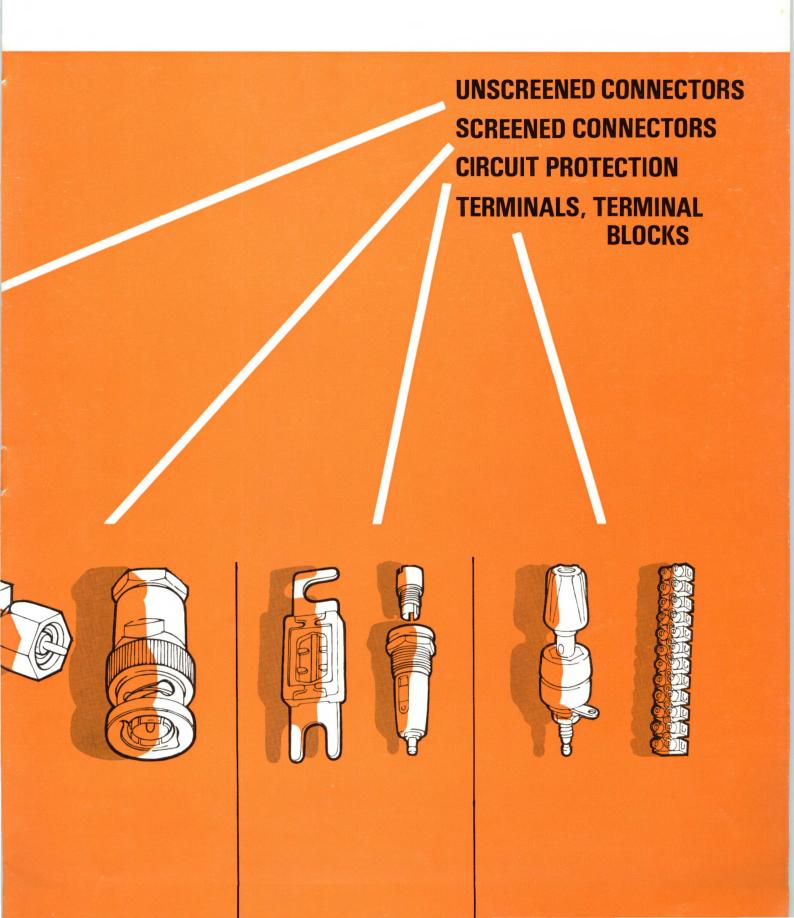
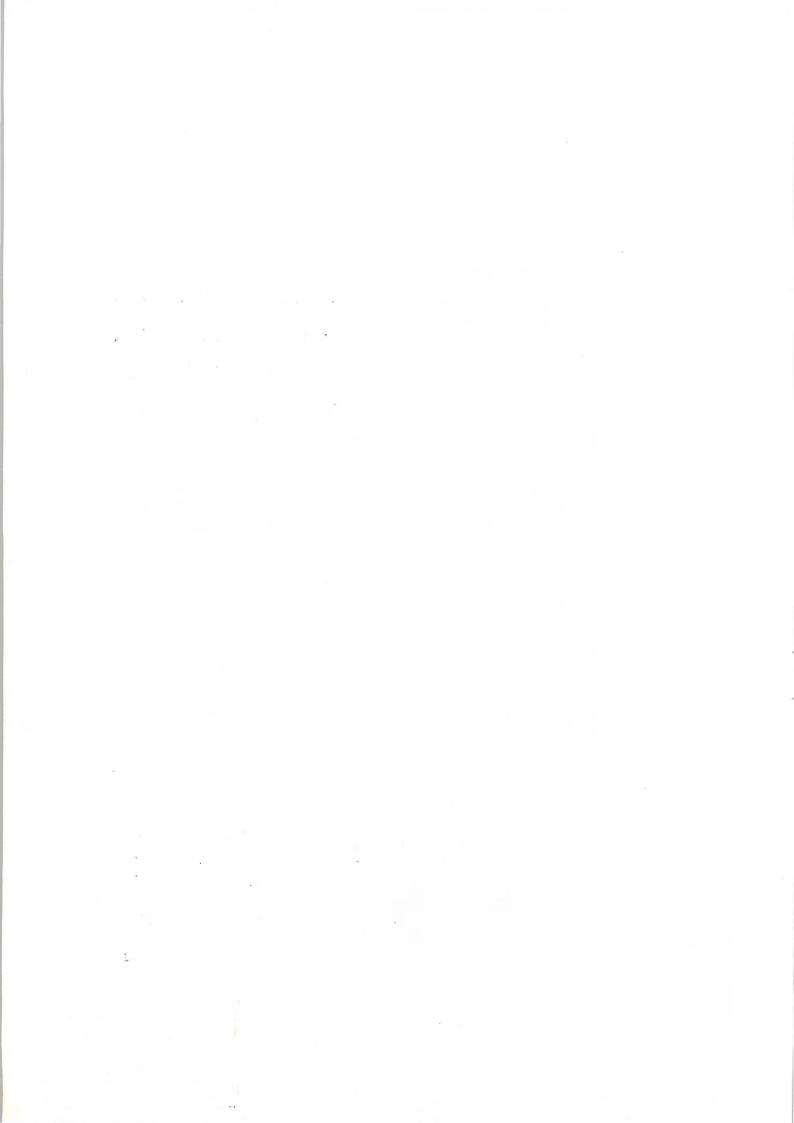
## BELLING-LEE GOMPONTATIS





### BELLING & LEE LIMITED

### ELECTRONIC COMPONENT DIVISION GREAT CAMBRIDGE ROAD, ENFIELD, MIDDLESEX, ENGLAND

TELEPHONE: 01-363 5393 TELEX: 263265 CABLES: RADIOBEL ENFIELD

### INTRODUCTION

This is a reference catalogue, providing basic information and specifications on many of our items. Full details, including dimensioned line drawings, panel cut outs and quantity price lists are available on application.

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### **UNSCREENED PLUGS AND SOCKETS**

### SINGLE POLE CONNECTORS

The 'O-Z' multiple contact plugs. Devised for a particularly low resistance, heavy current contact, the 'O-Z' principle of plug design is now firmly established as a method of ensuring a multi-point contact which will not jump out under vibration. Millions of plugs employing this principle are now in service. 'O-Z' plug pins feature a phosphorbronze spring leaf welded into the split stem ensuring that the contact resistance is virtually unaffected when used with wide tolerance sockets.

The mating length of the pin in the standard L series is 0.5'' (12,7 mm); in the E type connectors, the pin length is 20 mm, as commonly used on the continent.

### PLUG PINS ALL WITH SOLDER TAG & NUTS

L513 3 mm, 10A. L514 4 mm, 10A. L515 5 mm, 15A, with integral solder spill.

Temperature rise < 10°C.

The range of single pole insulated connectors, with plugs embodying the 'O-Z' contact design, has been extended to include all the items listed below combining improved performance and versatility with modern styling and maximum economy. Contacts are silverplated.

The 4 mm, plugs and stacking plugs mate with the top socket in Terminals L1499, L1850, L1855, L1361 and L1568, and continental sockets.

Colour range: Black ,blue, green, red, white, yellow; other colours to order.

Temperature range: from -55° to +85°C. Current rating: 10A. Temperature rise < 10°C. Contact resistance: 2 milliohms max.



# Actual Size

### **FREE PLUGS**

Insulated, with dry or soldered connection. L378A/3 (3 mm). L378A/4 (4 mm).

Wire diameter overall, 0.156 in (4 mm): conductors, 0.104 in (2,6 mm) diam. With Crimp or Solder connection. L1716 4 mm E6012 a new miniature version with snap-on PVC cover that recesses into the head of L1499 and L1568 terminals ensuring that the plug pin is fully shrouded and is not ejected when the terminal is unscrewed.

Crimp or solder connection.

Wire sizes: Conductors 70/.0076 in (0,1 mm) overall, 0.156 in (4,0 mm). With collet grip connection.

L1649 4 mm E6019 This new standard size plug has a collet which is closed and gripped around the conductor by screwing on the polypropylene cap. No tools required, easily re-wired.

Wire sizes: from 23 to 110/.0076 in (/0,19 mm) O.D. 0.175 in (4,5 mm).

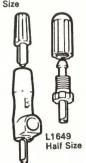
Stacking Plugs:

Side entry cable, grub screw retained. L1706 Twin 4 mm L1708 Single 4 mm E6016 Twin 4 mm E6015 Single 4 mm These permit rapid additions to a circuit





Half Size L1716 Half Size



L1708 Half Size

without disturbing existing connections and any number can be plugged together.

The twin version has 0.750 in centres (19,1 mm), to mate with 1568/61S. Wire sizes: Conductors 110/-0076 in (-/0,19 mm) O.D. 0·120" (3 mm)

FIXED SOCKETS

With Square Flange L1718, E6014 4 mm with round flange L1717, E6013 4 mm



L1706 Half Size

### HIGH TENSION 'O-Z' PLUG

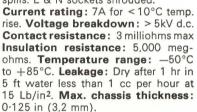
These quick attachment connectors are suitable for electronic and other medium H.T. appliances using standard high tension wire up to 0.359 in (9,1 mm) diam. Screw-in socket contact is spiked to make contact with and retain wire. Breakdown voltage: > 10KV d.c.

L623/P Fixed plug with spring retainer L623/S Free socket



#### SEALED, THREE POLE O-Z' CONTACT

This range of waterproof plugs and sockets, panel sealed, is ideal for many applications where dampness and rough treatment are normal - e.g., outdoor public address equipment, caravan or trailer connections, etc. Phenolic body mouldings, with cable grip in free members, oil resistant, rubber shrouds, contacts silver-plated, tinned solder spills. L & N sockets shrouded.



L1349/FP Free plug, straight entry. L1349/RP Free plug, right-angle entry. L1349/FS Free socket, straight entry. L1349/RS Free socket, right-angle entry.

L1349/CP Fixed plug. L1349/CS Fixed socket.



L1349/RS Half Size



L1349/FP Half Size



L1349/CS Half Size

### MULTI-POLE 'O-Z' **PLUGS AND SOCKETS**

This robust series is suitable for rackbuilt equipment, for power pack to chassis, and amplifier to receiver connections.

A locating key ensures correct insertion, and until it is correctly positioned none of the pins can make contact.

Current rating: 5 amp per pole. Temperature range:  $-40^{\circ}$  to  $+85^{\circ}$ C. Contact resistance: 1 Milliohm. Max. Finish: Metal parts silver-plated, solder spills tinned.

	Free plug	Fixed socket
5 – Pole 7 – Pole	L1258 L 530	L331 L726
10 - Pole	L1244	L332



11259 Half Size



L726 Half Size

### MINIATURE SINGLE POLE

These diminutive connectors, about the thickness of a diary pencil, and weighing less than 0,85 grammes, meet all requirements of designers of modern miniature electronic equipment and instruments.

Current rating: 5A. Contact resistance: <3.5 milliohms.

Insulation resistance: > 10<sup>8</sup> megohms. Colours: Black, blue, green, red, white, yellow, all from moulded low-loss plastics, combining robustness with easy loading.

L1526/colour: Fixed socket, self-supporting, printed circuit.

L1527/Au or Ag/colour: Stacking plug, side entry for wires of maximum diameter, 0.035 in (0,89 mm).

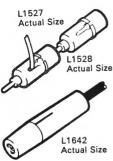
L1528/Au or Ag/colour: Free plug, and entry for wire or maximum diameter 076 in (1,9 mm) maximum conductor size 0.06 in (1,5 mm) diameter. L1529/Au or Ag/colour: Fixed socket. L1530/colour: Fixed socket, printed circuit.

**L1531/colour:** Fixed socket, rightangle, printed circuit.

**L1569/colour:** Fixed socket, right-angle, tag and mounting stirrup, printed circuit.

**L1642/Au or Ag/colour:** Free socket, end entry for wire of maximum overhaul diameter 0.095 in (2,4 mm).

\*Au indicates gold-plated finish (normally standard unless indicated otherwise). Ag indicates silver-plated finish.











L733/S Half Size

2-POLE PLUGS AND SOCKETS LOW VOLTAGE

A low price, quick-loading range of connectors for television twin feeders, extension speakers, etc. Connections to free members, may be crimped or soldered to the contacts, and the "butterfly" mouldings is snap fastening. L733/J Free socket.

L733/P Half Size

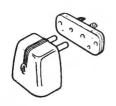
L733/S Fixed Socket.

### RADIO PLUG AND SOCKET

Designed for radio aerial applications, this plug and socket is non-reversible, having one large and one small pole; it is therefore, useful for phased extension speaker connections. The plug is also used with L1482 flush mounting television outlet.

**L1495/P** Free Plug, side entry cable clamp.

L1495/S Fixed socket.



L1495/S

Half Size

L1495 Half Size

### **3-POLE PLUGS AND SOCKETS**

This 3-pole miniature power connector, is suitable for many radio, television and equipment applications. All poles are fully shrouded. **Maximum rating:** 2.6A (temperature rise <10°C) at 250V a.c. **Maximum cable diameter:** 0.24 in (6,1 mm). **Material:** Brass pins, beryllium-copper sockets, silver-plated. Plug body, low-loss plastic. Socket, phenolic resin.

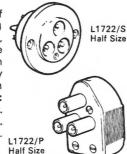
L1436/P Free Plug. L1436/S Free Socket.



#### **POWER CONNECTOR**

This connector is a larger version of L1436. The plug cover fixing screws fit into metal threaded inserts, and the shallow depth socket can be mounted on the front or rear of an equipment panel. All poles fully shrouded; nickel-plated contacts; high insulation resistance. Cable size: 0.375 in (9.5 mm) maximum diameter. Breakdown voltage: >9kV d.c. Maximum rating: 9A at 250 V a.c. (temperature rise <10°C).

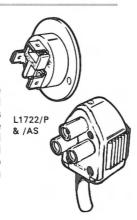
L1722/P Free Plug. L1722/S Fixed Socket.



### \*3 PIN POWER CONNECTOR L1722/P & /AS

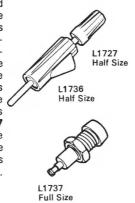
A new version of this popular 3 pole mains supply connector with a panel mounted socket with solder or solderless snap on connector for easywiring. The plug and socket contacts are shrouded and the plug which has screw terminal connections and a positive cable clamp is moulded in high impact strength plastic.

Current rating: 9 amp AC



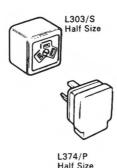
### 2 MM RANGE

The L1727 2mm free plug, which is end loaded, and the L1736, with a side cable-entry inclined at 30° to the axis and a top socket which permits stacking, combine simple robust construction, and are easy to load. They have snap-on moulded covers which are available with a choice of six colours to match the miniature terminal type L1726 (page 10) and accept conductors of the same size (1,9mm). The L1737 chassis socket is available in the same six covers. The component is suitable for panels 0.84 to 4.75 mm thickness and mounts in a 6.22 mm diam. hole, being keyed to prevent rotation.



### 3-POLE FLAT CONTACT PLUGS AND SOCKETS

Useful connectors for radio relay outlets extension speakers, etc. This design, which prevents accidental connection of apparatus to the power supplies, was accepted as a standard by the International Electro Technical Commission. It is intended for use in circuits where the peak power does not exceed 50 watts. Current rating: 5A. Breakdown voltage: 4kV d.c. Colour: Brown. Finish: Nickel-plated contacts. L303/S Fixed socket, surface mounting. L374 Free Plug.



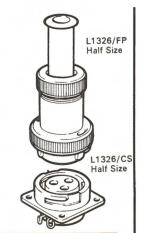
### UNSCREENED PLUGS AND SOCKETS

#### 3-POLE METAL CLAD, SPLASH PROOF

Designed for shipboard use with signal lamps, etc., positive bayonet locking mechanism prevents accidently uncoupling. Current rating: 15A for temperature rise of 30°C. Insulation resistance: >10<sup>s</sup> megohms. Breakdown voltage: >3kV d.c. Finish: Alloy housing, black anodised. Contacts: electro-tinned. Contact resistance: 4 milliohms maximum.

L1326/FP Free plug, end cable entry, size 0.315 in (8,0 mm) diameter. Maximum conductors 0.075 in (19 mm) diameter.

L1326/CS Fixed socket. L764/C/A Protective dust cover.



### STANDARD UNITORS

Pattern 102.

These unitors are the result of a Government development contract and have full joint service and A.R.B. approval. Their main purpose is to permit uncoupling of a sub-assembly for servicing or replacement.

They can also be used with the cable outlets and retainers described below for cable-to-chassis or cable-to-cable coupling. In the latter case, owing to the 45° cable entry, a direct pull on the cable will not cause accidental disengagement even when the stirrup is

Specification: DEF. 5321.

Current rating: Small poles, 3A each; Large poles, 10A each. Temperature rise < 20°C. Breakdown voltage: 3kV (sea-level); 1.4kV (60,000 feet). Contact resistance: (Max.) 2 milliohms (small poles). 1.2 milliohms (large). Insulation resistance: Greater than 150 megohms. Temperature range:  $-40^{\circ}$  to  $+100^{\circ}$ C. Humidity: Class H, . Max. wire size: Small poles, 19 s.w.g. Large poles, 16 s.w.g. Finish: Silver-plated pins; clean sockets, beryllium-copper; tin-dipped solder spills.





L653/P Half Size

L1328/S Half Size



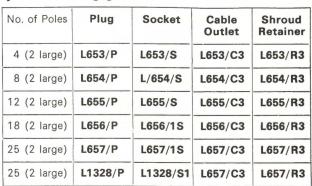


L1328/P Half Size

### UNITOR CABLE OUTLETS AND SHROUD RETAINERS

The range of die-cast covers and retainers to accommodate all standard Unitor plugs and sockets is listed in the L653/R3 Half Size table. A built-in polarising key is pro- L653/C3 vided, and the cable clamp accepts bunched wire or multi-core cables. The unitors are also polarised, making four different arrangements possible in each size. Earthing tags are fitted in the covers for screened cables.

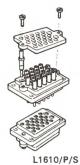




### \*CRIMP/SOLDER REMOVABLE **CONTACT UNITORS** 12 WAY 18 WAY 25 WAY

New additions to the Belling-Lee high reliability fixed contact unitors offer removable contacts for pre-crimping or soldering. After assembly the contacts are positively retained in the body mouldings but may be individually removed for rewiring by the withdrawal of a single plastic clip.

Available in 12, 18 and 25 way versions with a range of cast aluminium covers and retainers.



Quarter size

### MINIATURE UNITORS AND ACCESSORIES

#### 4+4 Pole 8 Pole 12 Pole

These items in the range give three possible pin or socket arrangements, each connector having a central earthing pin/polarising key.

Current rating: Small Poles: 9A Large Poles: 10A. Temperature rise: <10°C. Breakdown voltage: L1390/P > 2kV d.c.

2-Pole High Voltage.

The insulation is araldite GL.125, which gives this component a higher working temperature than the rest of the range. The working voltage is also higher and both poles are fully shrouded on the mating faces.

Current rating: 10A. Temp. rise < 10°C. Breakdown Voltage: > 10kV d.c.

Twin Coaxial can be used with cable having an outside diameter of 0.18 in (4.5 mm) and enables r.f. and pulse signals to be taken in or out of a plug-in unit.

Impedance: 50 ohms.

Breakdown Voltage: > 4 kV d.c.

L1388/P



L1388/S Half Size





L1390/S Half Size

L1580/P Half Size



11580/S

Dicakactin voitage	Cukaowii voitagoi - 4 kv aio.		
No. of Poles	Plug	Socket	
4-small 4-large	L1387/P/Ag	L1387/S/Ag	
8-small	L1388/P/Ag	L1388/S/Ag	
12-small	L1389/P/Ag	L1389/S/Ag	
2-H.V	L1390/P/Ag	L1390/S/Ag	
Twin Coaxial	L1580/P/Ag	L1580/S/Ag	

<sup>\*</sup> Ag silver-plated standard finish. Au gold-plated to order.

L1470/S Half Size



### SHROUDS

These aluminium shrouds can be used mounting 1, 2 or 3 units of a miniature unitor on plug-in unit, and equipment racks. Many thousands of non-interchangeable variations are possible.



Shrouds	Flush Mounting	Surface Mounting
For 1 unitor	L1470/F	L1470/S
For 2 unitors	L1471/F	L1471/S
For 3 unitors	L1472/F	L1472/S

### MINIATURE UNITOR, CABLE OUTLET AND RETAINER

The moulded cable outlet accommodates any member of the miniature unitor range, plug or socket, committing cable connection to the appropriate fixed units. Cable entry 0.375 in  $\times 0.250$  in  $(9.5 \times 6.4$  mm). The retainer is intended for use with flush mounting shroud. **L1470/F**, and is secured between the flange of the shroud and the panel, using common fixing screws. **L1588/C** Cable outlets. **L1588/R** Retainer.



### **COAXIAL SHORTING LINK**

This coaxial shorting link is designed to plug into the socket member, **L1580/S**, of our miniature unitor range, 50 ohms nominal impedance. Alternatively, a pair of miniature coaxial sockets, **L1465/A/CS**, may be used spaced on 0.625 in (15,9 mm) centre.



L1570/Au Gold-plated. L1570/Ag Silver-plated.

### PRINTED CIRCUIT EDGE CONNECTORS

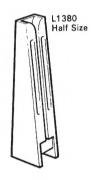
This range of P.C. edge connectors enables printed circuit boards to be easily removed from the equipment, but ensures that when the boards are inserted, reliable electrical contact is made in the various circuits. Domed beryllium-copper contacts of unique design, carefully heat treated, ensure gentle and consistent connection with minimum wear and low resistance.

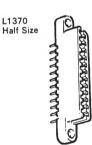
Positioning of the PC. board in relation to individual contacts is controlled by a polarising Block (**L1381**) and not by the supports.

They are normally supplied gold-plated (silver-plated also available) and give reliable performance over more than 25,000 insertions and withdrawals. A most important attribute in connectors of this kind. The connecting ends are of tubular section, of small bore for dip soldering, and terminates in a semicircular spill to accommodate "free" wiring. The contacts are easily removable from the moulding, e.g., to make room for the polarising block, L1381 as shown below.

The moulded bodies are made in two basic types, with contact spacings on 0·1 in (2.5 mm) and 0·15 in (3.8 mm) centres, respectively. The standard lengths supplied are listed below. The mouldings are open-ends and there is thus no limit to the width of board there will accept; also; connectors can be mounted end-to-end in suitable multiples for use with very wide boards carrying large numbers of contacts.

Moulded supports (L1380) are available to control board location, and facilitate blind insertion. These may either be mounted on the same fixing as the connectors, or stood off to accommodate wider boards. Current rating: 3A per contact (plate wiring).







4A per contact (free wiring). Temperature rise: < 10°C. Contact resistance: Au, 5 milliohms; Ag, 7 milliohms maximum. Insulation resistance: >10° megohms. Board thickness: 0.057 to 0.068 in (1,45 to 1,73 mm). Panel thickness: 0.125 in (3 mm) maximum. Breakdown voltage: > 2kV d.c. Temperature range: —40°C to +100°C.

**L1355/Au** or **Ag** 8-pole, 0·1 in module **L1486/Au** or **Ag** 32-pole, 0·1 in module **L1369/Au** or **Ag** 8-pole, 0·15 in module **L1370/Au** or **Ag** 12-pole, 0·15 in module

**L1372/Au** or **Ag** 18-pole, 0·15 in module

**L1740/Au** or **Ag** 24-pole, 0·15 in module.

L1741/Au or Ag 34-pole, 0.15 in module.

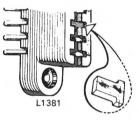
**L1380** Support for printed circuit panels.

L1381 Polarising block.

 $\mathbf{Au} - \mathbf{Gold}$ -plated.  $\mathbf{Ag} - \mathbf{Silver}$ -plated

Positioning of a P.C. board in relation to individual contacts is controlled by a polarising block (L1381) and not by support.





### CONNECTORS FOR RIBBON CABLES

The connector plugs are of unique design, which avoids the need of soldering, welding or crimping, and therefore, greatly increase the inherent reliability of the wiring system. The connectors are easily loaded on to the cable, without the need of specially skilled labour, and then transparent cover greatly facilitates the final inspection of assembly. May also be used as a jumper connector without severing the cable.

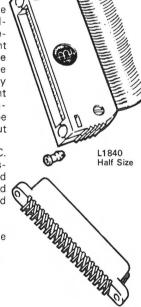
The connector socket is a standard P.C. edge connector from the range illustrated on the previous page, with plated beryllium copper contacts for board mounting and connection by standard wiring.

L1840/8/Colour\* L1840/12/Colour\* L1840/18/colour\*

0.15 in module

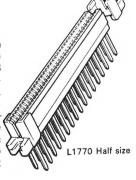
L1841/32/Colour\* 0.1 in module L1842A Nut retaining, 6 BA.

\*Natural, (transparent) or plack.



### \*PRINTED CIRCUIT EDGE CONNECTOR L1770/-0.1" & 0.2" SPACINGS

This connector offers the maximum choice of assembly with up to 35+35 contacts at 0·1" spacing or up to 18+18 contacts at 0·2" spacing and with contact terminations designed for soldering, flow soldering, wire wrapping or automatic wiring. The beryllium copper contacts, which are individually replaceable have a simple cantilever spring form and allow the maximum tolerances to be placed on board finger contact dimensioning.



#### \*MINIATURE LAMPHOLDER L1896

A miniature panel mounted lamp holder designed to take a variety of different types; pea-lamp bulbs (L.E.S.) selected according to voltage rating and filament life requirements. Bulb withdraws from front of panel by simply unscrewing lens. Alternative coloured polycarbonate moulded lenses available in Red, Blue, Green, Amber and Clear.





### SCREENED PLUGS AND SOCKETS

#### SUB-MINIATURE COAXIAL

In this well known range, with PTFE insulation (Polytetrafluorethylene) the plugs are suitable for use with subminiatured coaxial cable having a braid diameter of 0-067 in (1,7 mm) approximately, e.g., UR 94. Impedance: 50 ohms nominal. Temperature range: —55° to +200°C. Breakdown voltage: >750V d.c. Gold-plated body and centre contacts ensure a low resistance connection and prevent corrosion.

Silver-plated body also available to order, quote Ag as suffix in the place of Au.

Free Plugs.

**L1403/FP/Au** End entry, soldered braid connection.

**L1403/MFP/Au** With mechanical braid clamp.

L1403/RFP/Au Right-angle entry. Fixed Sockets.

L1403/CS/Au Bulkhead socket.

**L1403/BS/Au** Bulkhead adaptor (plugto-plug).

L1403/PCS/Au Printed circuit socket.





L1403/CS Actual Size



L1403/BS Actual Size



L1403/PCS Actual Size

### SUB-MINIATURE COAXIAL, PATTERN 17

This new range of connectors for instrumentation is suitable for cable UR 94, UR 95, UR 109 and UR 110 or similar of 50 ohm impedance (nominal) and unmatched UR 111.

Material: Brass body and contacts gold-plated.

Breakdown Voltage: >3 kV d.c.



L1565/S Actual Size



L1565/P Actual Size

	Screw-on Type	
Item	UR94/UR110	UR95/UR109— UR111 (Un- matched)
Plug	L1565/P/A	L1565/P/B
Socket (free)	L1565/S/A	L1565/S/B

### MINIATURE COAXIAL

Despite their small size, these connectors incorporate the best features of the Belling-Lee standard range (L734/P/AL and are extremely robust. The centre contact in the free members is removable for soldering. Ideal for use in modern electronic instruments, tape recorders, car radios, etc., they are designed for cables having an outside



L1465/FS Actual Size



L1465/FP Actual Size

diameter of up to 0.18 in (4,5 mm). Nominal impedance: 50 ohms. Breakdown voltage: > 2 kV d.c. Standard finish: Silver-plated centre contact, tin-nickel-plated body. Insulant: free members, polyethylene; fixed socket, polypropylene.

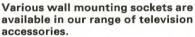
L1465/FP Free plug. L1465/FS Free socket. L1465A/CS Fixed socket:



### **COAXIAL CONNECTORS**

Standard (B.S.3041)

This range of plugs and sockets was designed to provide connectors for television aerial feeders, where the matching of the cable and plug/socket characteristics are not unduly critical, but it has also been found wide spread application in instrumentation. Nominal impedance: 60-70 ohms. V.S .-W.R.: less than 1.2:1 up to 250 MHz. Cable mounting members accept cables of 0.125 in to 0.312 in (3,2 to 7,9 mm) outside diameter, solid dielectric or semi-air spaced. The centre contacts are silver-plated with a thin dipped solder spill. A special collet clamp in free members grips the cable securely. eliminating strain on the conductor. Temp. range: -40°C to +70°C.



Free Plugs.

L734/P/AL With polished aluminium body.

L734/P/Ni Brass body, nickel-plated. L1329/Ni With removable centre contact for crimp or solder connections. L1556/colour Insulated free plug. Similar to L734/P/AL, but with resilient plastic shrouded body and cap, which are almost unbreakable, available in black, blue, green, red, white and Yellow.

Fixed sockets, surface mounting. L603/S Low-lose plastic insulated.

Available coloured, Black, blue, green, red, white and yellow. Cadmium-plated shell and circlip, silver-plated centre socket.

L604/S/Cd and L604/S/Ni. Cadmium or nickel-plated case; silver-plated centre socket. Low-lose plastic dielectric.

Fixed Socket. flush mounting. L734/S An alternative to L604/S/Cd cadmium-plated only.



734/P/AI Half Size



L1556 Half size



Half Size



L604/S Half Size

Panel Adaptor.

L617/Ni For coupling two coaxial plugs through a panel. Nickel-plated shell and mounting flange.

Free Sockets.

L734/J/AL With polished aluminium

L734/J/Ni Brass case, nickel-plated. Cable Adaptor.

L616/Cd A free coupling for two coaxial plugs. Cadmium-plated shell.

Printed Circuit Socket.

L1366. Socket suitable for dip soldering. These have "outer" fixing tags and one "inner" for connecting to the printed circuit.





11366 Half Size

### **BNC. CONNECTORS**

#### Pattern 15

In these improved connectors, first the braid is clamped between two metallic ferrules. Next, the cable is gripped by a compression gland made of silicone rubber, which is controlled by an internal threaded ring; this also prevents moisture from entering the cable. Finally, the cable gripped against a split-tapered collet which is tightened by; hexagonal nut. The strength of the resulting termination, approaches the cable breaking strain. Centre contact captive after assembly.

Nominal Impedance: 50 ohms.

V.S.W.R.: better than 1.2:1 up to 3,000 MHz. Temperature range: -55°C to +150°C. Breakdown voltage: > 3 kV d.c. Cables: Uniradio 43: 72: 76 or equivalent. Materials: Silver-plated contacts and body, silicone rubber cable seals. PTFE insulation. L1637/A Locking tool.

L1637/CS Bulkhead socket.

Panel socket (U.S.A. L1637/CSS UG447/U).

L1637/J Bulkhead jack.

L1637/JS Panel jack.

L1637/FP Free plug (U.S.A. UG88/U). L1637/FS Jack (U.S.A. UG89/U).

L1352/C Protective cover for fixed sockets and jacks.



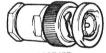
L1637/FF



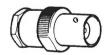
L1637/FS Half Size



L1637/CS Half Size



L1637/FP Half Size



L1637/FS

### DOUBLE COAXIAL CONNECTORS

### Pattern 22.

These new connectors have two independent screens concentrically disposed around the inner conductor. They will accept UR54 or equivalent cable. Alternatively, versions can be produced to order, to accept cables UR90 and UR111. **PTFE insulation:** PVC cable sleeve. Nominal impedance: 50 ohms. Breakdown voltage: > 2 kV d.c. Temperature range: -55°C to +70°C.

Humidity: H5. Finish: Silver-plated body and connections. They will mate with Pattern 15 BNC connectors, which is appropriated in Application 2 (above).



Half Size

L1646/FS

\*Available Late 1968

### APPLICATION

1. In sensitive apparatus where a direct current return path, separate from the screen, is necessary in order to avoid random circulating currents and common earth returns

2. In circuits that require low value of shunt capacitance.

L1647/50/FP/UR54 Free plug. L1647/50/FS/UR54 Jack L1647/50/J/UR54 Bulkhead iack. L1647/50/JS/UR54 Bulkhead jack. L1647/50/CS Bulkhead socket. L1647/50/CSS Panel socket.



### \*SEALED B.N.C. CONNECTOR L1747/FP/FS/J

These coaxial connectors have interface and cable clamp sealing and are designed to meet British Pattern 16 specification requirements. They are intermateable with all unsealed type of BNC connectors





Half Size

### \*2 PIN SHIELDED CONNECTOR L1752/FP/FS

2 Pole Shielded Connector L1752/FP & /FS. This polarised two pole shielded connector is housed in a silver-plated brass BNC type shell and is available for standard Duradio '68. Cable fittings for other miniature twin shielded cables are available on request.



L1752 /FP & /FS

### **FUSE BOXES**

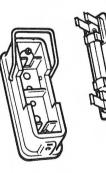
### SAFETY FUSE BOXES

Rating: 10A†. Breakdown voltage: (d.c.) > 4 kV.

L1033/C4 2-pole for rear or end entry wiring.

L1291 semi-recessed version of above, rear wiring only.

L1045/C3 single pole version of L1033/C4.



L1045/C3 Half Size

### PANEL SEALED FUSE BOXES

Rating: >7A†. Breakdown voltage (d.c.): >7 kV.

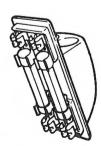
\*L670 Spec. DEF 64, Single pole, rear-of-panel.

\*L672 Double pole version of above. L676 Similar to L672, but with provision for fitting neon lamps to indicate when fuselinks are intact.

Lamps: G.E.C. type 9 or Hivac type 7L.

Qualification approved.

Temperature rise not greater than 40°C.



L676 Half Size

### FUSE-LINKS AND FUSEHOLDERS

### QUICK ACTION, LIGHT DUTY

The prospective current overload should not exceed ten times the fuse-link rating. The voltage rating varies inversely with the current rating, being governed by the intensity of the arc which they can handle. Thus, up to 150 mA rating, the maximum circuit voltage can be as 1000 V, reducing to 32 V d.c., 250 V a.c. at 3A and even lower a.c. values beyond this.

L562/rating Miniature Size 00 L1055/rating Standard Size 0

These two types have a minimum life of 1,000 hours at rated current, at 20°C.



L562 Half Size



L1055 Half Size

### **CURRENT LIMITERS**

L1330 'Airfuse'

Primarily developed for use in aircraft d.c. circuits (28V), these self-contained fuses have many other applications, e.g., on battery-driven vehicles, heavy current rectifiers, low voltage furnaces, etc. A.R.B. Approved.

Ratings: 35, 50, 80, 100, 130, 150, 200, 225, 275, 325, 500 A.

Maximum prospective overload: 35A rating 2500 A, remainder 3,000 A at 30 V d.c.



#### **DELAYED ACTION, LIGHT DUTY**

L338/rating 'Mag-Nickel' Size 0 These fuselinks are able to withstand repeated surges of up to fifteen times their rated current for periods not exceeding 0.01 sec.



L338 Half Size

### QUICK ACTION, HEAVY DUTY

Fuselinks of this type can deal with the iarge prospective overloads associated with circuits including electrical machinery, etc.

L754/rating Miniature, Size 00 Maximum prospective overloads: 4,000 V at 250 V a.c., 0.4 pF. Qualification approved (ratings 250 mA and over). L754/rating 'Minifuse' Size 00

This range has been extended downwards for instrument protection, etc., in ratings: 10, 15 and 25 mA.

L693/rating Standard Size 0 Qualification approved: Maximum prospective overload: 33,000 A at 440 V a.c.

L760/rating Low rating, Size 0. Similar in construction to L693 type, but unfilled, these fuselinks fall in the Heavy Duty class due to the small material content of the element, and extend the range of ratings down to 60 mA. They meet the requirements of category of duty AC2 i.e., 4000 A at 250 V, 0.4 power factor, and are qualification approved.



1754 Half Size



L693 Half Size



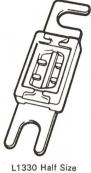
L760 Half Size

**SIZES 1 & 2** 

All with clamp type contacts for heavy duty fuselinks. Panel sealed.

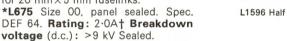
L1303 Size 1. with small lid, 15A† rating).

L1303, L1305 - 250 V d.c.



### **MINIATURE FUSEHOLDERS**

\*L575 Size 00, Spec. R.C.S. 262.1 Rating: 2.5A. Temp. rise: <55°C. Breakdown voltage (d.c.): >3.5 kV. L1596 Size 00. Rating: 7A† Breakdown voltage (d.c.): >4 kV E6011 Continental equivalent of L1596 for 20 mm × 5 mm fuselinks.





L1596 Half Size

### PANEL FUSEHOLDERS, SIZE 0

L1744 Bayonet locking. Rating: 30A for "fast-on" tags or solder connections Breakdown voltage (d.c.: >4 kV. L1341 Bayonet locking. A quick release fuseholder for use in aircraft, etc. Rating: 15A†

L1341/H As above but with test prod. hole

L1382 Spec. DEF 64. A robust, panel sealed fuseholder for Services use. L1382/H With test prod. hole in lid. Rating: 7A† Breakdown voltage (d.c.): >10 kV.



### PANEL FUSEHOLDERS,

L1302 Size 1. with large lid, 15A†

L1304 Size 2. with large lid, 30A† L1305 Size 2, with small lid, 30A† Maximum working volts (Services

L1302, L1304 - 440 V a.c.



### \*20 x 5 MM FUSE LINKS L1427 RATING

Designed to IEC specification 127 standard sheet  $\Pi$ . A low breaking capacity (35 amp) quick acting glass fuse link. Nine ratings from 1 to 6.3 amps.



L1427

Half Size

### \*INDICATING FUSEHOLDER L1848

Designed for  $1\frac{1}{4}$ " x  $\frac{1}{4}$ ", 0,3AG, and Standard.Sheet 1V fuse links, it provides lamp indication that a circuit is live or alternatively that a fault condition exists. The lamp is connected across the fuse or alternatively across the circuit load. Termination by soldering or solderless snap on connection. Application to

90-125 volt supply (27 kohms Resistor)

200–250 volt supply (100 kohms Resistor)

Also available for low voltage circuits.



### \*SIZE O FREE IN LINE FUSEHOLDER L1745

Simply and economically wired into supply lead, it accommodates  $1\frac{1}{4}'' \times \frac{1}{4}''$  fuse links. Fully insulated phenolic moulded body, circuit broken when cap is removed by simple push and twist operation.

Rating: 18 amps.



### SINGLE OPEN FUSEHOLDERS

**L1383** Size 00 for printed circuits, 0.1 in module. **Rating:** 2A† **Breakdown voltage** (d.c.) >3 kV. **L1426** Similar to L1383 but for Continental fuselinks  $20 \times 5$  mm.

\*L510 Size 0. Chassis mounting. Spec. R.C.S. 262 lss. 2. Rating: 7A† Breakdown voltage (d.c.) >10 kV.



- \* Qualification approved.
- † Temperature rise not greater than 40°C adjacent to terminals.

### **BI-METALLIC DEVICES**

### **DELAY SWITCHES**

**L413** delay switch, auto-resetting. **L415** delay switch, hand-resetting.

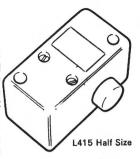
These useful switches find many applications in sequential process control where time delays of up to 60 seconds are required. For very fast operation, the heater power needed may be too great for continuous running, when an auxiliary contact should be specified for switching in a current limiting resistance. Maximum resetting time 120 seconds (L413).

As overload protection devices, these switches operate in 30-60 seconds at twice rated current.

Ratings: Indirectly heated types, 52-milliamps to 5-amps; directly heated types, 5-15-amps maximum.

Working Voltage: 250 V a.c. 50 V d.c. at 5-amps.

Maximum Heater Voltage: 48 volts.





#### **CRYSTAL OVEN THERMOSTAT**

**L1450** miniature thermostat (pre-set) for crystal ovens, etc.

Temperature Range: 45° to 130°C. Control: ±1° Centigrade.

Maximum Circuit Rating: 24 V



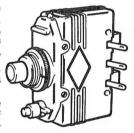
L1450 Full Size

### SECUREX MINIATURE CIRCUIT BREAKER

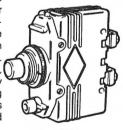
#### L5000 Series.

These robust precision devices combine the functions of circuit protection, switching, and indication of the state in a single compact unit. The speed of operation of overload, varies inversely as the magnitude of the over-current, with freedom from tripping by harmless surges.

Two basic types are available, one operating thermally by the deflection of a bi-metallic element, and the other thermal magnetically, i.e., thermally on over-currents up to 5-10 times the steady rating, and magnetically above this. The action is "trip-free" i.e., the mechanism cannot be re-set under fault conditions. Additional changeover contacts can be fitted for remote signalling, etc. - and the trip button can be omitted to permit use as a cutout. Nine standard ratings, 0.3, 0.5, 1, 2, 3, 5, 8, 10 and 15A, will hold indefinitely up to 1.1 times these values. Breaking capacity (maximum) is 300A for ratings up to 3A, and 500A for 5A ratings and over, both at 275V a.c., 0.8 power factor. Ir denotes maximum running current in amp.



L5 211 Half Size



L5100 Half Size

### Types Available:

List Number		Description
Thermal L5100/lr L5101/lr L5110/lr L5111/lr	Thermo- mag. L5200/Ir L5201/Ir L5210/Ir L5211/Ir	Cut-out (i.e. no "trip" button) Circuitbreaker (i.e. with "trip" button) Cut-out with signalling contacts Circuit breaker with signalling contacts

**Example:** L5211/5 is a thermal-magnetic circuit breaker fitted with "reset" button and auxiliary signalling contacts for controlling a circuit in which the normal current is up to 5-amps.

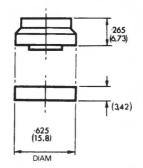
#### .531 1.00" 688" .313" 594" (17,4) (25,4) (7,95)(11,88) (15,0)(13,4)**TERMINALS HEAD & STEM SUB-ASSEMBLIES** 0.718" 1.00" .977 1.009" (25,63) (25,40)STANDARD COLOURS: (24,82)Black, Blue, Green, Red, White or Yellow L1732/1 L1301/1 L1719/1 L1726/1 L1499/0 Generic reference L1361/1 10 Current rating (in amperes) 10 10 10 10 15 No.8 32 Thread 2 B.A. 2 B.A. 2 B.A. 6 B.A. 4 B.A. UN.C.-2A Socket in head for Plug, Size (in millimetres) 4 2 2 4 PANEL FITTINGS (References) 01 02 03 04 05 CA

This table shows the standard range of Belling-Lee terminals, all with captive heads. They are supplied unassembled. In some cases the panel fittings fit more than one stem; this is indicated in the table. When ordering, select the generic reference from the table and add the appropriate suffix denoting the kind of fittings, also the head colour required.

Example: L1499/131/Red is a 15 amp terminal, type L1499/1, with panel fittings type 31, and a red head.

### REF: 01 Comprises 2 Mouldings Metal Washe

\* 2 Mouldings, 2 Sealing Rings, Metal Washer, 2 Locknuts

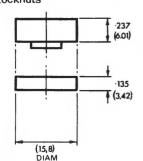


### Performance

Breakdown (kV d.c.)	Ins. res. (M $\Omega$ )	Panel thickness
>2	<b>₹</b> 500	0-156 in max (3,4 mm)

### REF: 02 Comprises

\*2 Mouldings, 2 Sealing Rings, Metal Washer, Solder Tag, 2 Locknuts

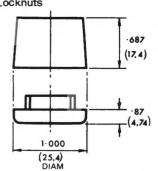


### Performance

Breakdown (kV d.c.)	Ins. res. (M $\Omega$ )	Panel thickness
>3	₹500	0·219 in max (5,6 mm)

### REF: 03 Comprises

\*2 Mouldings, 2 Sealing Rings, Metal Washer, Solder Tag, 2 Locknuts

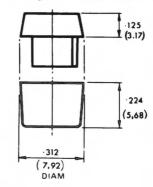


### Performance

Breakdown (kV d.c.)	Ins. res. (M $\Omega$ )	Panel thickness
>3	₹500	0·036—0·125 in (0·9—3,2 mm)

### REF: 04 Comprises

2 Mouldings, Metal Washer, Nut

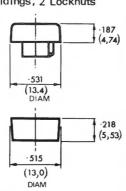


### Performance

Breakdown (kV d.c.)	Ins. res. (M $\Omega$ )	Panel thickness
>4	>20×106	O·125 in max (3,2 mm)

### REF: 09 Comprises

2 Mouldings, 2 Locknuts

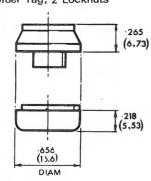


### Performance

Breakdown (kV d.c.)	Ins. res. (M $\Omega$ )	Panel thickness
>5	>20×10³	0.062 in max (1,6 mm)

### REF: 31 Comprises

2 Mouldings, Metal Washer, Solder Tag, 2 Locknuts

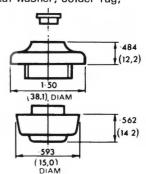


### Performance

Breakdown (kV d.c.)	Ins. res. (M $\Omega$ )	Panel thickness
>8	>20×106	0·036-0·125 in (0,9-3,2 mm)

### REF: 52 Comprises

\*3 Mouldings, 2 Sealing Rings, Metal Washer, Solder Tag,

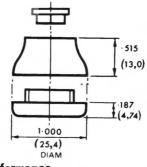


### Performance

Ins. res. (M $\Omega$ )	Panel thickness
>20×10°	0·125 in max (3,2 mm)
	(M Ω)

### REF: 72 Comprises

\*3 Mouldings, 2 Sealing Rings, Metal Washer, Solder Tag, 2 Locknuts



### Performance

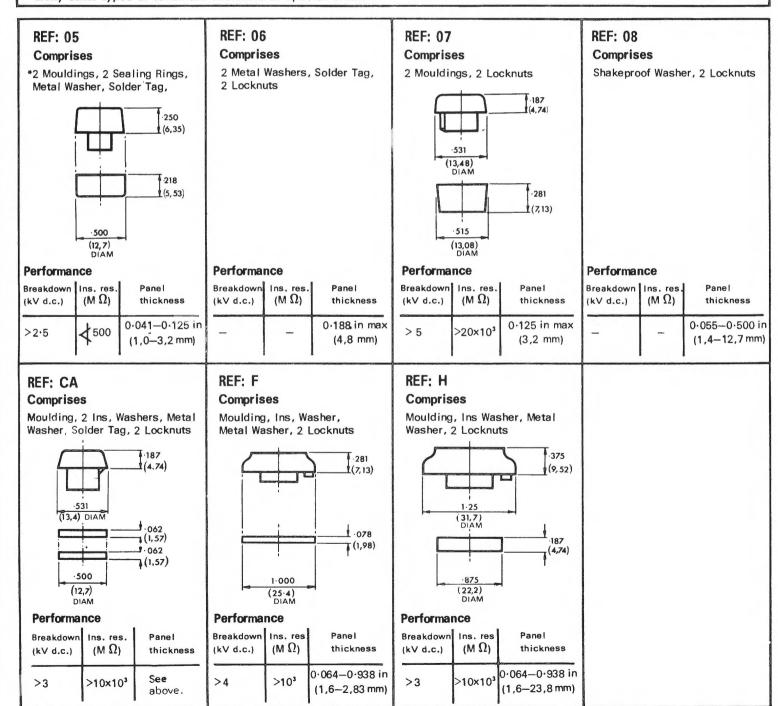
renoma	IICE			
Breakdown (kV d.c.)	Ins. res. (M $\Omega$ )	Panel thickness		
>8	>20×106	0·125 in max (3,2 mm)		

.594" (15,0) 	.594" (15,0)	.406" (10,3) 	.406" (10,3) 	.406" (10,3)	.406" (10,3) -672" (17,07)	.406" (10,3) 	.406" (10,3) 	1.25" (31,7)	1·00" (25,4)
L1499/1	L1499/2	L1568/1	L1568/2	L1568/3	L1568/1E	L1850/1	E6020/1	L1005/1	L309/1
15	15	15	15	15	15	15	15	100	30
No.8 32 UN.C.–2A	2 B.A.	4 mm	5/16" B.S.W.	O.B.A.					
4	4	4	4	4	4	4	4	-	_
CA, 31	CA, 31, 72, 52	CA	CA 31	CA, 31, 72, 52	06	07 08	09	F	н

Panel thickness for L1499/OCA, L1568/1CA 0.048-0.188 in (1.0-4.8 mm) L1499/1CA, L1568/2CA 0.048-0.563 in (1.0-14.3 mm); L1499/2CA, L1568/3CA 0.048-0.875 in (1.0-22.2 mm).

IF YOU DO NOT SEE EXACTLY WHAT YOU NEED. PLEASE ASK.

Many other types of terminals available to special order.



### TERMINAL BLOCKS

### FLEXIBLE TERMINAL BLOCKS

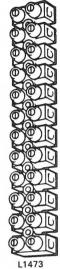
12-way (see table below for list numbers, etc.) with captive terminal screws. Grey P.V.C. mouldings easily subdivided with a knife, and secured on curved or irregular surfaces. Brass inserts and terminal screws are fully shrouded. Metal parts can be supplied nickel-plated if required. The screw heads are gripped by the resilient moulding and are safe under mechanical shock and vibration. Even when totally disengaged from their inserts and the block is mounted up-side down the screws do not fall out.

L1473 and L1469 are skeletonised for even greater flexibility without any loss of performance.

L1409 and L1469 have a right angled lead through which overcomes the problem of bringing leads through a bulk head obviating the need for separate cable bushes, as well as eliminating all risk of damage to internal wiring.

**Temperature range:**  $-55^{\circ}$  to  $+70^{\circ}$ C.

Humidity: H<sub>6</sub> (DEF 5011)







List No.	Rating *	Breakdown Voltage (d.c.)			Max. Cable Size See L1639/B text			
L1350	15 A	>7 kV (5 kV to chassis)			3/·036″ or 70/·0076″			
L1409	15 A	>6 kV (4·5 kV to chassis)			3/·036″ or 70/·0076″			
L744	20 A	>8 kV (6 kV to chassis)			7/·029″ or 110/·0076″			
L1473	20 A	>10 kV (6 kV to chassis)			7/·029″ or 110/·0076″			
L1469	20 A	>10 kV (6 kV to chassis)			7/·029″ or 110/·0076″			
L1639/B	20 A	> 8 kV (6 kV to chassis)			7/·029″ or 110/·0076″			
L1325	43 A	>10 kV (8 kV to chassis)			7.052	2"		
List No.	А		DIMEN B	SIOI	VS C	Length		
L1350	·546″		·625″			3.750″		
L1409	·546″		·625″	·375″		3.750″		
L744	·625″		·750″	_		5.00″		
L1473	·656″		·750″	_		5.00″		
L1469	·656″		·750″	·562″		5.00″		
L1639/B	·625″		·750″	_		5.00*		

<sup>·</sup> At specified current ratings, the temperature rise is less than 20° above normal ambient (20°C).

1.031"

### FLEXIBLE TERMINAL BLOCKS

The L1639/B flexipad terminal block has an entirely new type of screw insert; incorporating a circular metal pressure pad, on which the screw is free to rotate. This provides positive clamping of wires from a single 36 s.w.g., to 110×36 s.w.g., without risk of fracturing individual strands.

### MODULAR TERMINAL BLOCK

L1384/Ag/Au Terminal Block for printed circuits 0.1 in module. Consists of a black nylon moulding carrying two terminal screws. These units clip together to form a terminal strip with any even number of connections.

Ag - Silver-plated Au - Gold-plated Rating: 15A for temperature rise not exceeding 30°C.

Breakdown Voltage: 6 kV d.c.



### \*MINIATURE BARRIER **TERMINAL BLOCK L1790**

This terminal block consists of a basic fourteen section moulding which can be readily sub-divided to the desired length and offering a choice of termination for screw solder, snap on space connection. The moulding is designed for direct mounting to a metal panel, the base contacts being fully shrouded by the moulding, except when the through chassis configuration is used. L1790 With one row of screw terminals, and one row of right-angle, throughchassis terminations for solder or solderless snap-on connections.

L1791 With one row of terminations for solder or solderless snap-on connections, and one row of right-angle through-chassis terminations for solder or solderless snap-on connections.

L1792 With two rows of screw terminals. L1793 With one row of screw terminals and one row of terminations for solder or solderless snap-on connections.

L1794 With two rows of terminations for solder or solderless snap on connections.



L1791 Half size



L1792 Half size



.937"

L1325

7.410"

