



Connector Performance Specifications

Property	Requirement	Result
Electrical		
Contact Resistance	20mV open circuit @ 100 mA	<15 mΩ typical
Current-Carrying Capacity	Maximum current for 30°C temperature rise	3 - 6 A
Inductance		<0.5 nH
Insulation Resistance	@ 500 VDC	>1,000 MΩ
Dielectric Withstanding	500 VAC (sea level)	No breakdown
Mechanical		
Durability	Room temperature	>25,000 cycles
Vibration	20 Gs; 10 - 2,000 Hz; no discontinuity greater than 2 nanoseconds	No discontinuity
Shock	100 Gs; 6 milliseconds; no discontinuity greater than 2 nanoseconds	No discontinuity
Environmental		
Temperature Life	1,000 hours @ 200°C	<5% resistance change
	5,000 hours @ 170°C	<5% resistance change
Thermal Shock	100 cycles -55°C to +85°C	<5 mΩ change
	2,000 cycles -20°C to 110°C	<5 mΩ change
Low Temperature	Liquid nitrogen (-200°C)	<5 mΩ change
Humidity	5,000 hours @ 30°C to 80°C, 85% relative humidity	<5 mΩ change
Salt Spray	96 Hours	<5 mΩ change
Outgassing	1.0% Total Mass Loss (TML)	<1.0% TML
	0.1% CVCM	
	ASTM E595 (NASA)	
Material		
Contact Material	Molybdenum with 20 - 30µin, gold plating	
Insulator Housing	Liquid Crystal Polymer / Polyetherimide	
Packaging Material	Anti-static ABS	



At Cinch our philosophy is that anything is possible.

With over 90 years' experience as a global supplier we offer simple, effective solutions to our customers' interconnect and integration needs. From basic interconnect to complex integration requiring bespoke design, we focus primarily on quality, ingenuity and reliability, meeting the high performance demands of industries such as Defence, Aerospace, Space, Telecom, High Speed Data Servers and Industrial Transportation.

**TOGETHER
WE STIMULATE.
WE INNOVATE.
WE CREATE.**

BEL FUSE CORPORATE OFFICE
206 Van Vorst Street, Jersey City,
New Jersey 07302,
USA

CINCH CONNECTORS
1700 Finley Road, Lombard,
IL 60148,
USA

CINCH CONNECTORS LTD.
Shireoaks Road, Worksop,
Nottinghamshire S80 3HA,
UK

CINCH CONNECTORS
ADS Office, Aeropole Batiment 2,
5 Avenue Albert Durand,
31700 Blagnac,
FRANCE

GIGACOM INTERCONNECT
Vingalandsгатan 8,
SE-417 63 Gothenburg,
SWEDEN

FIBRECO LTD.
12 Filich Industrial Estate,
Chelmsford Road,
Great Dunmow, Essex CM6 1XJ,
UK



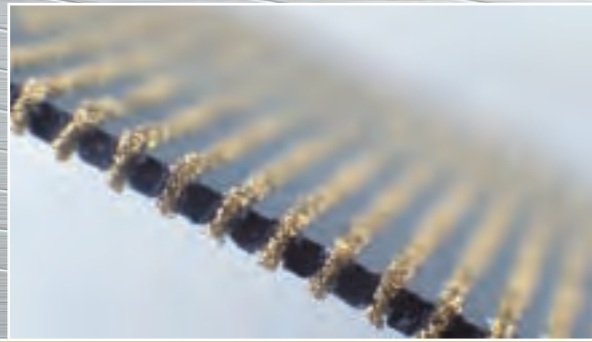
www.cinch.com
Cinch has manufacturing and sales sites located globally approved to AS9100 revC.
sales@cinchuk.com

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ENABLING TECHNOLOGY FOR THE MOST DEMANDING INTERCONNECT APPLICATIONS



Components for a connected planet



CIN::APSE®

It takes more than an ordinary connector to support advanced performance interconnect applications. It takes CIN::APSE, a proven solderless Z-axis connector technology that offers exceptional mechanical and electrical performance at signals well above 30 GHz.

If you have an interconnect challenge, and need to overcome the restrictions of ordinary connector devices, CIN::APSE can provide the versatile and reliable interconnect solution you need.

RoHS Compliant.

Innovative Compression-Mount Technology

CIN::APSE is a unique, Z-Axis compression interconnect which provides superior mechanical and electrical performance. The contact construction consists of randomly wound gold plated molybdenum wire, formed into a cylindrical shape (Figure 1). Standard contact diameters are 0.020" (0.50 mm) and 0.040" (1.00 mm). The basic CIN::APSE contact configuration consists of a contact installed into a customised plastic insulator with the patented Cinch hourglass hole design (Figure 2). Once in place, the contact extends on both sides of the insulator. Custom made to your specifications, CIN::APSE utilises a multi-point contact that can handle signals well above 30 GHz, while offering a superior combination of small size, low inductance and exceptional resistance to shock, vibration and thermal cycling.

Quick, Solderless Installation

CIN::APSE is a easily installed in two basic steps, without soldering. First, using alignment features, the CIN::APSE interconnect is positioned between two components with matching connection footprints. Next, the two components are compressed and fastened together (Figure 3).

Low Compression Force, Low Contact Resistance

The CIN::APSE contact offers one of the best force / deflection ratios in the industry. An average compression force of only 2.5 ounces (71 N) will yield a typical contact resistance of less than 20 mΩ. This means high I/O count applications can achieve excellent electrical performance with only minimal Z-Axis compression force (Figure 4).

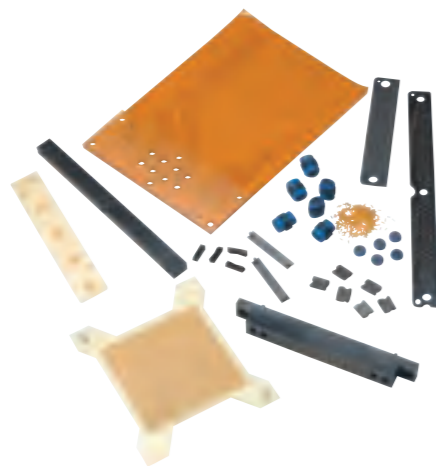


Figure 1.



Figure 2.



Figure 3.

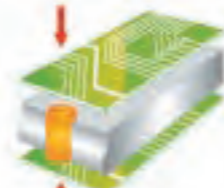


Figure 4.

Contact Configurations

1. Contact only
2. Plunger - Contact
3. Plunger - Contact - Plunger
4. Contact - Spacer - Contact

Versatile Configurations

In addition to standard configurations, CIN::APSE can be custom configured to meet your exact footprint and mated heights.

- Quick-turn machined prototypes
- Heights ranging from .020" - 1.5" (0.5 - 38 mm)
- Multiple insulator materials
- Custom compression system design

CIN::APSE can be used in almost any application where you need to connect two parallel surfaces.

CIN::APSE® Applications

- Digital devices - 20+ GHz Signal Speeds
- Chip - PCB (LGA)
- PCB - PCB (Interposers)
- Flex Circuit - PCB / Flex Circuit (Interposers)
- LCD - PCB / Flex Circuit (Interconnect)
- 'D' Connectors - CIN::APSE (Solutions)
- Hermetic sealing
- IP rated
- EMI Shielding



1. Contact only



2. Plunger - Contact



3. Plunger - Contact - Plunger



4. Contact - Spacer - Contact

Your Need	CIN::APSE Solution
Solderless	CIN::APSE provides the advantages of a solderless connection Easy repairs and upgrades in plant or in the field No risk of damaging expensive boards or components Allows for large mismatches in CTE between substrates
Signal Speed and Integrity	CIN::APSE can easily handle signal speeds over 20+ GHz Low inductance of <0.5 nH Low crosstalk and EMI Low signal loss Low circuit resistance of 15 - 20 mΩ
High Density High I/O Low Profile Light Weight Low Mass	CIN::APSE is the leader in high I/O and miniaturization I/O counts in production exceeding 5,000 Standard pitch as small as 1 mm Mated height as low as .020" (0.5 mm) or up to 1.5" (38 mm) Contacts are 75% - 85% air when fully compressed
Reliability	7 to 11 points of contact per contact Mechanical wiping action Extremely stable over time and temperature High contact normal force
Extreme Environments	Temperature range -200° C to 200° C Low mass contact withstands extreme shock and vibration



FEATURED DEVELOPMENTS

0.8 mm CIN::APSE®

Solutions for Small Pitch Applications

The proven performance of CIN::APSE technology in a reduced size ideal for high density applications that require pitches down to 0.8 mm.

Extremely high density interconnects are needed for many components and applications.

- Fibre optic transceivers
- Medical electronics
- Sensors
- High density modules

Solutions for Low Voltage Drop Applications

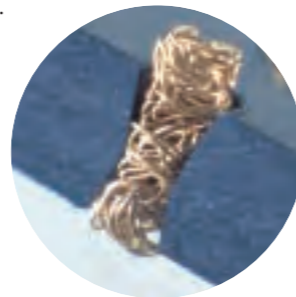
The introduction of the Ø0.8 mm contact provides a lower line resistance whilst remaining on the standard 1.0 mm CIN::APSE pitch.

CIN::APSE technology provides the ability to reduce interconnection voltage drops within a power sensitive system.

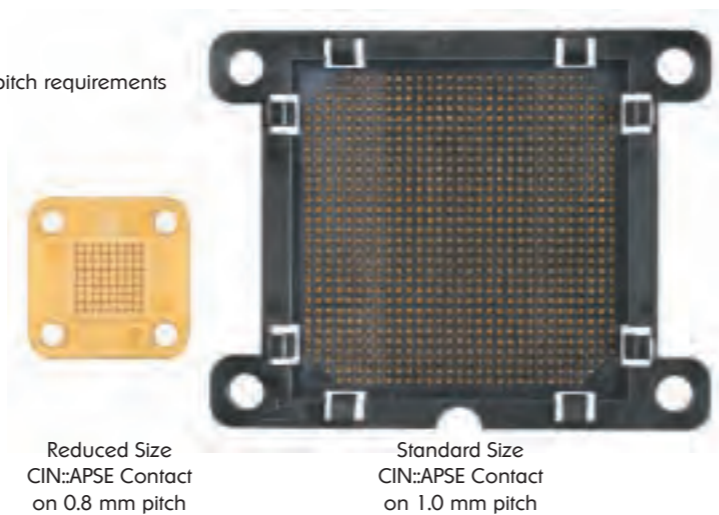
- Electronic control units
- Remote power sources
- Weight and Size reduction of power supplies

Key CIN::APSE Features for Applications

- High reliability
- High density
- Low mating force
- Low resistance & inductance
- Solderless
- Custom configured to meet your interface pitch requirements
- Quick turn around machined prototypes



Detail of CIN::APSE Contact



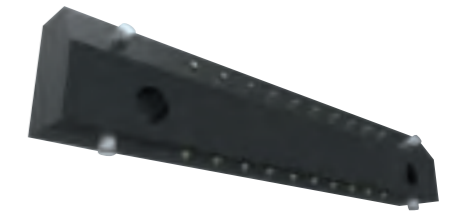
Reduced Size CIN::APSE Contact on 0.8 mm pitch

Standard Size CIN::APSE Contact on 1.0 mm pitch

360° CIN::APSE® Termination

CIN::APSE technology provides a method of termination from 0 and 360 degrees to solve the most complex of routing in ECU designs.

The unique method of connector construction enables the designer to vary the angle of termination to aid routing direction of flexible circuits and PCBs within the system.



90° CIN::APSE®

The advantage of the low profile that CIN::APSE technology provides the ability to rack daughter boards closer together within a system design.

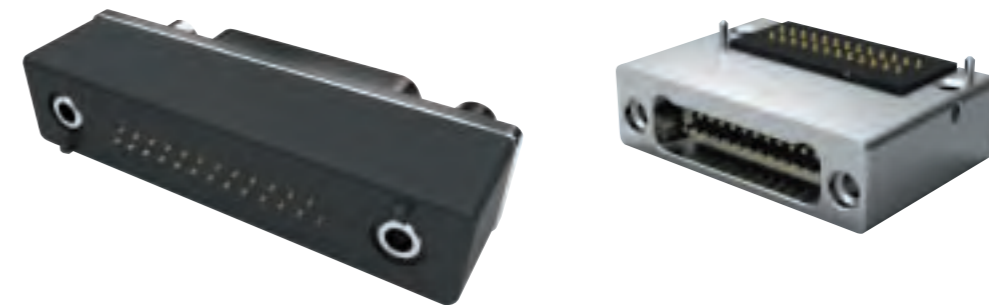
- Single or multiple row configuration
- Dual sided PCB interconnection
- High density
- Low profile saving space
- Compression technology
- Allows for tolerance and CTE mismatch

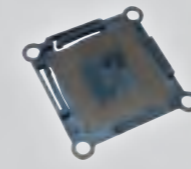


Dual Technology

CIN::APSE flexible termination method allows the compression technology to be incorporated within a traditional connector frame to provide a high performing Surface Mount solution.

Cinch contact technology withstands extreme shock & vibration, and is extremely stable over time and temperature to provide a viable alternative to the press fit connector technology for demanding environments.

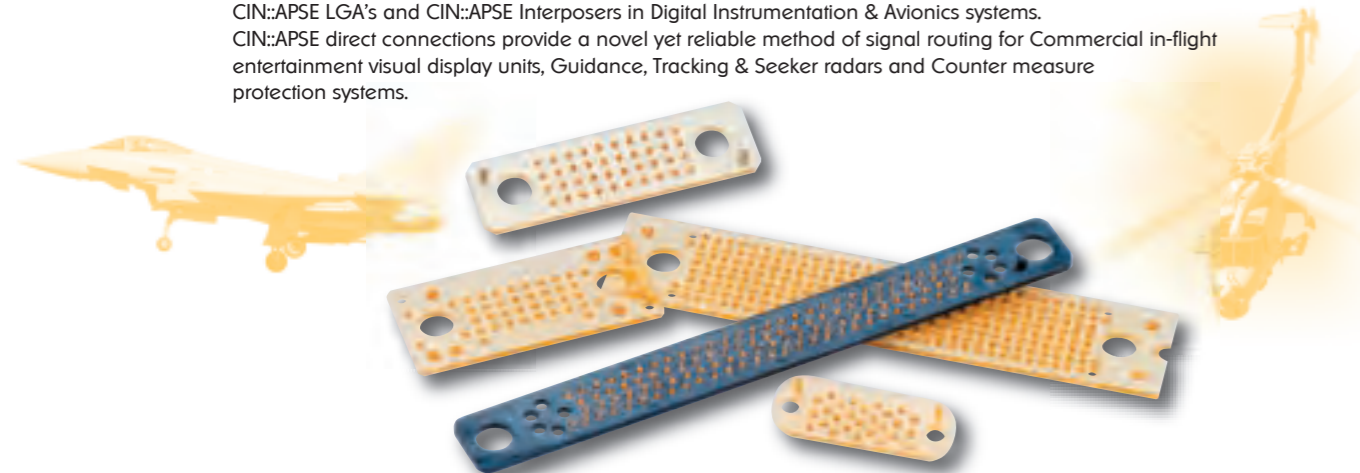




Military & Aerospace

CIN:APSE provides the ability to create innovative connector solutions to meet a new generation of interconnect challenges.

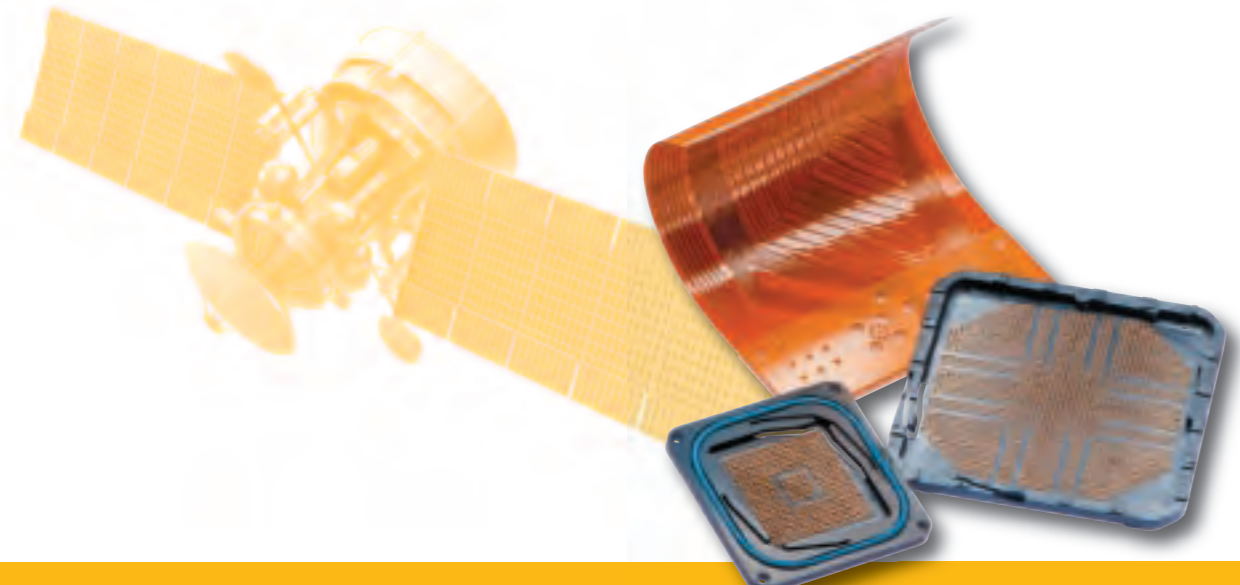
CIN:APSE advanced interconnect solutions include high performance Gyroscopes for in-flight control and stabilisation systems. This combined with the next generation of CPU packages connected through CIN:APSE LGA's and CIN:APSE Interposers in Digital Instrumentation & Avionics systems. CIN:APSE direct connections provide a novel yet reliable method of signal routing for Commercial in-flight entertainment visual display units, Guidance, Tracking & Seeker radars and Counter measure protection systems.



Satellite & Space

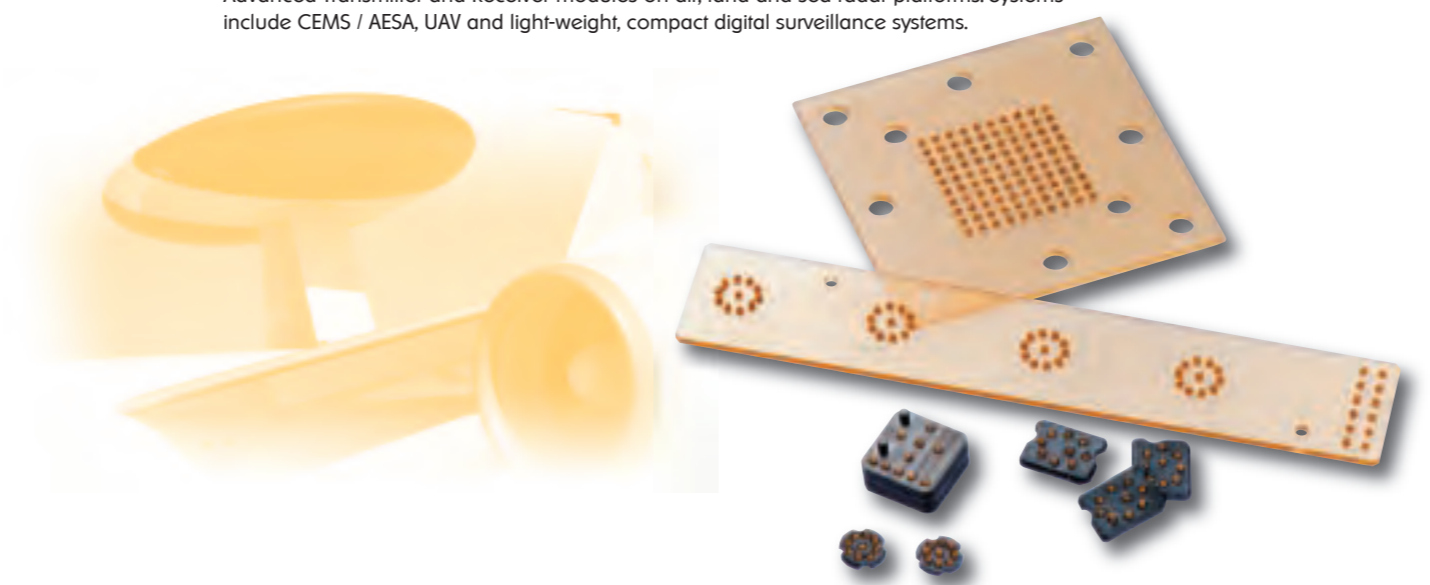
CIN:APSE LGAs are lightweight, high contact density and have excellent electrical & mechanical signal properties providing exceptional performance for Multipurpose Geostationary Communication Platforms. CIN:APSE PCB Interposers enable simple routing options for complex multilayer PCB and flex circuits within confined spaces within electronic control units.

CIN:APSE multi-configuration custom connectors provides a new dimension for planet and deep space exploration together with the addition of environmental seals for hostile planet environments.



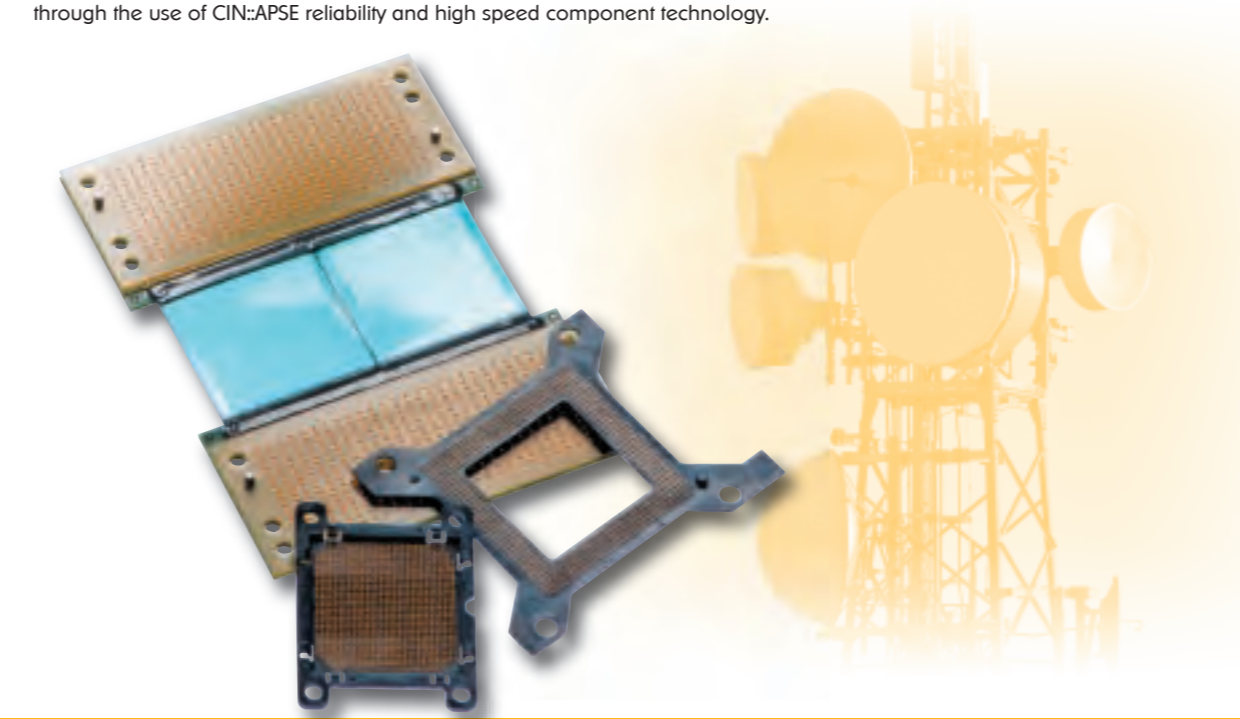
Radar & Surveillance

CIN:APSE multipoint compression contact technology provides ideal connector solutions for Advanced Transmitter and Receiver modules on air, land and sea radar platforms. Systems include CEMS / AESA, UAV and light-weight, compact digital surveillance systems.



Telecommunications

Advanced telecommunications for next generation mobile networks and internet access through the use of CIN:APSE reliability and high speed component technology.



Transport

CIN:APSE provides the unique ability to make custom interconnector solutions available for electronic displays and sensors where crucial reliability is required within demanding environments.



Computer

CIN:APSE LGA is the connector of choice for the most demanding CPU / MCM and ASIC-to-board applications in leading:

- High-end servers
- Routers
- High speed switches
- Main frames

