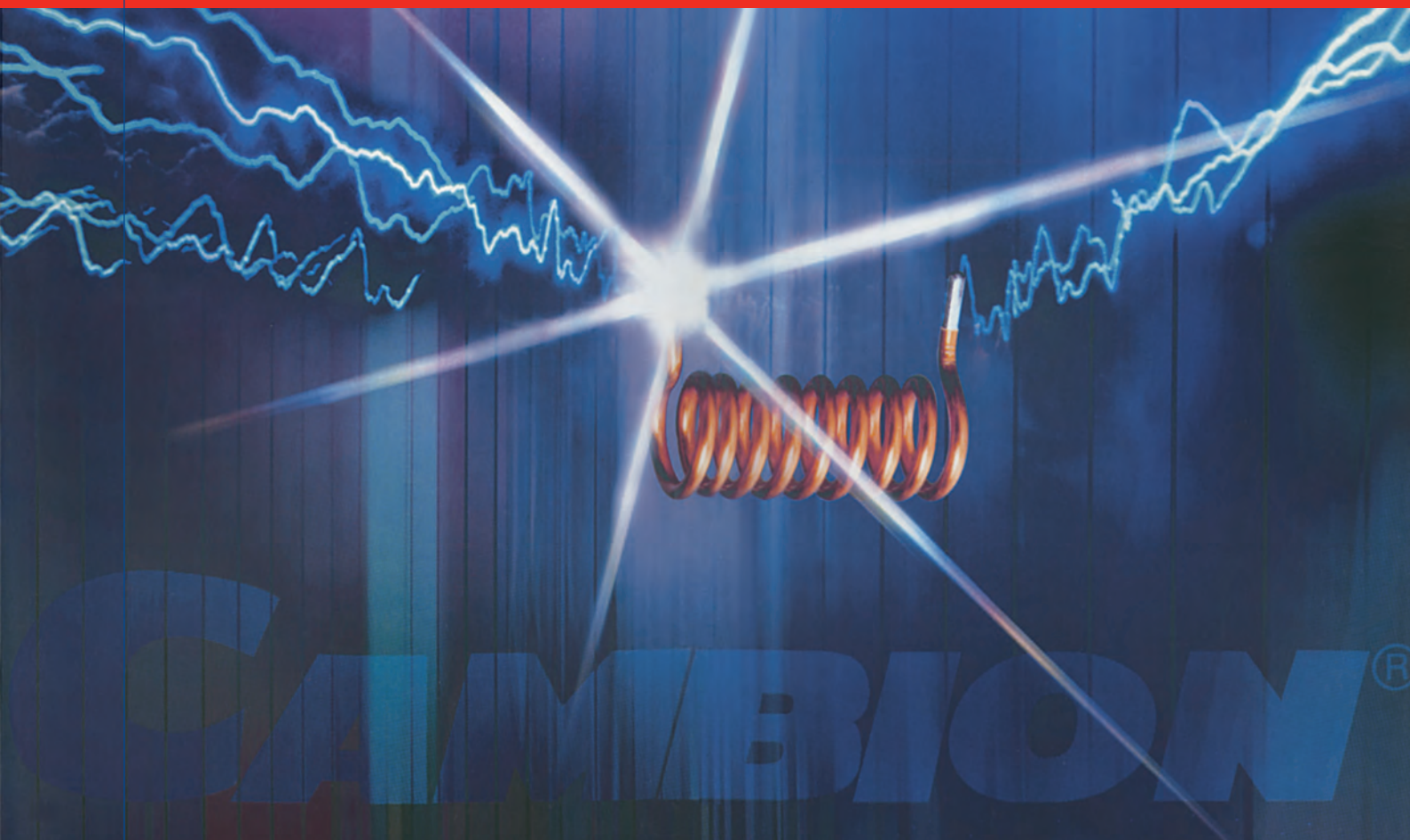
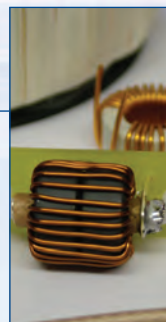
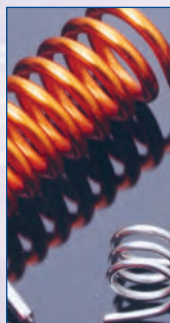


# short form catalogue



**CAMBION®**

## Cambion® - The Story So Far

The Cambridge Thermionic Corporation was founded in the 1930's in Cambridge, Massachusetts USA. The name Cambion® being derived from the first four and last three letters of that name.

The company quickly established a reputation in the USA as a quality supplier of small electro-mechanical and electronic components for the military and professional electronics markets.

In 1961 a parallel manufacturing facility was established in Castleton, Derbyshire, England to service an ever-expanding global market.

|      |                                                                   |
|------|-------------------------------------------------------------------|
| 1961 | Cambion Electronic Products Limited established in the UK         |
| 1981 | Cambion, SAE and Hollingsworth acquired by Midland Ross (MR).     |
| 1984 | Name changed to Midland Ross Limited (MR).                        |
| 1987 | Management buy-out of the MR connector division to form IPI.      |
| 1987 | Name changed to Interconnection Products Limited. Cage Code U2600 |
| 1991 | The US part of IPI ceased trading. Cage Code 71279                |
| 1991 | Acquired by the Wearnes Organisation.                             |
| 1994 | Name changed to Wearnes Hollingsworth Limited. Cage Code U4251    |
| 2001 | Name changed to Wearnes Cambion Limited. Cage Code K3105          |
| 2015 | United Engineers Limited acquires the Wearnes corporation         |
| 2016 | Name changed to Cambion Electronics Limited. Cage Code K3105      |

Over the company's history, ownership changes have given rise to various name iterations such as Midland Ross, IPI Limited, Hollingsworth and Wearnes.

In 2015, the Singaporean multi-national, United Engineers Limited acquired the organisation to support its growth in Technology and Manufacturing.

## Cambion® Your Total Manufacturing Solution Partner

As the history shows Cambion® have a long and established pedigree for high performance electro-mechanical and inductive components serving the professional, automotive, military, aerospace and industrial markets. Cambion® are committed to ongoing product development, products are constantly reviewed and updated for strategic fit to meet the ever changing marketplace. Continual investment, especially in the latest machinery, has resulted in substantial manufacturing and assembly capabilities to cover a broad and comprehensive range of disciplines and technologies. The unbeatable combination of modern materials and processes carried out by highly skilled operatives ensure the highest possible quality standards are achieved.

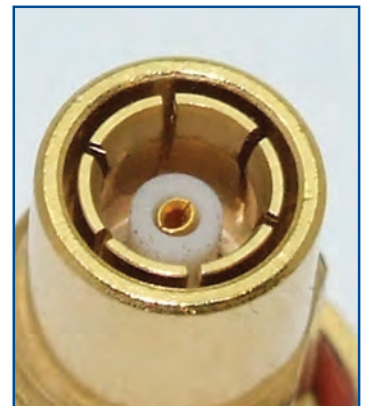
Cambion® are autonomous in its manufacturing capabilities with stamping, machining, moulding, automatic assembly and a fully equipped toolroom all under one roof at its ISO9001 & ISO14001 Castleton facility. Consequently Cambion® has total control over factors of production, so are able to swiftly take ideas off the drawing board and make them a reality in double quick time.

Cambion® brings together extensive experience and knowledge

to offer a full design and prototype service. Engineers are able to provide a solution to a customer's individual requirements where standard components may not be suitable.

Cambion® works closely with its associated group facilities in the Far East, supporting the Electronics market with an array of services and products, ranging from precision electronic components and assemblies, PCBA, Die Casting, to full turnkey box build devices, consequently offering access to low cost manufacturing.

Group facilities are dedicated to providing OEM, ODM and EMS services for industry. Products and services include: inductive components, electronic connectors and assemblies, miniature switches, anti-theft devices sensors, PCBA, full box build and many more. With a dedicated precision moulding and stamping capability along with R & D centre, giving the capability of supporting small to large projects. The Group also has a leading precision engineering provider specialising in aluminium die-casting, extrusion and CNC machining. In-house tool shop facility allows the fabrication production tooling and maintenance, thus streamlining production expenses and minimising customer response times. Active in all electronic markets, but particularly strong in the automotive sector. In addition to ISO9001, it is also registered with ISO14001, OHSAS18001, TS16969 and AS9100.



## OUR VALUES



### UPHOLDING INTEGRITY

Integrity guides our interactions with shareholders, customers, the community and stakeholders



### CHAMPIONING INNOVATION

Innovation is key to our future growth and development



### FOSTERING TEAMWORK

Teamwork enables us to achieve results based on a common identity, vision and purpose



### ENSURING EXCELLENCE

Excellence eliminates mediocrity and constantly drives us to do better

# electro mechanical

## Cage Jack – PCB mounted single pole sockets

Highly reliable PCB connector with multiple contact points to 60% of the circumference of the mating pin. Used in conjunction with Connector Pins and Shorting Links. Also known as Jacks, Jack Sockets or PCB Sockets.

**Mount** – Solder, Press-fit, Swage, Crimp & Eyelet

**Versions** – Straight & Right Angled, Closed & Open ended, Insulated.

**Acceptance Diameter** – 0.41mm (0.016") to 2.54mm (0.100")

**Current Carrying Capacity** – up to 32 Amps.

### Material

Spring Beryllium Copper  
Body Copper or Brass, Deep Drawn or Machined

### Plating Options

Gold - Tin - Tin/Gold  
Right-angled versions can be supplied with colour code snap on insulator. Swaging tools available on request. Custom Designs available on request



## Connector Pins, Polygon Pins and Wire Wrap Terminals

A range of precision machined Pins for through board

**Connector pins** are used in conjunction with Cage Jack or Shorting Link Socket.

Can be used when inserting into various PCB materials such as FR4 and Ceramic.

**Wire Wrap Terminals** are either stamped or polygon machined.

**Mount** – Solder, Press-fit, Swaged & Crimp

**Versions** – Straight & Right Angled. Standard, Slotted, Turreted, Eyelet & Patch Cord form.

**Crimp AWG** – 16 AWG – 28 AWG

**Pin Diameter** – 0.41mm (0.016") to 2.54mm (0.100")

**Wire Wrap Styles** – 2 & 3 wrap lengths

### Board Thickness

Pins 0.79mm (0.031") - 3.96mm (0.156")  
Wire Wrap 1.59mm (0.062") - 4.76mm (0.187")

### Material

Brass or High performance Tellurium Copper

**Plating Options** – Gold - Tin

Connector Pins also designed in Patch Cord style. Comprehensive range of insertion tools specific to the Terminal mount.



## Spring Loaded Contacts and Connectors

A range of discreet, and assembled Spring Loaded Contact's offering low contact resistance, high reliability, and up to 1 million cycles.

**Mount** – Solder, SM, and press fit

**Versions** – Slotted, solder bucket, socket, and pin

### Material

Body Brass  
Plunger Brass  
Spring Stainless Steel  
Insulator High temperature plastic, UL 94V-0

**Plating** – Gold

**Operating Temperature Range** –  
-40°C to +125°C

**Dual in-line connector available**  
4 through 20 way.

For custom design please consult factory.



## Shorting Links - Also known as Handbags or Jumpers

**Type** – Male & Female

**Styles** – Insulated & Non Insulated

**Pitch** – 2.54mm (0.100") to 12.7mm (0.500")

### Colours

Red, Blue & Black as standard other colours available on request

### Material

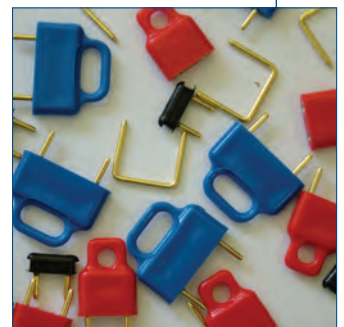
Link Brass  
Insulator Polypropylene  
Female Spring Beryllium Copper  
Female Body Copper

### Plating Options

Gold - Tin - Tin/Gold

### Test Point

A 6.35mm (0.250") Shorting Test Point available in various colours to allow in-line testing without the removal of the existing component.



# electro mechanical

## Solder Terminals

A range of Terminals specific to the desired method of soldering.

**Mount** – Solder, Press-fit & Swaged

**Versions** – Slotted, Turreted & Threaded.

**Board Thickness**

0.79mm (0.031") – 3.18mm (0.125")

**Material**

Brass & Phosphor Bronze

**Plating Options**

Silver  
Gold  
ElectroTin  
Electro Solder

Comprehensive range of insertion tools specific to the Terminal mount



## Insulated Terminals

A range of Insulated Terminals in the stand off or feed-through style.

**Versions** – Slotted, Turreted & Threaded

**Insulator Material**

PTFE (Teflon)  
Diallyl Phthalate  
Ceramic  
Tufnol

**Terminal Material**

Brass

**Plating Options**

Silver  
Gold  
ElectroTin  
Electro Solder

Comprehensive range of insertion tools specific to the Terminal type.



## Connectaball - PCB test points

A Quick and simple means of termination for PCB test points. Machined for high performance and reliability with eight points of contact on engagement. Unhindered movement of the assembly within a solid angle of 90° about the axis of the test point, beyond which the assembly disengages automatically.

**Mount** – Surface Mount, Press-fit, Swaged & Edge Mount

**Type** – Ball & Socket Wire Assembly

**Electrical** – Working Current – 3 Amps Max.  
Contact Resistance – 5mΩ

**Mechanical** – Engaging force – 60N  
Pull off force – 4.9N

**Material** – Ball & Socket – Brass Socket Insulator – PTFE

Socket Wire – 19\*0.2, silver-plated copper, Teflon insulated or 28\*0.15, tinned copper, PVC insulated. Supplied in standard length of 457mm (18.00"), other length made to order.

**Plating Options** – Silver – Gold – Electro Tin

**Colours** – Red, Blue & Black as standard other colours available on request



## Relay Bases

Available as 8 and 11 way, with, and without mounting ears, to suit Leach Relay types M300 and M500. Other versions available on request

**Materials**

Insulator – High temperature plastic, UL 94V-0, suitable for vapor phase, infrared and wave soldering

Contacts – Brass, Gold plated

Clips – Beryllium Copper, Gold plated

**Operating Temperature Range**

-40°C to +125°C

**Current** – upto 25A



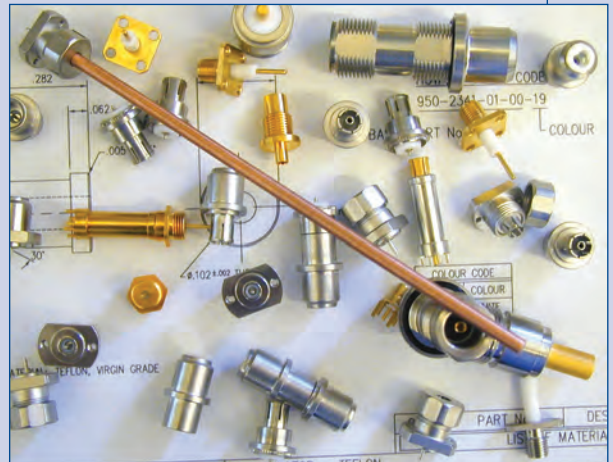
# electro mechanical

## RF Connectors

Recent major investment in 'state of art' CNC machining centres and contact less measurement systems, has allowed Cambion® to compliment its range of high performance connectors and inductive products, with RF Connectors. Specialising in manufacture of custom variants of industry standards.

Cambion® can offer a unique development facility of precision turning and prototyping of application specials in styles such N type, 7/16, SMA, SMB, SSMB, MCX, Din 41626 and many more, incorporating blind mates, quick termination with minimal outlay.

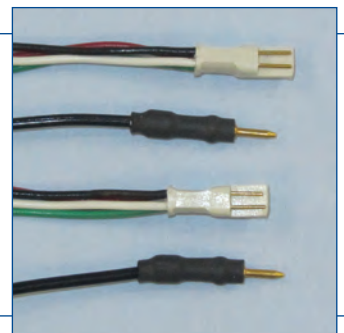
Also available are custom converters and adaptors theoretically between any standard range of RF Connectors. Contact our Technical Sales Desk on + 44 (0)1433 621555 or send enquiry via email to [sales@cambion.com](mailto:sales@cambion.com)



## Custom Connectors and Cable Assembly

Cambion® are able to assist with Electro-Mechanical component design, either hybrid versions of standard products, or to an application specific requirement, supported with fast turnaround of prototypes via its UK manufacturing facility.

Additionally, Cambion® can offer full project management of connector and cable harness developments.



## Battery Holders / Adaptor Boards / Component Clips / Hardware

### Battery Holders

A range of Battery Holders to accept a range of industry standard batteries.

**Styles** – AA, C, D & PP3

**Mount** – Screw & Through Board Solder

**Material**

Body & Clip – Polyester

Spring/Solder Lug – Phosphor Bronze

**Plating** (Spring/Lug) – Tin

Battery Clip Supplied loose with assembly

### Socket Adaptor Boards

A range of socket adaptors which allow for swift conversion of standard IC sockets to accept axial leaded components.

**Number of Ways** – 6, 8, 14, 16, 24, 40

**Material**

Pin – Phosphor Bronze

Board – FR4

**Plating Options** Gold – Tin

**Custom designs available on request**

### Component Clips

Consist of a metal housing and a spring-loaded plunger which, when depressed opens to accept a component lead. Mainly used for testing and burn in components.

**Mount** – Thread (2-56 & 3-48), Swage, Press-fit, Pluggable

**Version** – Insulated & Non-Insulated, Capped Plunger.

**Material** Housing & Plunger – Brass.

Spring – Cres. Steel, Passivated

Insulator – PTFE (Teflon)

Plunger Cap – Nylon

**Plating Options** – Nickel – Electro Solder

### Stand Offs & Spacers

A range of stand-offs and spacer in both round and hex forms.

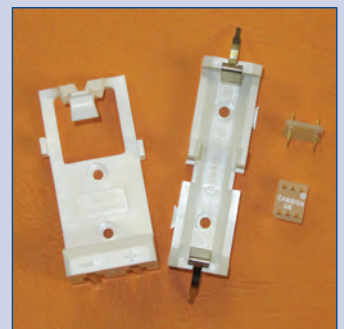
**Lengths** 4mm (0.157") to 25.4mm (1.000")

**Versions** – Through hole or Threaded.

**Tapped** Imperial 2-56 to 6-32 / Metric M2 to M4

**Material Options** Brass – Stainless Steel – Aluminium

**Plating Options** Nickel – Cadmium



# Inductive products

## Filtered Terminals

**Capacitance** – E12 range from 150pF to 2200pF

**Capacitance Tolerance** –  $\pm 20\%$ ,  $\pm 10\%$  and  $\pm 5\%$

**Working Voltage** – over 500V DC

**Working current** – upto 20 Amps

**Plating** – include gold, silver and tin

**Mounting** – Thread, solder and swaged

Additional elements such as inductors can be included within the package to form Pi filters



## Air Coils

**Types** – with or without ferrite, Iron powder and steel cores

**Diameter** – 1mm to 40mm

**Turns** – up to 100

**Wire size** – 0.1mm to 5mm

**Wire type** – silver plated, tinned, enamel coated copper and aluminium

**Applications include** – power supplies, noise suppression, RF filters



## Variable Coils

**Inductance** – 50nH to over 100mH

**"Q"** – greater than 200

**Frequency range** – from below 1KHz to over 500MHz

**Styles** – Open and magnetically shielded versions

**Pattern size** – 5, 7 and 10mm others to order

**Mounting** – through hole and surface mount

**Applications Include** – filters, if transformer, communications systems, telemetry



## Chokes

**Inductance** – 22nH to over 100mH

**Current** – greater than 4A

**DCR** – less than 10m $\Omega$

**"Q"** – greater than 100

**Tolerance** – 5% and 10% available others to special order

**Case type** – open, shrink sleeve, epoxy and moulded

**Packaging** – loose, ammo pack or tape and reel

**Applications include** – communications equipment, RFID, filter networks



## Toroids

**Outside Diameter** – 1.5mm to 175mm

**Core material** – strip steel, amorphous, iron powder and ferrite

**Wire size** – 0.05mm to over 3mm

**Mounting** – self-leaded, surface mount, open frame, potted

**Applications include** – dc-dc converters, common mode and differential mode filter, RF mixer, baluns, current sensors, audio systems



# Inductive products

## Wire Wound Chip

**Footprint** – 0402, 0603, 0805, 1008 and 1812

**Inductance** – 1nH to 1mH

**Current** – up to 1.3A

**Tolerance** – 2%, 5%, 10% and 20%

**Core materials** – ceramic and ferrite

**Applications Include** – communication systems, cellular telephones, filter networks, telemetry



## Drum Cores

**Inductance** – 3.3 $\mu$ H to over 250mH

**Current** – up to 30A

**Tolerance** – 5%, 10% and 20%

**Packaging** – loose or tape and reel

**Covering** – heat shrink or ferrite sleeved versions available

**Mounting** – through hole and surface mount

**Application include** – power supplies, class D amplifiers and speaker crossovers



## RFID

**Inductance** – 250nH to 23.8mH

**Tolerance** – 2%, 5% and 10% others to order

**Core types** – air core, ceramic, phenolic, ferrite and iron powder

**Packaging** – loose or tape and reel

**Applications include** – various frequency segments including 60KHz, 125KHz, 134KHz, 8.3MHz, 13.56MHz, 432MHz and 915MHz



## Transformers

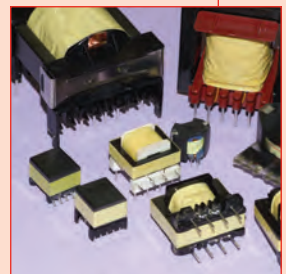
**Types** – linear and switching

**Core material** – laminated steel, laminated nickel, iron powder and ferrite

**Power rating** – from 0.2VA to over 500VA

**Styles** – through hole and surface mount, open frame, potted, planar and traditional winding methods

**Applications include** – dc-dc converter, ac-dc or dc-ac power supplies, impedance matching



## Custom

All of the products listed can be tailored to customer requirements.

Our in house tooling and moulding facility can provide fast turnaround together with competitive pricing.

Cambion® are able to take your project from concept through prototype to low cost, high volume production with industry recognised standards.





full line catalogue



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