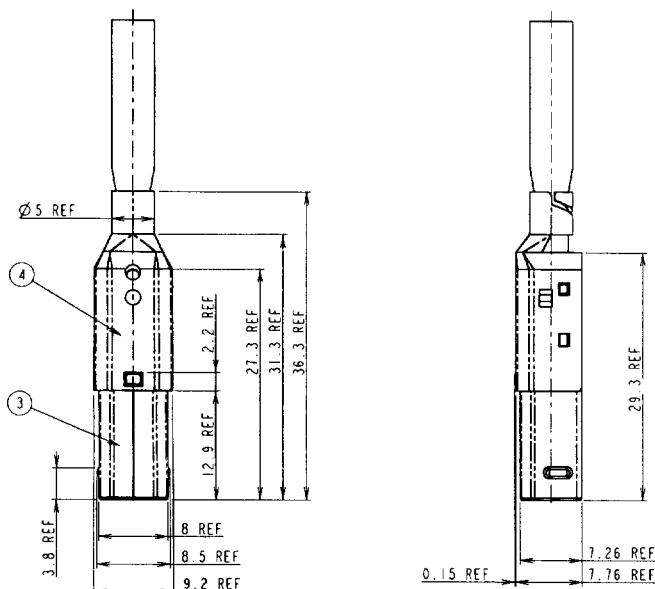
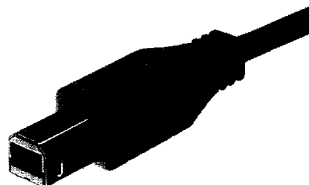


RECOMMENDED PCB MOUNTING DIMENSION (x5)

USB-101SK
Series A
Cable Plug

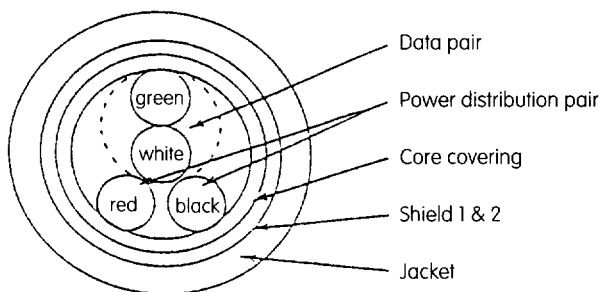


USB-201-SK
Series B
Cable Plug



EXAMPLE OF USB CABLE AWG#28 SPECIFICATION

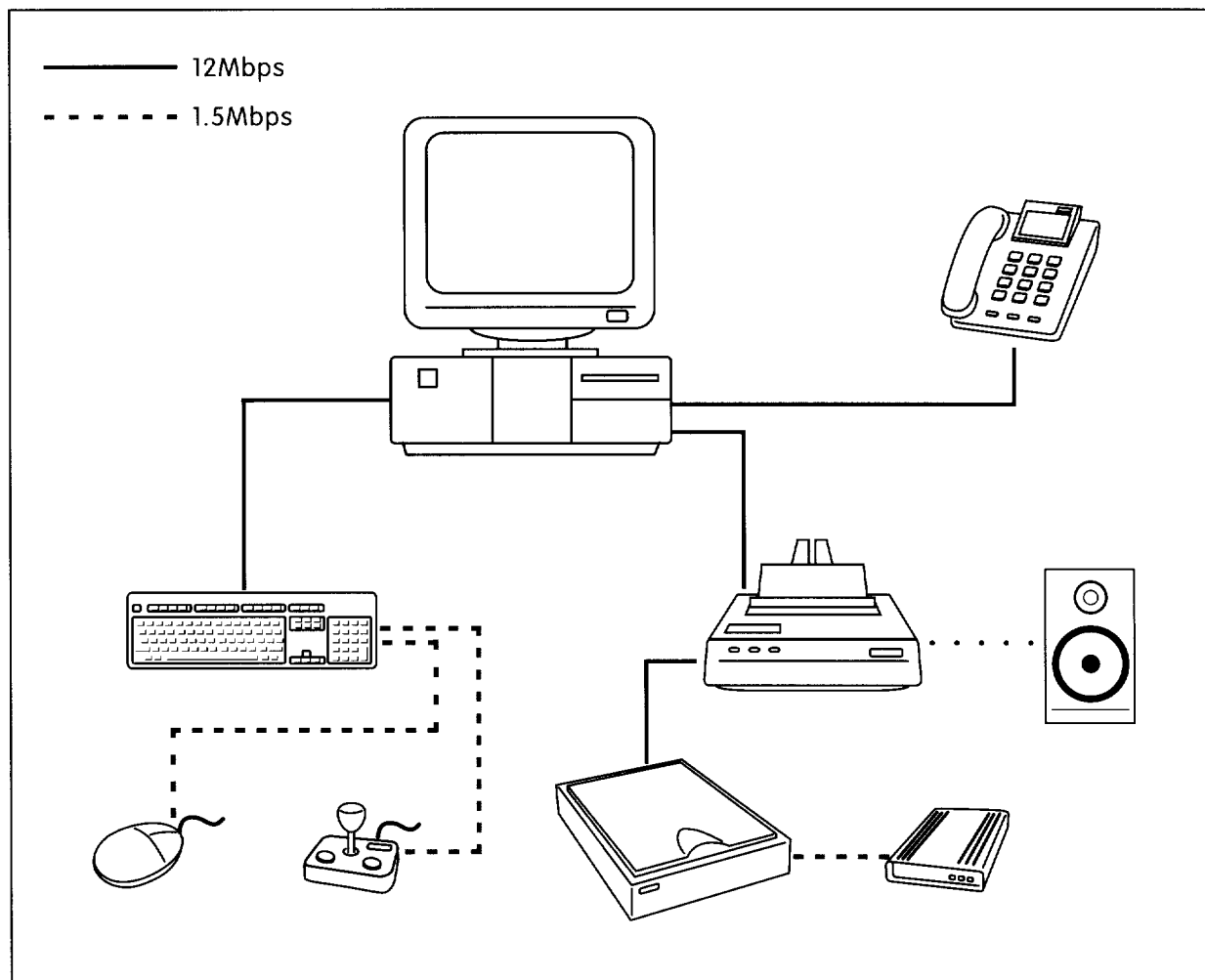
F i g . 1



Annotation : The words in the above drawing denote the color of insulation.

Item		Requirements
Data Pair	Conductor	Construction (No./mm): 7/0.127 (28AWG) Stranded tinned annealed copper wire
	Insulation	Solid PE Thickness: Nom. 0.22 mm Color: Green, White
	Twisting	Twisted pair consists of the above descriptive Green and White wires
Power distribution pair	Conductor	Construction (No./mm): 7/0.127 (28AWG) Stranded tinned annealed copper wire
	Insulation	Semi-Rigid PVC Diameter: Nom. 0.84 mm Color: Red, Black
Stranding		Make-up: See Fig. 1
Core covering		Suitable plastic tape
Shield 1		Suitable metallized polyester tape
Drain wire		Construction (No./mm): 7/0.127 (28AWG) Stranded tinned annealed copper wire
Shield 2		0.1 mm Tinned annealed copper wire braid Density: Min. 65%
Outer jacket		Flame-retardant and heat-proof PVC Thickness: Nom. 0.65 mm Color: Urbanwhite
Cable marking		Following details shall be printed on the outer jacket - Power distribution pair's conductor size, - Cable's name, - Manufacturer's name, - Year of manufacture.
Overall diameter		4.5 mm
Weight		26 kg/km

USB INTERCONNECTION & TRANSMISSION SPEED



USB VS P1394

	Performance	Application	Feature
	High Speed (25M~1000M bps)	- DVD-ROM - Digital Video Camera - Hard Disk	- Wide Band - Hot Plug in
	Middle Speed (500K~10M bps)	- Audio - Digital Video - B-ISDN	- Low Cost - Hot Plug in - Plural Peripherals
	Low Speed (10K~100K bps)	- Mouse - Keyboard - Modem - Joystick - ISDN	- Very Low Cost - Hot Plug in - Plural Peripherals

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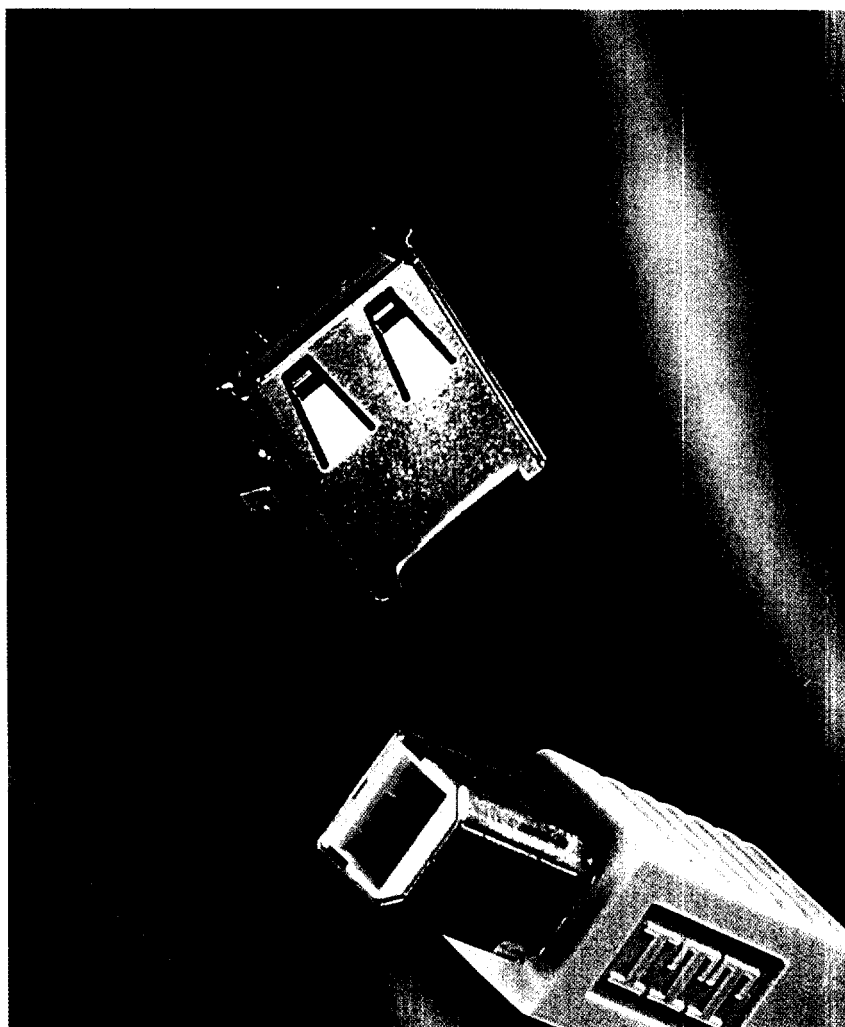
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