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**INDUSTRY STANDARDIZATION  
OF  
60 AND 68 POSITION  
1.27 mm (.050 INCH) PITCH  
RIBBON STYLE CONTACT  
CONNECTOR**

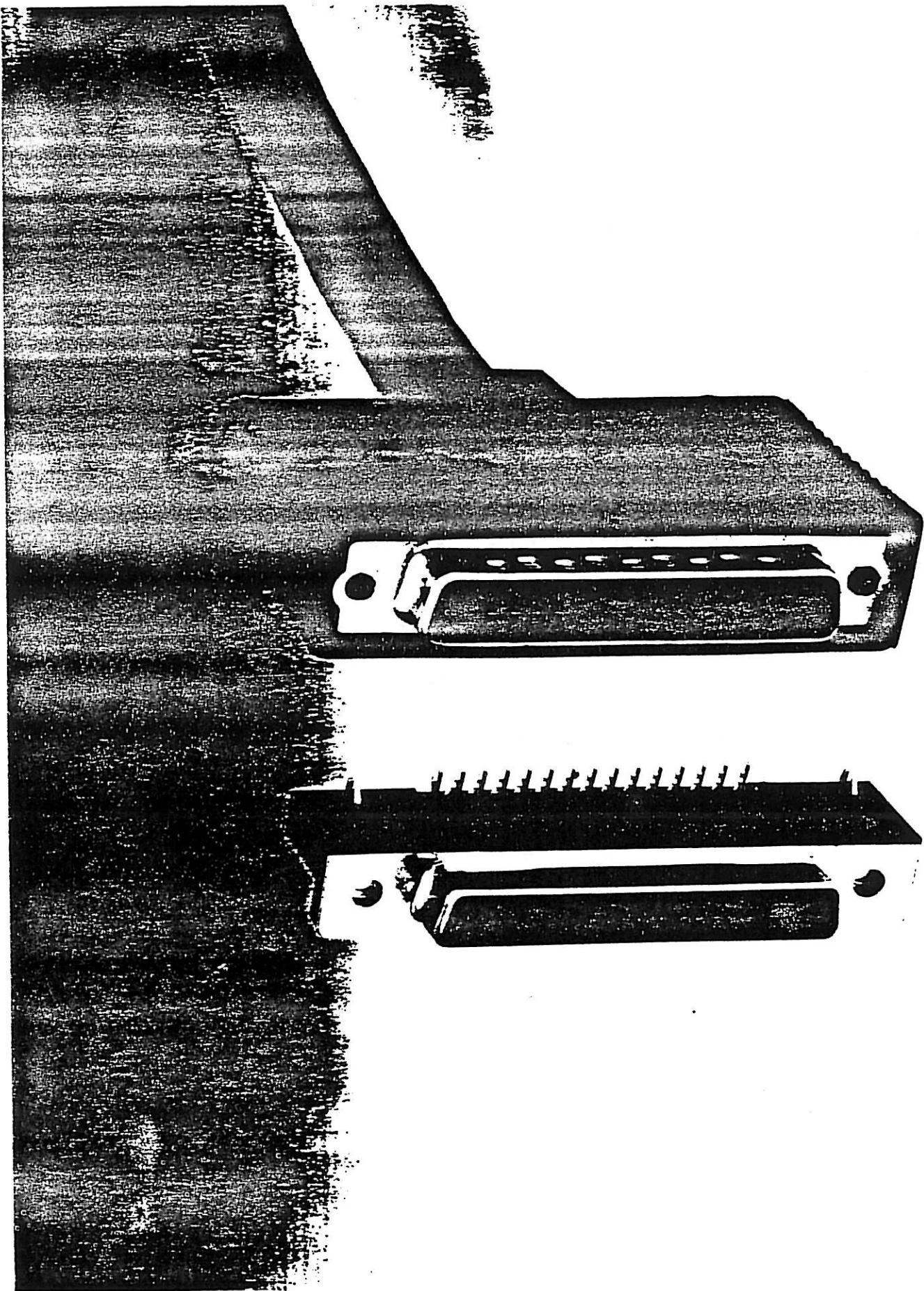
by

**Michael Lazar**

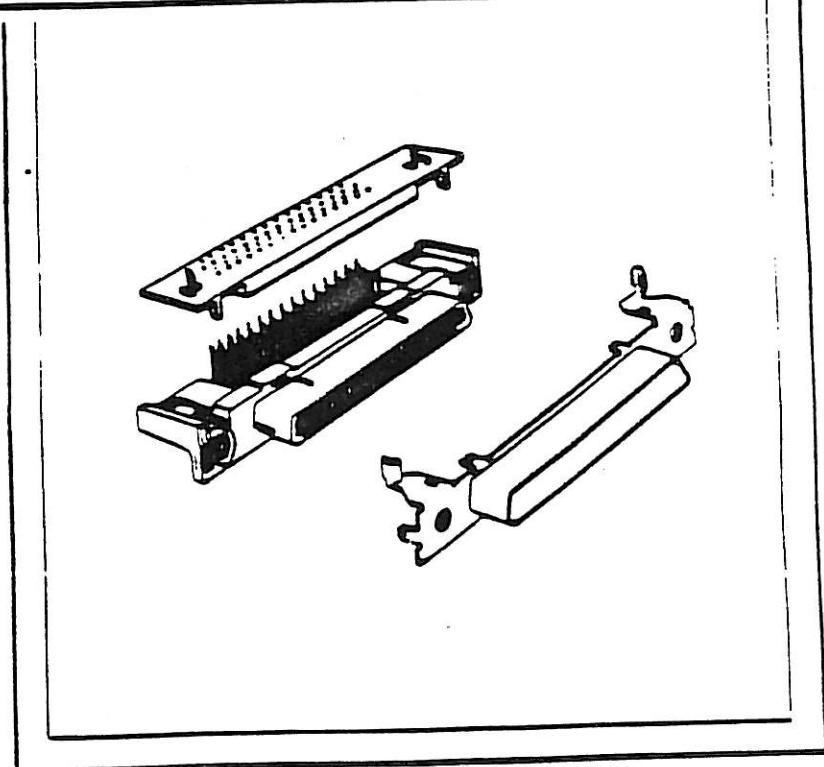
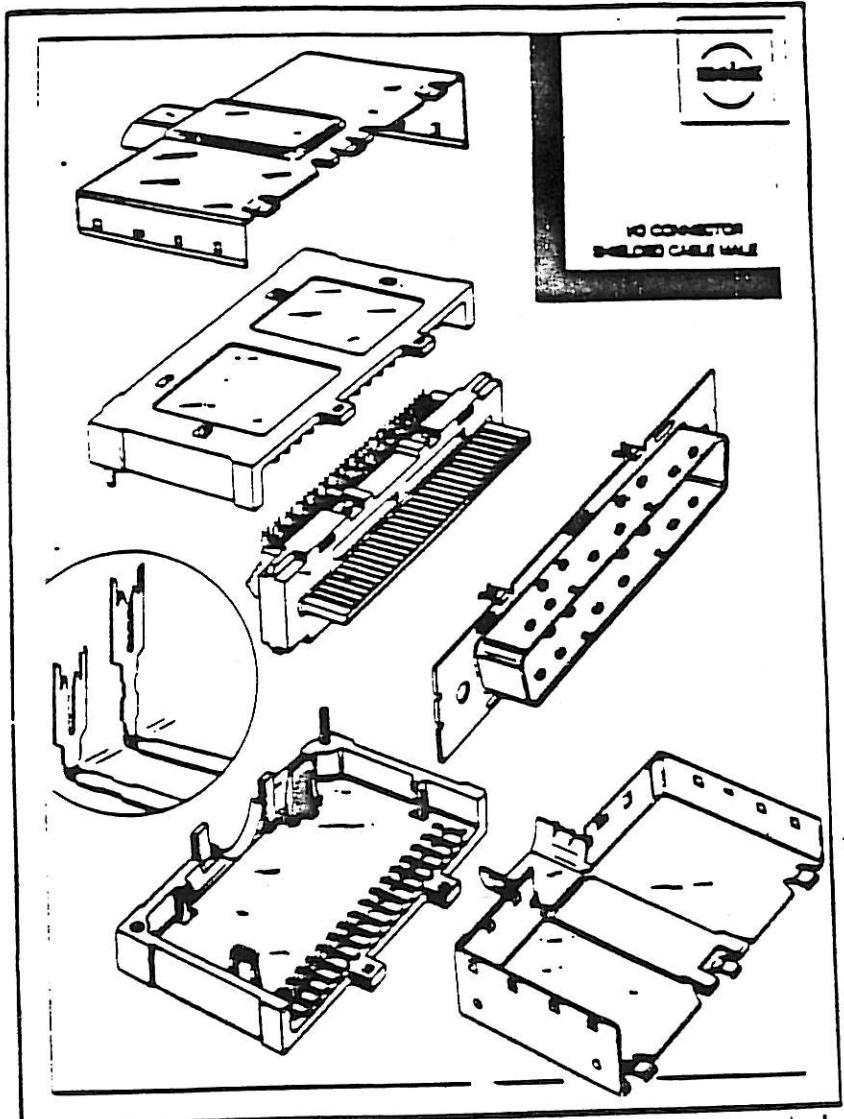


**CONNECTOR INDUSTRY CONSULTING GROUP  
14 PILGRIM ROAD, WHITE PLAINS, NEW YORK 10605 914-949-5450 FAX 914-761-1867**

X 3TA. 2/91-84



# IBM SCSI



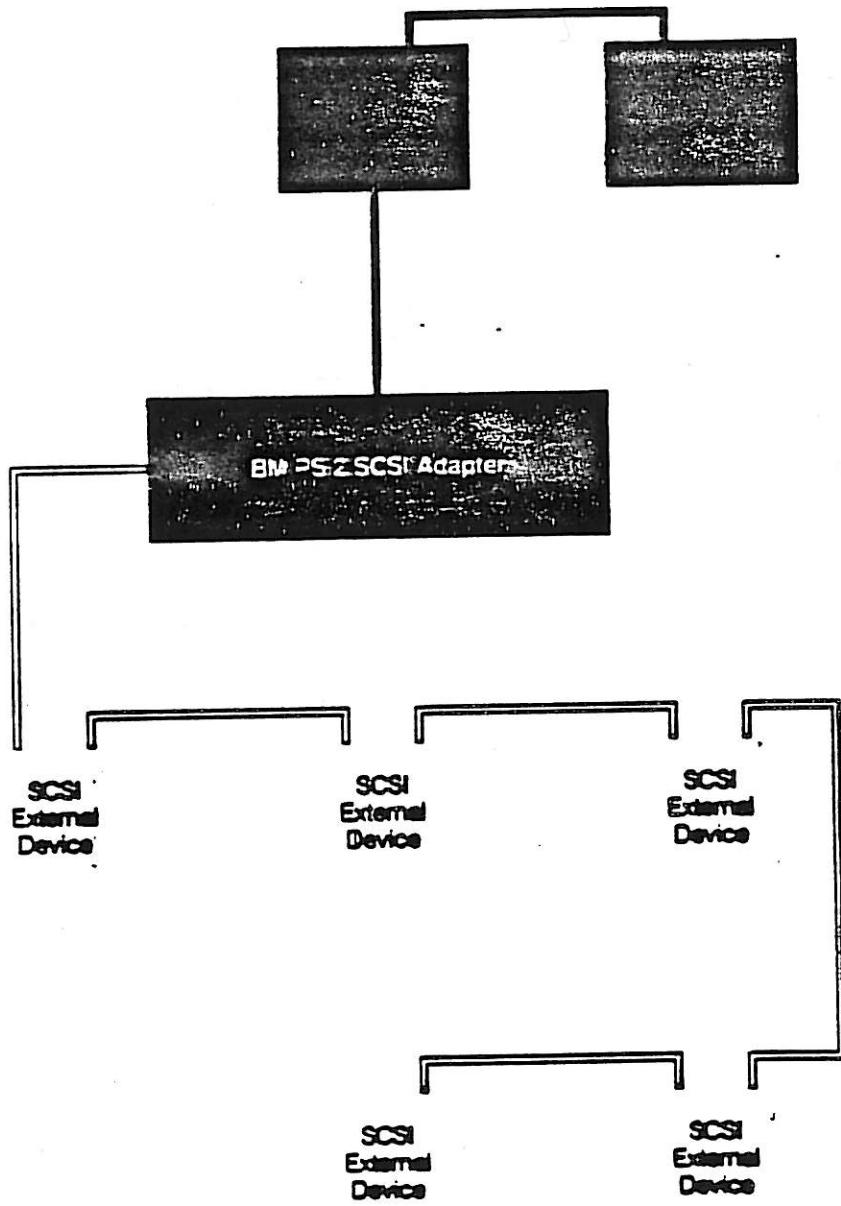
# Small Computer System Interface (SCSI) for IBM Personal System/2

## **More expansion and growth for your Personal System/2**

Put the industry-standard ANSI Small Computer System Interface (SCSI<sup>1</sup>) to work in your Personal System/2<sup>®</sup>—and work with more files and peripherals than ever before. With SCSI, you can support up to seven SCSI devices from a single Micro Channel<sup>®</sup> expansion slot. And that means you'll have more free slots available for adding functions like communications, networking and advanced graphics.

Just as important, you can use the hardware-independent SCSI standard to take advantage of tomorrow's products and technologies when they become available—while protecting your present investment. And for today, you can enhance your PS/2<sup>®</sup> by adding high-performance fixed disks, CD-ROM drives, and more—all on a single PS/2 SCSI adapter.

**Combine Micro Channel performance with SCSI flexibility**  
Because IBM's SCSI subsystems are designed for your Micro Channel system, they help your PS/2 do more work. For example, since IBM's SCSI adapters perform intelligent busmaster functions, they can operate independently of your system processor. The result: improved system throughput and better I/O management for network file servers. It all means that data can be transferred faster, more efficiently and more reliably to meet the demands of many users or I/O-intensive applications.



**Access more data faster with SCSI fixed disks**

With SCSI adapters, some PS/2 systems can support multiple internal fixed disks for impressive file server capacity—over 1 gigabyte (GB) on certain models. Add an External Enclosure for SCSI Devices and you can add up to seven devices to any Micro Channel model...and back up your data on a SCSI tape drive that can hold 2.3GB of data. And, for equally impressive performance, they can accept any combination of IBM 60MB, 80MB, 120MB, 160MB, 320MB and 400MB SCSI internal fixed disk drives with average seek times as fast as 11.5ms.

Even better, the adapters permit a PS/2 to support both SCSI and non-SCSI drives—including disks with ESDI or ST506 interfaces. So you can use them to protect the investment you have made in fixed disk storage while taking advantage of today's high-performance drives.

**Add powerful resources conveniently with CD-ROMs**  
Imagine a dictionary, thesaurus, spelling-checker and quotation library—all online for ready reference by your secretaries or writers. Picture entire volumes of clip art, illustrations and graphics on hand to liven up your publications and presentations.

IBM SCSI CD-ROM drives can put these resources online. Up to seven CD-ROM drives can attach to a single SCSI adapter, so you can make multiple libraries and references available for your users. And the stereo output jack of the IBM CD-ROM drives allows you to add impressive sound to multimedia presentations.

**Why is SCSI important to you?**

Developed in the mid 1980s, the Small Computer System Interface (SCSI) is a widely used industry standard that supports I/O devices through a common interface and common protocols. The importance of SCSI comes from the fact that it provides an open architecture for attaching and controlling peripheral equipment—up to seven devices from a single adapter. So SCSI lets you take advantage of products offered by many different manufacturers.

SCSI offers investment protection, too, since it gives you an efficient, industry-standard growth path for expanding your system as new technologies become available.

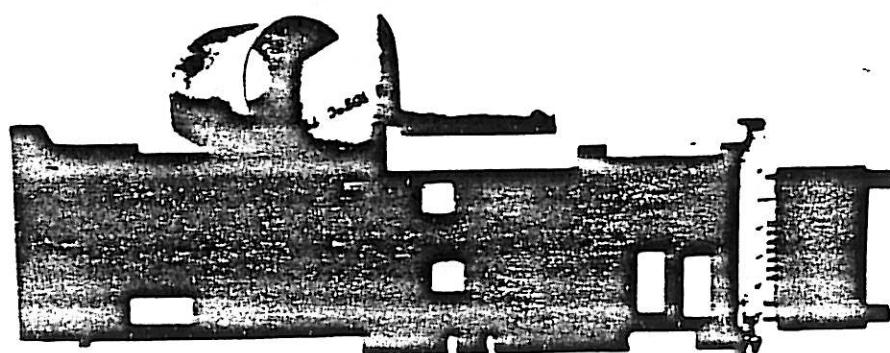
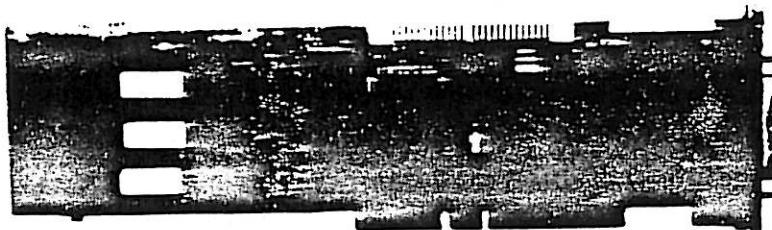


SCSI can bring you the benefits of high-performance fixed disks, helpful CD-ROM libraries, and other standard SCSI devices—all from a single Micro Channel slot.

**features from two SCSI adapters**  
 Whichever IBM PS/2 SCSI Adapter you choose, you get expandability combined with high data transfer rates and Micro Channel support. Both adapters let you attach up to seven SCSI-compatible devices—and up to 28 devices can be supported on a single PS/2. And these adapters both offer busmastering capabilities to offload I/O tasks from your system processor for consistent high throughput.

The IBM PS/2 Micro Channel SCSI Adapter offers you a cost-effective SCSI solution for expanding your PS/2s. It fits in either a 16- or 32-bit Micro Channel slot and provides a data transfer rate of up to 6.6MB per second via its 16-bit data path.

For disk-intensive environments where overall performance is critical—like multiuser transaction processing or high-capacity network servers—the PS/2 Micro Channel SCSI Adapter with Cache offers additional performance advantages. Its 32-bit data path gives you a data transfer rate of up to 13.3MB per second—twice that of the 16-bit adapter. And it can use its built-in 512KB disk cache to free more of your system memory for running applications.



*Both IBM PS/2 SCSI Adapters combine powerful Micro Channel busmastering capabilities with support for up to seven SCSI devices. So you get fast SCSI data transfer rates of up to 13.3MB per second—and balanced throughput as well.*

#### **IBM PS/2 Micro Channel SCSI adapters**

Feature	Benefit
<b>AMBI SCSI-1 industry standard</b>	<ul style="list-style-type: none"> <li>Enhances system expansion by supporting up to seven internal and external SCSI devices on one adapter—up to 28 SCSI devices on some PS/2s</li> <li>Enables the connection of SCSI devices from other manufacturers</li> <li>Protects your PS/2 investment by providing a device-independent architecture</li> </ul>
<b>Intelligent busmaster SCSI adapters</b>	<ul style="list-style-type: none"> <li>Offload the system processor, allowing it to do more work</li> <li>Provide balanced system performance and high throughput for multitasking and multiterminal environments</li> <li>Work with Micro Channel architecture to deliver more efficient and reliable data transfer</li> </ul>
<b>General-purpose SCSI interface</b>	<ul style="list-style-type: none"> <li>Supports fixed disks and other SCSI devices on a single adapter</li> <li>Keeps PS/2 expansion slots free for other features</li> </ul>
<b>Built-in fixed disk BIOS</b>	<ul style="list-style-type: none"> <li>Lets you use both SCSI and non-SCSI fixed disk drives on the same PS/2</li> <li>Provides compatibility for DOS and Operating System/2® environments</li> </ul>
<b>Fast SCSI options, 20MB, 30MB, 75MB, 100MB, 220MB and 400MB SCSI fixed disk options</b>	<ul style="list-style-type: none"> <li>Increase the amount of high-speed storage available for floorstanding PS/2 models</li> <li>Let you add fixed disk drives as you need them—up to five internal drives on some models</li> <li>Allow you to tailor your storage capacity by using a mix of disk sizes</li> </ul>
<b>IBM CD-ROM options</b>	<ul style="list-style-type: none"> <li>Provide low-cost alternatives for storing large amounts of read-only data</li> <li>Support HIGH SEPIRA or ISO 9660 industry-standard compact disk format</li> </ul>
<b>Optional external controllers for SCSI devices</b>	<ul style="list-style-type: none"> <li>Supports up to seven internal SCSI devices from any Micro Channel system</li> <li>Allows storage expansion when you need it</li> </ul>
<b>Optional external controllers for single SCSI devices</b>	<ul style="list-style-type: none"> <li>Supports one internal 5.25" or 3.5" SCSI device from any Micro Channel system</li> </ul>

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**IBM SCSI cables and accessories**

PS/2 Card to Option Cable  
(6451139)

A 60-pin to 50-pin connector cable required for attaching the first SCSI external device in the daisy chain; includes a 50-pin Option Interface Terminator required for the last external device in the chain.

PS/2 Option to Option Cable  
(6451042)

A 50-pin to 50-pin connector cable for attaching one SCSI external device to another.

PS/2 SCSI Fixed Disk Kit A  
(6451053)

Required to install SCSI fixed disk drives in the front QASD bay of the IBM Models 60, 65 SX and 80 386.

PS/2 CD-ROM Kit A  
(6450847)

Required to install the internal CD-ROM drive in the IBM Models 60, 65 SX and 80 386.

PS/2 Micro Channel SCSI  
Adapter External Terminator  
(6451039)

Required to terminate the Micro Channel SCSI Adapter with Cache when no external SCSI devices are attached. Comes standard with Models 90 XP and 95 XP.

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**SCSI cabling for external attachment**

To install a single external device



SCSI adapter

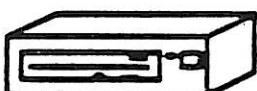


Card to  
Option Cable  
P/N 6451139



Option Interface Terminator\*

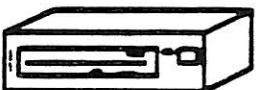
Option Interface Terminator\*



Last SCSI device



Option to Option Cable  
P/N 6451042



Next SCSI device



Option to Option Cable  
P/N 6451042

To install multiple external devices



SCSI adapter



Card to  
Option Cable  
P/N 6451139



First SCSI device

\*Included with Card to Option Cable. This terminator is not required on the External Enclosure for SCSI Devices (3511003).

**IBM PS/2 Micro Channel SCSI product family at a glance**

SCSI adapters	Micro Channel SCSI Adapter	Micro Channel SCSI Adapter with Cache				
Part number	6451109	6451110				
Configuration	Uses one 16- or 32-bit Micro Channel expansion slot; up to four SCSI adapters may be installed on some PS/2s					
Micro Channel Data path Transfer rate	16-bit 6.6MB/sec.	32-bit 13.3MB/sec.				
SCSI channel Data path Transfer rate	8-bit 5MB/sec.	8-bit 5MB/sec.				
Data cache	None	512KB				
SCSI BIOS	Provides fixed disk interface with DOS and OS/2 environments, allows operation of both SCSI and non-SCSI fixed disks on the same PS/2. Includes Power-on Self Test (POST) and a generic, hardware-independent interface for other SCSI devices					
Device support	Up to seven SCSI-compatible physical devices via IBM SCSI internal or external adapter connectors; up to eight logical devices can be defined for each physical device, to a maximum of 15 logical devices per adapter					
SCSI cabling	Serial "daisy-chain" cabling, with a total cable length not exceeding 6 meters. Devices or adapters at the ends of the chain must be terminated					
Terminators	On-card terminator built in	Card edge terminator included; separate external terminator (Part number 6451038)				
<b>SCSI Fixed Disk Options</b>	60MB SCSI fixed disk	80MB SCSI fixed disk	120MB SCSI fixed disk	160MB SCSI fixed disk	320MB SCSI fixed disk	400MB SCSI fixed disk
Part number	6451049	6451045	6451050	6451046	6451108	6451081
Average seek time	23ms	17ms	23ms	16ms	12.5ms	11.5ms
Supported systems	Model 60, Model 80 386 (-041, -071, -111 and -311), require IBM SCSI adapter; maximum of two SCSI fixed disks (internal)					
	Model 65 SX, Model 80 386 (-051, -081, 121, 321, -A16, -A21 and -A31); one SCSI adapter is standard equipment; maximum of four fixed disks (internal)					
	Model 90 XP 486 and Model 90 486 SX, SCSI Adapter with Cache is standard; maximum of three fixed disks (internal)					
	Model 95 XP 486 and Model 95 486 SX, SCSI Adapter with Cache is standard; maximum of five fixed disks (internal)					
<b>SCSI CD-ROM</b>	PS/2 CD-ROM Drive (internal)		PS/2 External CD-ROM Drive			
Part number	6451113		3510001			
Storage capacity	Approximately 600MB, HIGH SIERRA or ISO 9660 CD-ROM media format					
Supported systems (via PS/2 SCSI adapters)	All PS/2 Models 60, 65 SX, 80 386, 90 XP and 95 XP		All PS/2 Micro Channel models			
<b>SCSI tape drive</b>	PS/2 2.3GB Full-High SCSI Tape Drive					
Part number	6451121					
Storage capacity	2.3GB					
Data transfer rate	245KB/sec					
Supported systems	PS/2 Model 95 XP 486; supported on other Micro Channel models via PS External Enclosure for SCSI Devices (3511003)					
<b>External enclosures</b>	PS/2 External Enclosure for SCSI Devices					
Part number	3511003					
Maximum number of devices	Seven					
Fixed disk storage	320MB (12.5ms)					
Standard	Up to six additional SCSI fixed disk drives (80MB, 120MB, 160MB) for maximum of 2.2GB					
Optional						
Other devices supported	PS/2 CD-ROM Drive; PS/2 2.3GB Full-High SCSI Tape Drive					
Cabling requirements	Attaches to SCSI adapter in system unit via card to option cable. Cabling for installing up to seven internal SCSI devices is included					
<b>External enclosure</b>	PS/2 SCSI Storage Enclosure					
Part number	35100V0					
Maximum number of devices	One 5.25" or 3.5" half-high SCSI device					
Devices supported	PS/2 SCSI fixed disk drives (60MB, 80MB, 120MB, 160MB, 320MB or 400MB)					
Cabling requirements	Standard 50-pin SCSI interface					

\*IBM, Personal System/2, Micro Channel, PS/2, Operating System/2, and OS/2 are registered trademarks of International Business Machines Corporation.  
ANSI X3.131-1986

## **PROPOSAL OBJECTIVE**

**FIRST PREFERENCE:** TO ADD THE 60 AND 68  
1.27 mm PITCH RIBBON STYLE CONNECTOR TO THE  
SCSI - 2 STANDARD AS AN ALTERNATE.

**NOTE:** IT IS NOT THE INTENT TO REPLACE  
ANY OF THE CONNECTORS CURRENTLY SPECIFIED.



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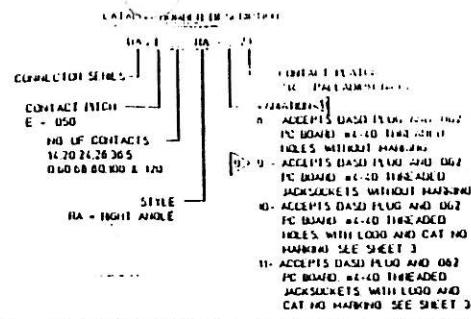
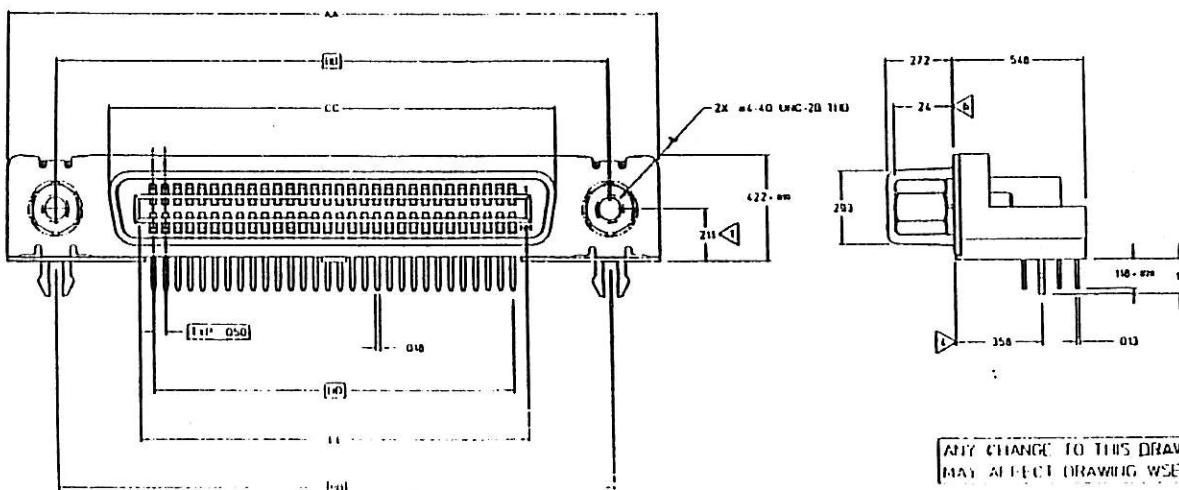
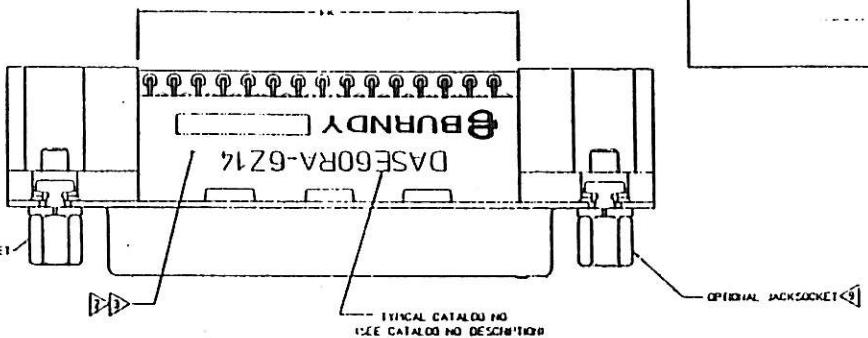
## **PROPOSAL OBJECTIVE**

**SECOND PREFERENCE:** IF THE FIRST PREFERENCE  
IS NOT IMPLEMENTED; TO HAVE A CONNECTOR  
STANDARD ISSUED BY EIA, IEC, OR I.E.E.E.

ANSI X3T9.2 MAY THEN MAKE REFERENCE TO THE EIA  
(ETC.) STANDARD AS AN ACCEPTABLE ALTERNATE FOR  
USE WITH SCSI - 2 IF IT CHOOSES.



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- 1) REVERSE CONNECTION NOT USED
- 2) MOUNTING SURFACE INC. INVERTED TO THREAD CENTER
- 3) PRINTING ALIGNMENT AREA
- 4) FLAT SURFACE FOR VACUUM PACKING
- 5) 2X TORSION TO CENTER OF CLIP AND SECOND ROW OF CONTACTS
- 6) CONTACT SURFACE FOR AVAILABILITY
- 7) JACKSOCKET HEIGHT AFTER TORQUE OF 3 INCHES APPLIED
- 8)
- 9)
- 10) OPTIONAL JACKSOCKETS PRE-PACKAGED IN BULK
- 11) RA RECEPTACLE PACKAGED IN QUANTITIES OF 25 ASSEMBLIES PER TUBE
- 12) CONTACT BUNDY FOR ADDITIONAL VARIATIONS

**MATERIALS**  
MOLDED COMPONENTS BODY, BASE PLATE, THERMOPLASTIC  
CONTACTS PHOSPHOR BRONZE  
SHELL WITH INTEGRAL RETAINING CLIP STEEL

**FINISH**  
CONTACTS  
214. RHODIUM ENCL SOFT GOLD FLASH OVER 40 MICROCHES  
RHODIUM PALLADIUM NICKEL OVER 50 MICROCHES  
RHODIUM NICKEL  
SOLDER TAIL 100 MICROCHES RHODIUM SOLDER  
OVER 50 MICROCHES RHODIUM NICKEL  
SHELL 150 MICROCHES RHODIUM NICKEL

**PERFORMANCE CHARACTERISTICS**  
ENVIRONMENTAL  
OPERATING TEMPERATURE 0°C TO 70°C  
THERMAL SHOCK MIL-STD-101C, METHOD 10031  
-55°C TO +55°C, 5 CYCLES  
FLAMMABILITY UL DIV-0

**MECHANICAL**  
DURABILITY: 250 MATRO CYCLES WITHOUT ELECTRICAL DEGRADATION  
CONTACT RETENTION 1 LB MIL-STD-101C  
MATRO FORCE: MIL-STD-101C, METHOD 20131 8 OZ PER OPPONE  
CONTACT PART 1007 (BOARD), US24 GAUGE PER MIL-C-1017

**ELECTRICAL**  
CONTACT RESISTANCE (LOW LEVEL SIGNAL) 10 MILLIOHM MAXIMUM  
INITIAL: 10 MILLIOHMS MAXIMUM INCREASE THROUGH TEST  
ISULATION RESISTANCE: MIL-STD-202, METHOD 302, CONDITION B,  
1000 HEGOHMS MINIMUM  
DETECTING WITHSTANDING VOLTAGE: MIL-STD-1014, METHOD 3001L  
CONDITION L 500 V AC RMS MINIMUM  
CAPACITANCE: 2 PICOFARADS MAXIMUM AT 1 MEGAHERTZ.  
CURRENT RATIO: 1 AMP WITH LESS THAN 30% RISE ABOVE AMBIENT.

2	REV B REV DATE 04-23-90	VCE	MM	2-18-91
1	REVISION NUMBER	MM	SEP	04-06-90
KEY	DATE	MM	JUN	04-06-90
<b>BURNDY CORPORATION 1990</b>				
FSCM NO 09972	DON(3)	PC	825	
<b>HICROSHIELD® RAIGHT ANGLE RECEPTACLE</b>				
CAT NO DASE RA 214 (TABLE)				
1	REV B	1	REV C	1
10 CONTACTS				
UNLESS OTHERWISE SPECIFIED				
NET WEIGHT	INCH	MM	INCH	MM
1.4 POUNDS	.101	2.54	.001	2.54
1.4 POUNDS	.101	2.54	.001	2.54
DRAWN BY REV				
SE 04-10-91 2				

**BURNDY**  
CONNECTORS



## PURPOSE

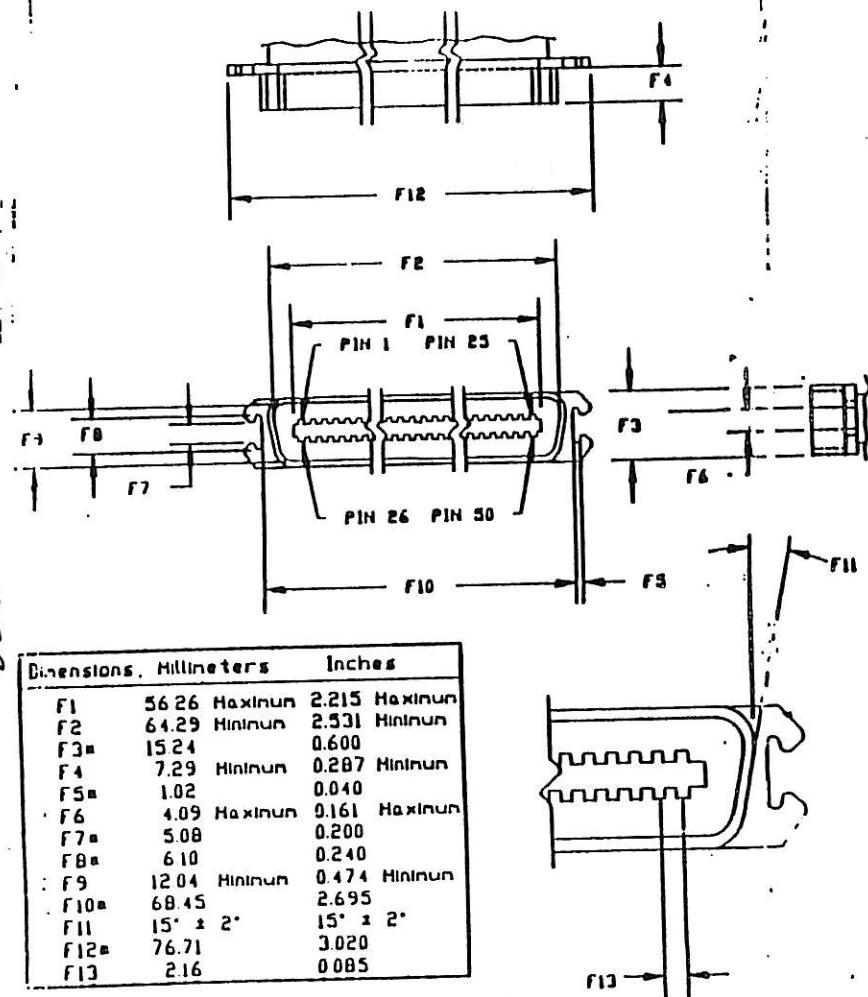
- THE 60 AND 68 POSITION, 1.27 mm PITCH RIBBON STYLE CONNECTOR IS ALREADY A DE-FACTO STANDARD.
- IBM IS COMMITTED TO IT'S USE TO IMPLEMENT THEIR SCSI ARCHITECTURE.
- THERE IS A HISTORY OF I/O "ALTERNATIVES, PREDOMINANTLY RIBBON STYLE USAGE HISTORY, 50 CKT CENTRONICS

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## Physical Characteristics



NOTES:  
 (1) Tolerances ± 0.127 mm (0.005 inch)  
 noncumulative, unless specified  
 otherwise.  
 (2) Dimensions listed with asterisks  
 are shown for reference only.

Figure 4-8: 50-Contact Shielded Low-Density Cable Connector

3/9/90

## Physical Characteristics

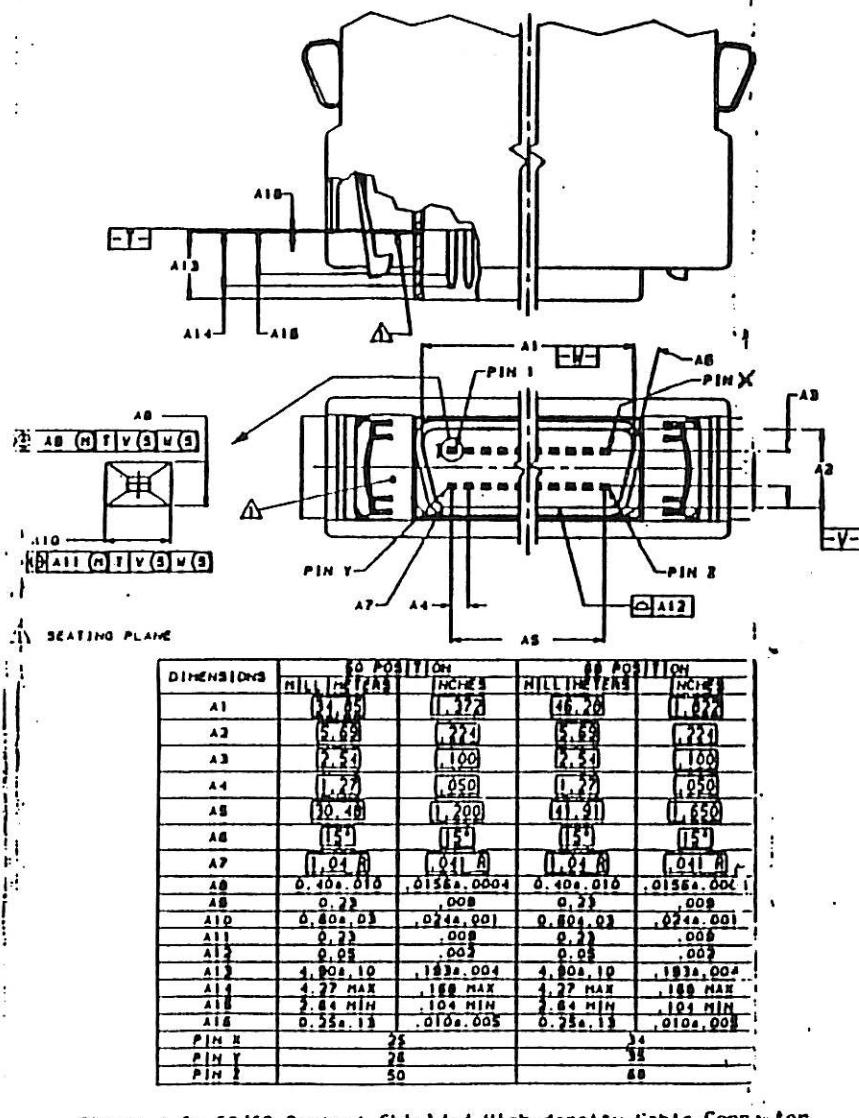
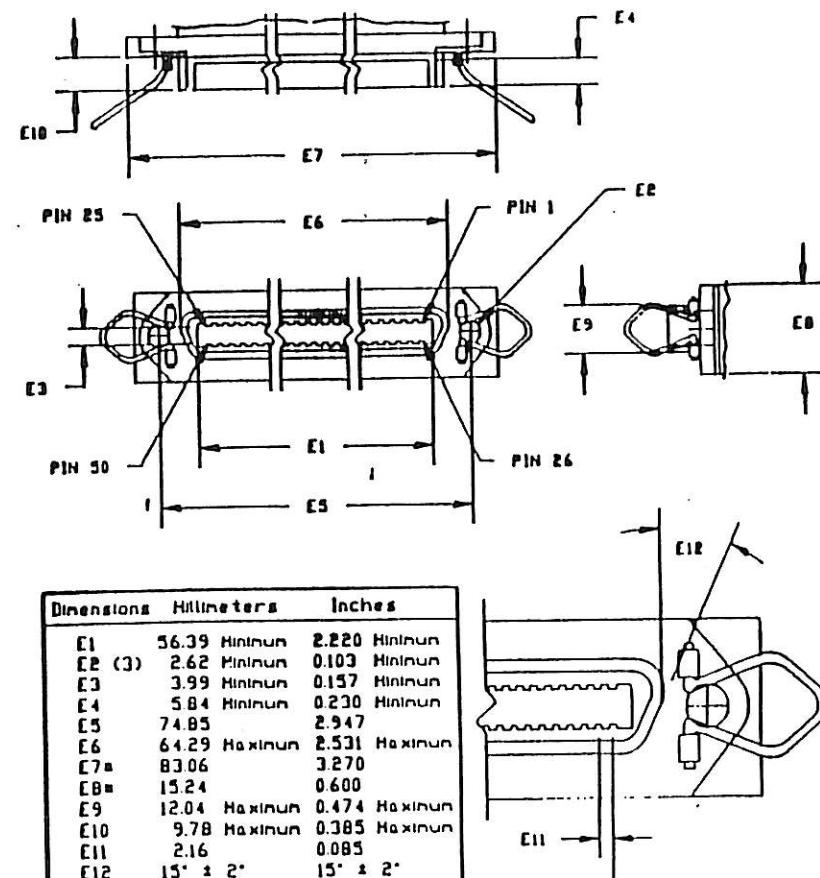
### 4.3.3. Connector Contact Assignments

The connector contact assignments are defined in Tables 4-1 through 4-5. Table 4-1 defines which of the other four tables to use and which set of contact assignments to use.

Table 4-1: Cross-Reference to Connector Contact Assignments

Connector Type	Driver/ Receiver Type	Cable	Connector Figure	Contact Assignment Table	Contact Set
Nonshielded Alternative 1	Single-Ended	A	4-1 & 4-2	4-2	2
Nonshielded Alternative 1	Single-Ended	B	4-1 & 4-2	4-3	
Nonshielded Alternative 1	Differential	A	4-1 & 4-2	4-4	
Nonshielded Alternative 1	Differential	B	4-1 & 4-2	4-5	
Nonshielded Alternative 2	Single-Ended	A	4-3 & 4-4	4-2	1
Nonshielded Alternative 2	Differential	A	4-3 & 4-4	4-4	
Shielded Alternative 1	Single-Ended	A	4-5 & 4-6	4-2	2
Shielded Alternative 1	Single-Ended	B	4-5 & 4-6	4-3	
Shielded Alternative 1	Differential	A	4-5 & 4-6	4-4	2
Shielded Alternative 1	Differential	B	4-5 & 4-6	4-5	
Shielded Alternative 2	Single-Ended	A	4-7 & 4-8	4-2	2
Shielded Alternative 2	Differential	A	4-7 & 4-8	4-4	

## SHIELDED PLUG (CABLE VERSION)

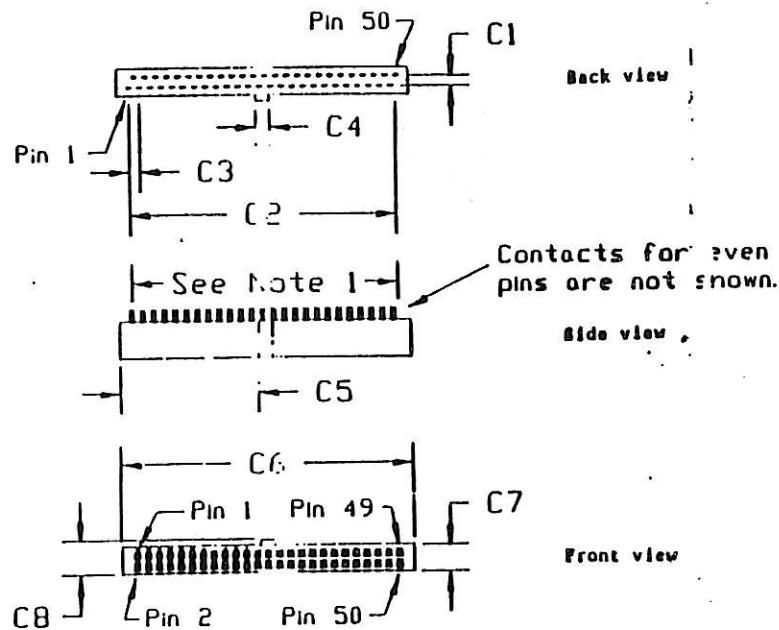
Figure 4-6: 50/68-Contact Shielded High-density Cable Connector  
(A Cable/B Cable)

## NOTES:

- (1) Tolerances ± 0.127 mm (0.005 inch) noncumulative, unless specified otherwise.
- (2) Dimensions listed with asterisks are shown for reference only.
- (3) Dimension E2 to accommodate 4-40 or 6-32 threaded screws.

Figure 4-7: 50-Contact Shielded Low-Density SCSI Device Connector

# SHIELDED RECEPTACLE (BOARD VERSION)

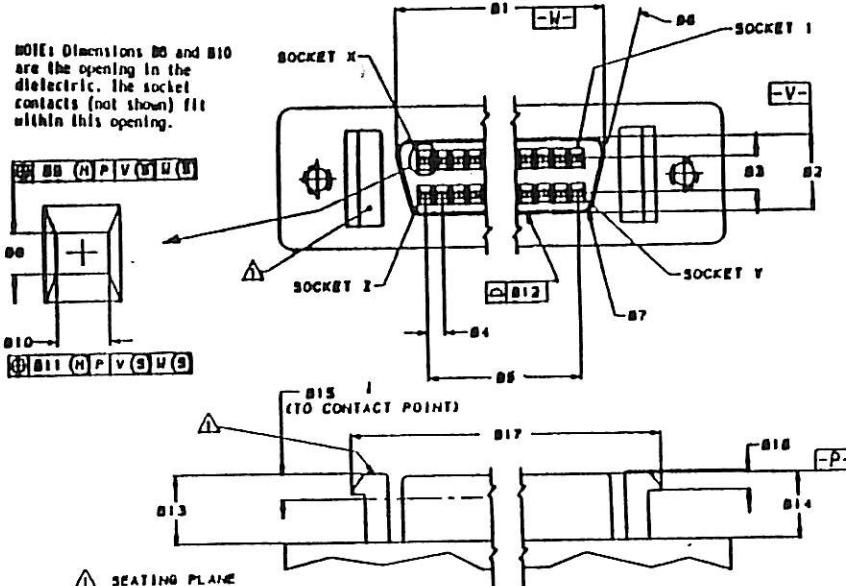


Dimensions	Millimeters	Inches	Comments
C1	2.540	0.100	
C2	60.960	2.400	
C3	2.540	0.100	
C4	3.302	0.130	
C5	32.385	1.275	
C6	68.072	2.680	
C7	6.096	0.240	
C8	7.620	0.300	Maximum

## NOTES:

- (1) Fifty contacts on 1.27-mm (0.05-inch) staggered spacing = 62.23 mm (2.450 inch) [reference only].
- (2) Tolerances  $\pm 0.127$  mm (0.005) noncumulative, unless specified otherwise.
- (3) Connector cover and strain relief are optional.

Figure 4-4: 50-Contact Nonshielded Low-Density Cable Connector  
(A Cable)



## PURPOSE

- TO ENSURE THAT ALL CONNECTOR MANUFACTURERS WILL PRODUCE PRODUCTS WHICH EXHIBIT TROUBLE-FREE INTERMATEABILITY AND ACCEPTABLE PERFORMANCE AND QUALITY
- TO PREVENT THE EMERGENCE OF PROPRIETARY FEATURES WHICH SOME MANUFACTURERS MIGHT ATTEMPT TO INTRODUCE TO MONOPOLIZE THE MARKET.
- TO ENSURE THAT ALL MANUFACTURERS WILL BE FREE OF LIABILITY FOR PATENT INFRINGEMENT.

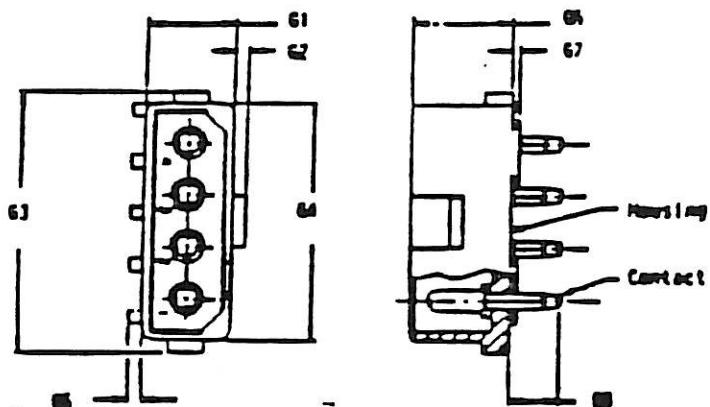


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# PROBLEMS

## 4 CIRCUIT POWER CONNECTOR

- ✓ ESDI DOES NOT SPECIFY CRITICAL INTERNAL DIMENSIONS OF THE 4 CIRCUIT POWER CONNECTOR.
  
- ✓ LACK OF A DEFINED INDUSTRY STANDARD HAS CREATED PLUG COMPATIBILITY PROBLEMS AMONG COMPONENTS OF THE DISK DRIVE POWER SUPPLY DISTRIBUTION SYSTEM, WHICH INCLUDES:
  - POWER SUPPLY OUTPUT CABLE
  - POWER DISTRIBUTION HARNESS
  - DISK DRIVE POWER INPUT CONNECTOR



Recommended layout for  
1.57 (.062 inch) thick P.C. board

NOTES:  
(1) Tolerances  $\pm 0.3\text{mm}$  (.015 inch) cumulative,  
unless specified otherwise.

(2) Dimensions listed with asterisks (\*) are  
shown for reference only.

DIMENSIONS	MILLIMETERS	INCHES
61	.30	.120
62*	1.27	.500
63*	$25.4 \pm 0.25$	$1.000 \pm .010$
64	23.24	.915
65*	1.27	.500
66	9.53	.375
67	$0.76 \pm 0.13$	$.030 \pm .005$
68	4.57/3.81	.180/.150
69*	$1.78 \pm 0.08$	$.070 \pm .003$
610*	$5.00 \pm 0.13$	$.200 \pm .005$

FIGURE 13: J3/P3 POWER CONNECTOR

TABLE 2: J3/P3 CONNECTOR PIN ASSIGNMENTS

J3 Connector Pin	Voltage
1	+12V DC +51
2	12V RETURN
3	5V RETURN
4	+5V DC +51

# MICROSHIELD APPLICATIONS

## I/O PORTS, CABLES, TERMINATORS

### COMPUTERS

DESKTOPS

LAPTOPS

WORKSTATIONS

MINICOMPUTERS

### PERIPHERAL DEVICES

STORAGE DEVICES

PRINTERS

SCANNERS

MODEMS

PLOTTERS

## SUPPORTERS OF PROPOSAL

- MOLEX INC., LISLE, IL.
- BURNDY (DIV. OF FCI INTERNATIONAL),  
NORWALK, CT.
- DUPONT ELECTRONICS, WILMINGTON, DE
- IBM

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# **MANUFACTURERS OF IBM RIBBON STYLE I/O**

**AMP**

**MOLEX**

**BURNDY**

**DUPONT**

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# ACCREDITED STANDARDIZATION

## ORGANIZATIONS

- ANSI X3T9
- EIA P5.1 CONNECTOR SUB-COMMITTEE  
(ELECTRONIC INDUSTRY ASSOCIATION)
- IEC 48B TECHNICAL COMMITTEE FOR  
CONNECTORS. (INTERNATIONAL  
ELECTROTECHNICAL COMMISSION).
- IEEE (INSTITUTE OF ELECTRONIC AND  
ELECTRICAL ENGINEERS).

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# EIA P5.1 CONNECTOR SUB-COMMITTEE

- MEETS 3X / YEAR
- WRITES CONNECTOR AND CONNECTOR TEST METHOD STANDARDS.
- EIA / NECQ (NATIONAL ELECTRONIC COMPONENTS QUALITY ASSESSMENT SYSTEM) STANDARDS ARE USUALLY ADOPTED BY ANSI, AS IS.
- EIA / NECQ STANDARDS COVER DIMENSIONS, TOLERANCES PERFORMANCE AND QUALITY REQUIREMENTS (MUCH MORE EXTENSIVELY THAN ANSI X3T9 STANDARDS).
- EIA / NECQ STANDARDS SPELL OUT QUALIFICATION TESTING, INCLUDING; LOT SIZE, SEQUENCES, AND EIA STANDARD CONNECTOR TEST PROCEDURES.

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## EIA P5.1 (cont'd)

- EIA / NECQ STANDARDS SPELL OUT QUALITY ASSURANCE REQUIREMENTS AND PERIODIC TESTING TO RETAIN QUALIFICATION.
- EIA MAINTAINS A QPL (QUALIFIED PRODUCT LIST) FOR ALL QUALIFIED COMPONENTS.
- MADE UP OF VOLUNTARY TECHNICAL EXPERTS FROM THE CONNECTOR INDUSTRY, CONNECTOR USERS; COMMERCIAL AND MILITARY, TEST LABS, AND SUPPLIERS OF MATERIALS AND SERVICES.
- EIA / NECQ STANDARDS AND QUALIFICATIONS ARE ACCEPTABLE WORLDWIDE THROUGH ANSI AND IEC.



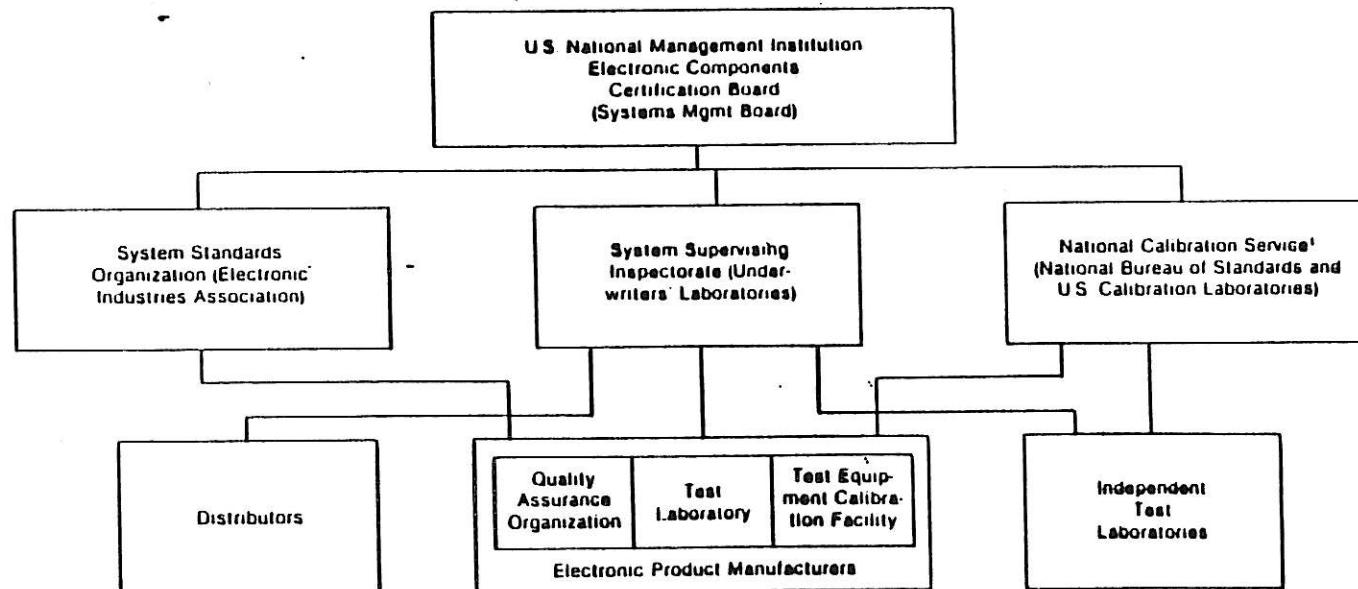
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## THE SYSTEM'S ORGANIZATION

A National body called the Electronic Components Certification Board is the U.S. management body for the system. A Systems Management Board (SMB), consisting of the members of the ECCB representing manufacturers of components, users of components, and general interest groups, acts as the management body for the operation of the System. Reporting to it are a System Standards Organization (SSO) and a System Supervising Inspectorate (SSI). The SSI is responsible for approval of manufacturers and the quality organization and procedures used to certify individual families of components, along with independent test laboratories and distributors.

### THE U.S. NATIONAL CERTIFICATION SYSTEM ORGANIZATION



Note 1: The National Calibration Service is the U.S. National Bureau of Standards operating in conjunction with a U.S. network of calibration laboratories.

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### THE OBJECTIVE

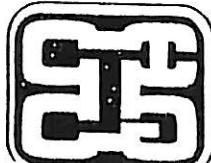
To facilitate domestic trade in electronic components through certification that a manufacturers component meets recognized and approved specifications.

### IS ACHIEVED BY

A National organization that assures operation with integrity in accordance with nationally agreed upon rules. This organization is made up of a System Supervising Inspectorate (SSI) which approves electronic component manufacturers and conducts follow-on surveillance and audits, and a System Standards Organization (SSO) that manages specification development in the country, and a National Calibration Service.

### NECQ Audits Substantially Reduced Redundant Audits by OEMS

"Texas Instruments Military Products has been a participant in the NECQ pilot and transition programs utilizing third party audits of our manufacturing operations in Taipei, Taiwan and Midland, Texas. Our experience in these programs has proven conclusively to us that the NECQ audit performed in lieu of OEM (Prime Contractor) MIL-Q-9858 audits has substantially reduced the proliferation of multiple and redundant audits by OEMs. One NECQ audit in the two facilities in 1989 replaced at least four major OEM visits to each of the two facilities. We fully endorse and encourage expansion of this program."

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# **IEC 48B TECHNICAL COMMITTEE** **FOR CONNECTORS**

**SAME AS EIA P5.1 EXCEPT:**

- MEETS 2 X / YEAR.
- MEMBERS FROM 24 DIFFERENT COUNTRIES.
- CONNECTOR STANDARDS USE IEC TEST METHODS
- IECQ SYSTEM SIMILAR TO NECQ. QUALIFICATION RECOGNIZED IN BOTH DIRECTIONS.



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**IEEE**

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- OCCASIONALLY WRITES CONNECTOR STANDARDS AS PART OF A SYSTEM STANDARD. (EXAMPLE: APPENDIX A OF FUTUREBUS STANDARD).
  - PREFERS TO HAVE EIA HANDLE CONNECTOR STANDARDS, WHEN POSSIBLE AND TIMELY (EXAMPLE: 2.5 mm PITCH P.C. CONNECTOR FOR COMBUS STANDARD, CURRENTLY BEING IMPLEMENTED).



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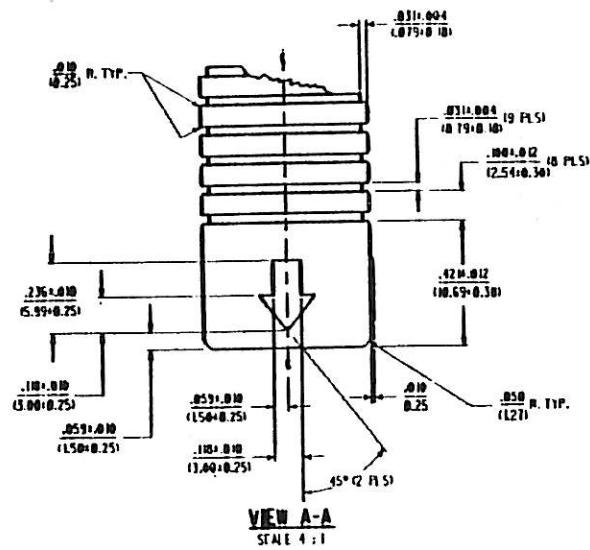
# BENEFITS OF PROPOSAL TO USERS

- MULTIPLE QUALIFIED SOURCES LEADS TO:
  - LOWER APPLIED COSTS
  - BETTER SERVICE
  - STIMULATES INNOVATION ON CABLE ASSEMBLY PROCESSES (BY CONNECTOR MANUFACTURERS) TO LOWER CABLE ASSEMBLY COST AND IMPROVE QUALITY.
- ASSURES TROUBLE-FREE CONNECTOR INTERMATEABILITY.
- ELIMINATES CONFUSION AMONG SCSI USERS AND MANUFACTURERS ABOUT CONNECTORS.

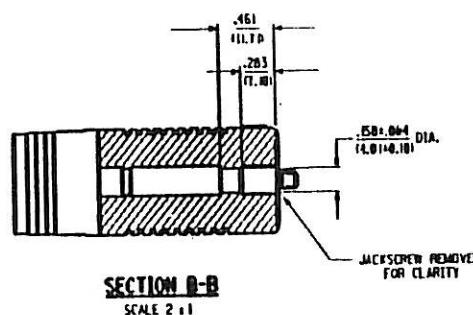


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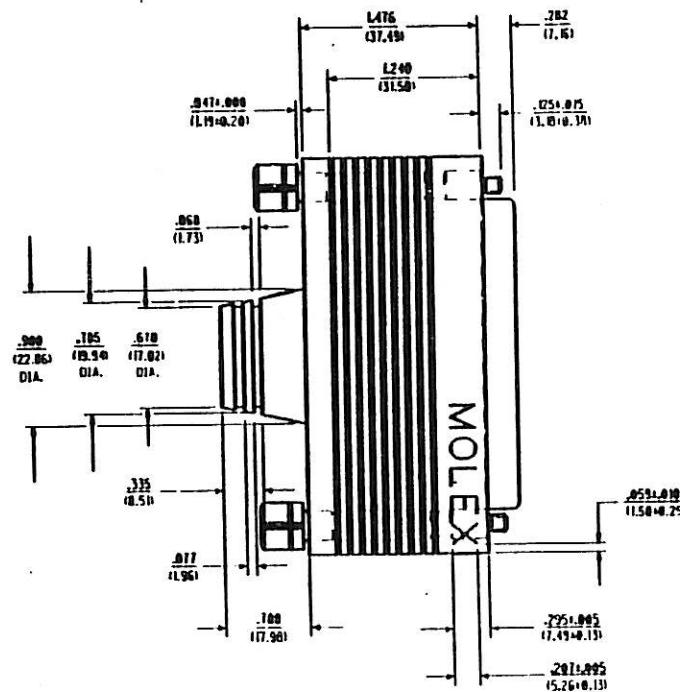
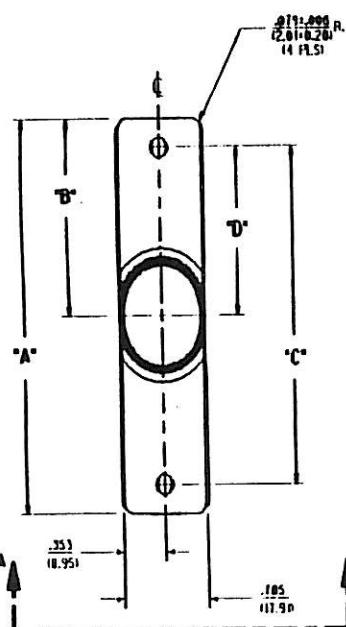


VIEW A-A  
SCALE 1:1



**SECTION B-B**

JACKSCREW REMOVED  
FOR CLARITY



C		ONE SHEET 1	
		FILE NUMBER B-141 ALICE	
		PICKUP	
1st fl.		2nd fl.	3rd fl.
V		SEARCHED AND SERIALIZED	
I/O OVERMOLD			
SEARCHED		INDEXED	
SERIALIZED		FILED	
JULY 1 1974		12:01/51	
FBI - PORTLAND			

## BENEFITS (cont'd)

- IF ANSI ASKS EIA TO WRITE CONNECTOR STANDARD, THEN:
  - QPL ELIMINATES REDUNDANT TESTING BY MANY SCSI USERS / MANUFACTURERS.
  - ELIMINATES REDUNDANT QUALITY AUDITS BY USERS, (OF CONNECTOR MAKERS PLANTS).
  - ASSURES THAT ALL CONNECTOR VENDORS ON THE QPL MEET THE DIMENSIONAL, PERFORMANCE, AND QUALITY REQUIREMENTS OF THE STANDARD.

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## **MOTION 1**

- MOTION TO ADD THE 60 AND 68 POSITION  
1.27 mm (.050 INCH) PITCH, RIBBON STYLE  
CONTACT CONNECTOR TO THE SCSI-2 **AND/OR -3**  
STANDARD AS AN ALTERNATIVE.
  
- THE FORMAT TO BE USED WILL BE IDENTICAL  
TO THAT CURRENTLY USED ON TENTATIVE  
STANDARD X3.131.199X.

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## IMPLEMENTATION OF MOTION 1

- A TASK GROUP WILL BE FORMED TODAY CONSISTING OF VOLUNTARY REPRESENTATIVES OF BURNDY, DUPONT, MOLEX, AND IBM. ANY OTHERS WHO MAY WISH TO PARTICIPATE IN THIS EFFORT ARE ALSO WELCOME.
- TIMING
  - ALL VOLUNTEERS TO SUBMIT THEIR NAMES TO ME BY JULY 1.  
FAX : (914) 761-1867
  - FIRST DRAFT TO BE READY FOR PRESENTATION AT X3T9.2 MEETING ON AUG. 19-23.

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## **MOTION 2**

***TO BE PROPOSED ONLY IF  
MOTION 1 IS NOT TO BE IMPLEMENTED***

- MOTION TO REQUEST CHAIRMAN OF ANSI X3T9.2 TO WRITE A REQUEST TO THE CHAIRMAN OF EIA P5.1 TO PREPARE AN EIA / NECQ STANDARD FOR THE 60 AND 68 POSITION 1.27 mm (.050 INCH) PITCH, RIBBON STYLE CONTACT CONNECTOR. UPON COMPLETION OF THAT ASSIGNMENT, ANSI X3T9.2 TO AUTHORIZE A CHANGE TO THE SCSI 2 TENTATIVE STANDARD X3.131.199X TO SPECIFY THE EIA / NECQ NUMBER, AS AN ACCEPTABLE ALTERNATE FOR SCSI 2 EQUIPMENT.
- FORMAT TO BE ACCORDING TO EIA / NECQ RULES.

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## **IMPLEMENTATION OF MOTION 2**

- UPON ACCEPTANCE OF THE TASK DESCRIBED IN MOTION 2, THE CHAIRMAN OF EIA - P5.1 WILL AUTHORIZE THE FORMATION OF A SPECIAL TASK FORCE, TO UNDERTAKE THE ASSIGNMENT.
  
- I WILL VOLUNTEER TO HEAD THE TASK FORCE. IT WILL BE JOINED BY REPRESENTATIVES FROM MOLEX, BURNDY, DUPONT AND IBM AND ANY OTHERS WHO MAY WISH TO PARTICIPATE IN THIS EFFORT.

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## **IMPLEMENTATION OF MOTION 2 (cont'd)**

- IF THE X3T9.2 CHAIRMAN CAN WRITE HIS REQUEST TODAY, I CAN CONVEY IT TO THE P5.1 CHAIRMAN AT THEIR MEETING TOMORROW IN SANTA FE. THIS SHOULD GET THE TASK FORCE ORGANIZED THIS WEEK. IN THAT EVENT, THE TASK FORCE SHOULD BE ABLE TO SUBMIT IT'S FIRST DRAFT OF THE STANDARD TO P5.1'S MEETING IN SEPTEMBER.
  
- COMPLETION OF AN APPROVED STANDARD COULD OCCUR ONE YEAR FROM NOW.

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