

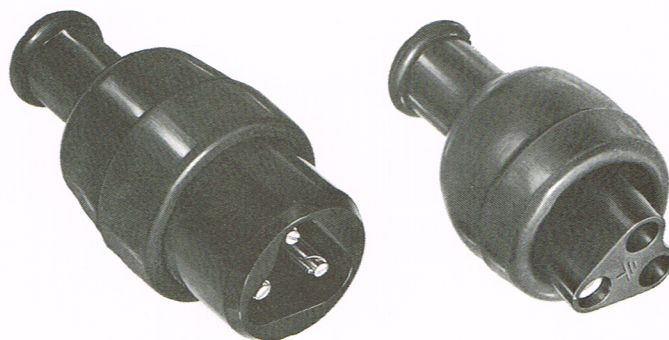
## L1349 Series sealed 3-pole 0-Z connectors

L1349/CP Fixed connector  
L1349A/CS Fixed connector  
L1349/FP Free connector, straight entry  
L1349A/FS Free connector, straight entry  
L1349A/RS Free connector, right angle entry

These waterproof connectors are resistant to sunlight, mineral oils, and grease; the fixed members are also both barrier and panel sealed. The plugs employ the 0-Z contact principle described previously. Originally designed for use in fighting vehicles, these connectors also have world-wide applications in industry and shipping.

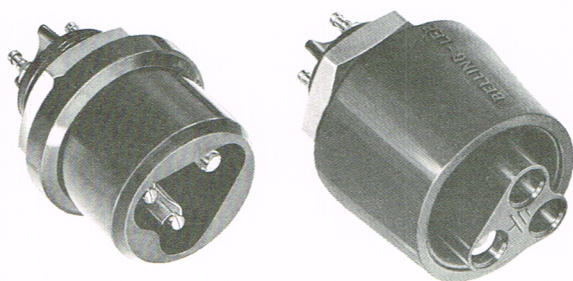
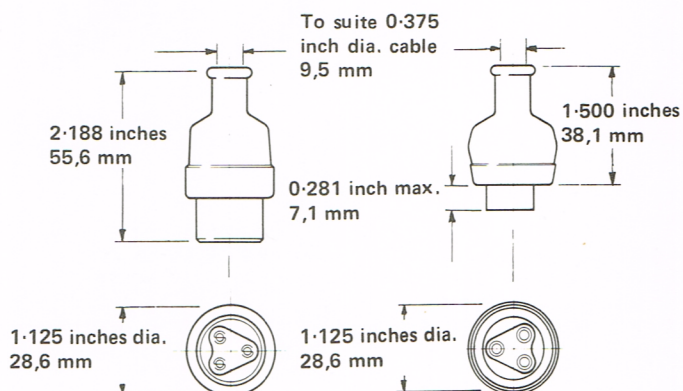
All the free members incorporate a cable strain relief feature.

|                                    |                                                                                                                                        |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Breakdown (d.c.):</b>           | > 5 kV                                                                                                                                 |
| <b>Current rating:</b>             | 7 A for (temperature rise < 10 °C)                                                                                                     |
| <b>Insulation resistance:</b>      | > 5 x 10 <sup>3</sup> megohms                                                                                                          |
| <b>Contact resistance:</b>         | 3 milliohms maximum per pole                                                                                                           |
| <b>Temperature range:</b>          | -50 °C to +85 °C (Ambient)                                                                                                             |
| <b>Humidity:</b>                   | H6 (DEF 5011)                                                                                                                          |
| <b>Water resistance:</b>           | Dry after 1 h in 5 ft 1524 mm of water                                                                                                 |
| <b>Sealing (fixed items):</b>      | Leakage does not exceed 1 cc/h at 15 lbf/inch <sup>2</sup> 100 kPa                                                                     |
| <b>Insertion/withdrawal force:</b> | 3 - 15 lbf 110 - 13 N                                                                                                                  |
| <b>Panel thickness (maximum):</b>  | 3,2 mm 0.125 inch                                                                                                                      |
| <b>Fixing torque:</b>              | L1349A/CS 1,41 - 0,79 N m<br>112-200 ozf inch<br>L1349/CP 1,46 - 0,85 N m<br>120-206 ozf inch                                          |
| <b>Finish:</b>                     | Contacts, silver plated                                                                                                                |
| <b>Weight (average):</b>           | L1349/CP 18,2 g 0.65 oz<br>L1349/FP 23,7 g 0.84 oz<br>L1349A/CS 26,1 g 0.92 oz<br>L1349A/FS 13,7 g 0.49 oz<br>L1349A/RS 18,9 g 0.67 oz |



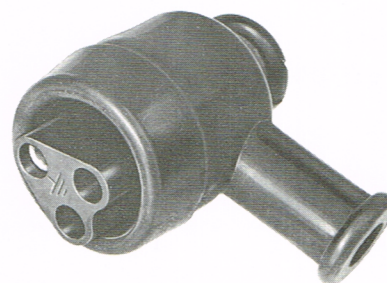
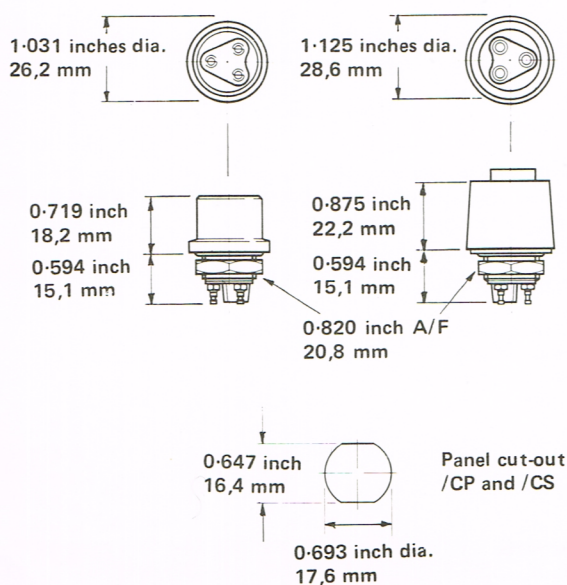
L 1349/FP

L 1349A/FS

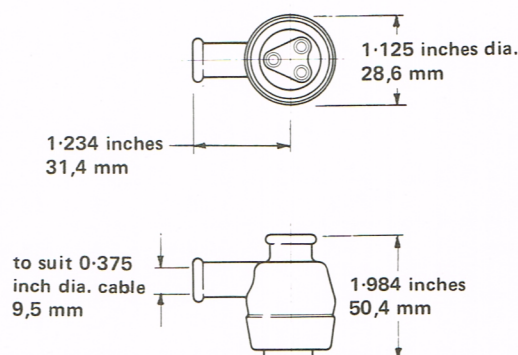


L 1349/CP

L 1349A/CS



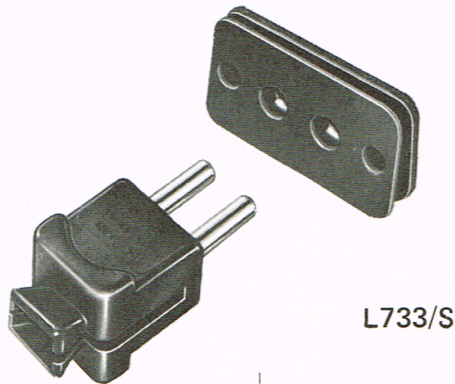
L 1349A/RS





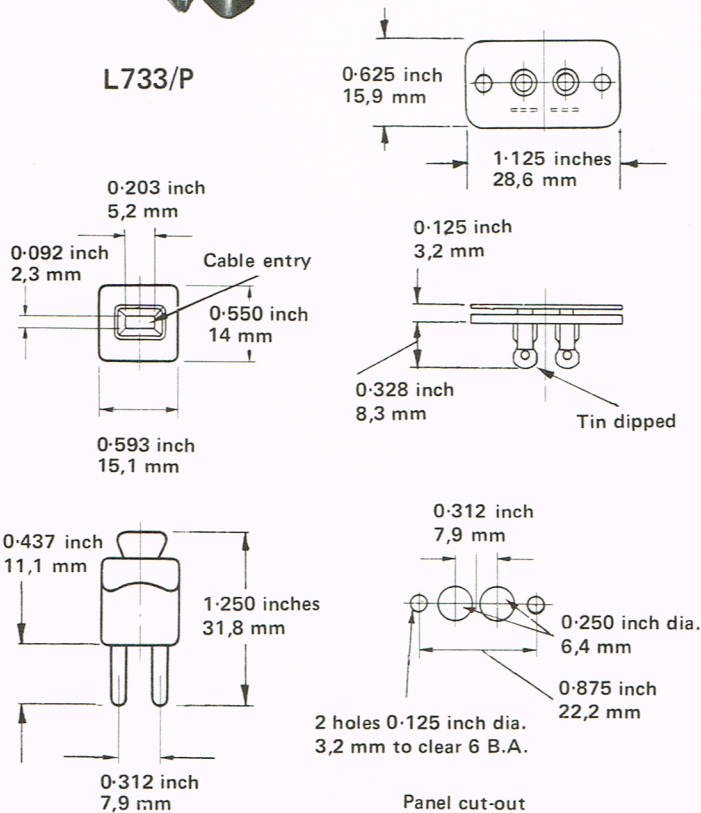
## L733 Series low voltage connectors

L733/P Free connector  
L733/S Fixed connector



L733/S

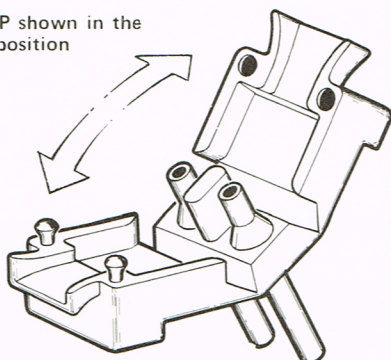
L733/P



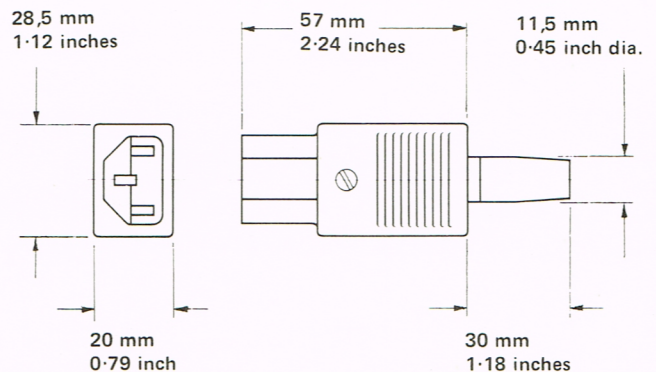
Originally designed for television twin feeder connections, these small connectors are suitable for many other low voltage signal applications including extension loudspeaker circuits. The conductors may be crimped (with ordinary pliers) or soldered into the internally serrated spills of the free members, and the 'butterfly' moulding is snap-fastening, making loading quick and easy.

|                    |        |       |         |
|--------------------|--------|-------|---------|
| Weights (average): | L733/P | 4.6 g | 0.16 oz |
|                    | L733/S | 2.0 g | 0.07 oz |

L733/P shown in the open position



## L1920 3-pole mains connector, free, re-wirable



A 3-pole re-wirable mains connector which complies with the requirements of CEE Publication 22, Standard Sheet V, and has been approved by DEMKO (Denmark), OVE (Austria), SEMKO (Sweden), SVE (Switzerland) and VDE (Germany). Mates with our mains inlets such as L1950, L2131A, L2132A, L2133A and L2134A.

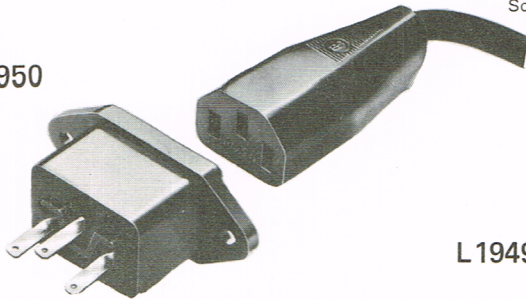
|                                    |                                                                    |
|------------------------------------|--------------------------------------------------------------------|
| <b>Operating voltage:</b>          | 250 V a.c. r.m.s.                                                  |
| <b>Current rating:</b>             | 6 A                                                                |
| <b>Insulation resistance:</b>      | Between supply pole $\geq 2$ megohms<br>Elsewhere $\geq 5$ megohms |
| <b>Temperature range:</b>          | $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ (Ambient)           |
| <b>Insertion/withdrawal force:</b> | 45 to 6 N 162 to 21.6 ozf                                          |
| <b>Cable retention:</b>            | $> 60$ N 216 ozf                                                   |
| <b>Terminations:</b>               | Designed to provide option of screw or solder connection           |
| <b>Materials:</b>                  | Socket — Thermosetting plastic                                     |
| <b>Finish:</b>                     | Contacts — Nickel-plated                                           |
| <b>Colour:</b>                     | Black                                                              |
| <b>Weight (average):</b>           | 32g 1.13 oz                                                        |



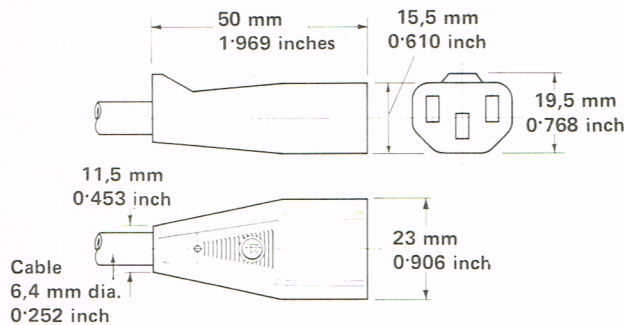
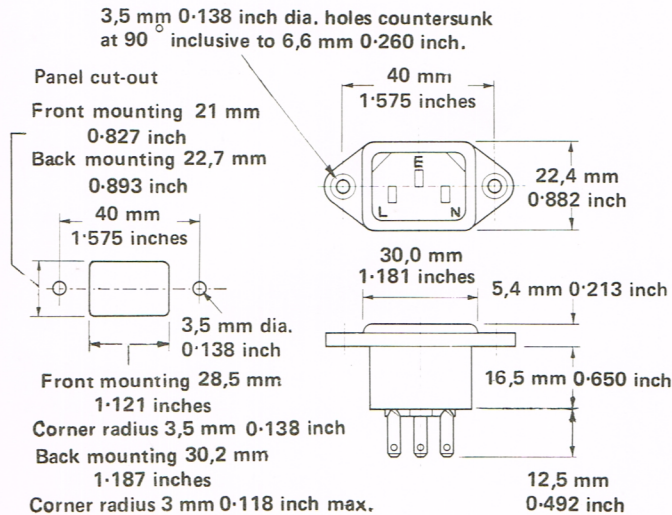
- L1948 3-Pole mains connector, free, with cable, grey  
L1949 3-Pole mains connector, free, with cable, black  
L1950 3-Pole mains appliance inlet

Scale 1:1½

L1950



L1949

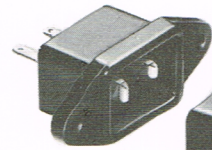


A 3-pole (including earth) mains coupler in which the free connector is moulded onto the cable and fully shrouded to BS 414. Approved to CEE 22 (IEC 320). A rewirable version is shown on page 8 of this section.

|                              |                                                                                                                                                                                           |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating voltage:           | 250 V a.c.                                                                                                                                                                                |
| Current rating:              | 6 A                                                                                                                                                                                       |
| Insulation resistance:       | Between supply poles $\geq 2$ megohms, elsewhere $\geq 5$ megohms $\leq 25^\circ\text{C}$ ( $35^\circ\text{C}$ maximum)                                                                   |
| Ambient temperature:         | $65^\circ\text{C}$                                                                                                                                                                        |
| Maximum pin temperature:     | $45$ to $6\text{ N } 162$ to $21.6\text{ ozf}$                                                                                                                                            |
| Withdrawal force:            | $> 60\text{ N } 216\text{ ozf}$                                                                                                                                                           |
| Cable retention:             | Solder or solderless snap-on connectors $0.110 \times 0.032$ inch $2.8 \times 0.81$ mm                                                                                                    |
| Terminations (fixed member): | 2 metres (L1949) or 3,5 metres (L1948), PVC insulated to BS 6500 and CEE 13 (53), conductors $0.75\text{ mm}^2$                                                                           |
| Cable:                       |                                                                                                                                                                                           |
| Materials:                   | Inlet — phenolic resin<br>Free connector — PVC<br>Contacts — brass, silver-plated<br>Outer sheath stripped length — 50 mm 1.97 inches<br>Inner insulator stripped length — 10 mm 0.4 inch |
| Trimming dimensions:         |                                                                                                                                                                                           |
| Colour:                      | L1948 Grey, L1949, L1950 Black                                                                                                                                                            |

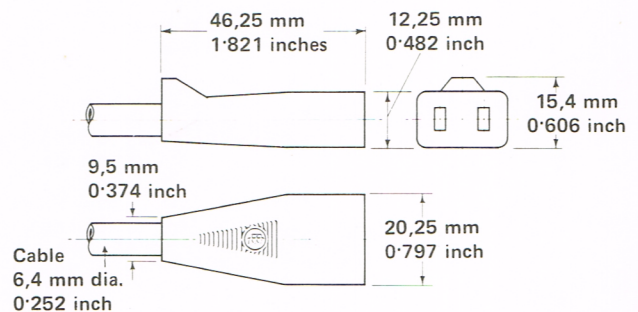
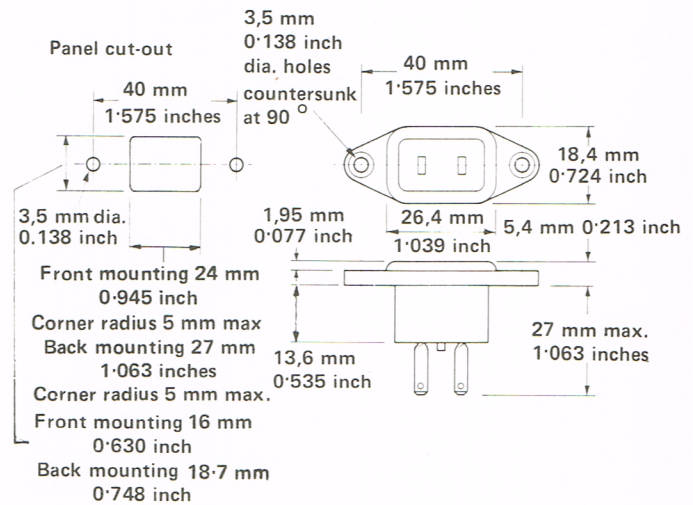
- L1951 2-Pole mains connector, free, with cable  
L1952 2-Pole mains appliance inlet

Scale 1:1½



L1951

L1952



A 2-pole mains coupler in which the free connector is moulded onto the cable and fully shrouded to BS 415. Designed to comply with the requirements of CEE Publication 22 and IEC Publication 320.

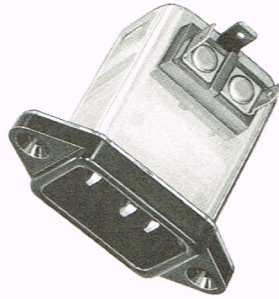
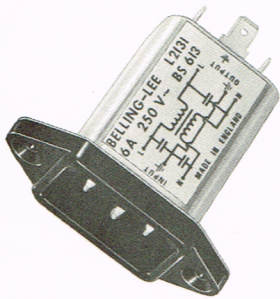
|                              |                                                                                                                                                                                           |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating voltage:           | 250 V a.c.                                                                                                                                                                                |
| Current rating:              | 6 A                                                                                                                                                                                       |
| Insulation resistance:       | Between supply poles $\geq 2$ megohms; elsewhere $\geq 5$ megohms $\leq 25^\circ\text{C}$ ( $35^\circ\text{C}$ maximum)                                                                   |
| Ambient temperature:         | $65^\circ\text{C}$                                                                                                                                                                        |
| Maximum pin temperature:     | $30$ to $4\text{ N } 108$ to $14.4\text{ ozf}$                                                                                                                                            |
| Withdrawal force:            | $\geq 60\text{ N } 216\text{ ozf}$                                                                                                                                                        |
| Cable retention:             | Solder or solderless snap-on connectors $0.110 \times 0.032$ inch $2.8 \times 0.81$ mm                                                                                                    |
| Terminations (fixed member): | 2 metres, PVC insulated to BS 6500 and CEE 13 (52); conductors $0.75\text{ mm}^2$                                                                                                         |
| Cable:                       |                                                                                                                                                                                           |
| Materials:                   | Inlet — phenolic resin<br>Free connector — PVC<br>Contacts — brass, silver-plated<br>Outer sheath stripped length — 50 mm 1.97 inches<br>Inner insulator stripped length — 10 mm 0.4 inch |
| Trimming dimensions:         |                                                                                                                                                                                           |
| Colour:                      | Black                                                                                                                                                                                     |



## L2131A/-L2133A/-3-pole filtered appliance inlet, end terminations

## L2132A/-L2134A/-3-pole filtered appliance inlet, side terminations

Scale 1 : 1½



L2131A

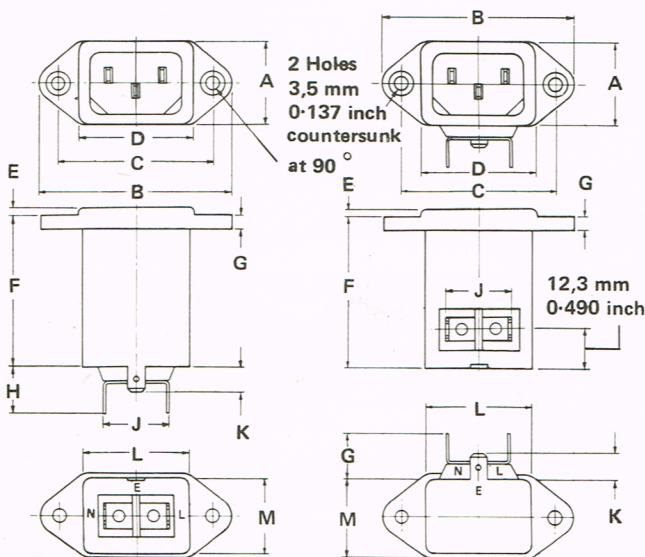
L2132A

L2131A/- 6 Amp Rating

L2132A/- 6 Amp Rating

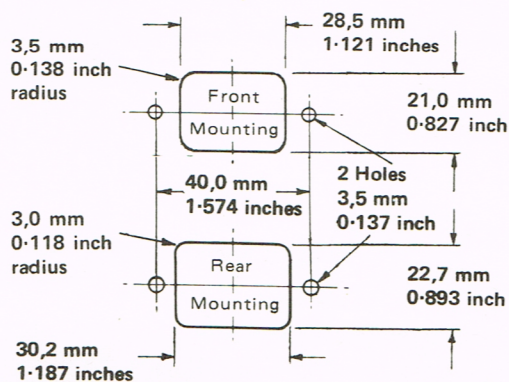
L2133A/- 2 Amp Rating

L2134A/- 2 Amp Rating



### FRONT PANEL MOUNTING

L2131A/- L2133A/-  
only



### REAR PANEL MOUNTING

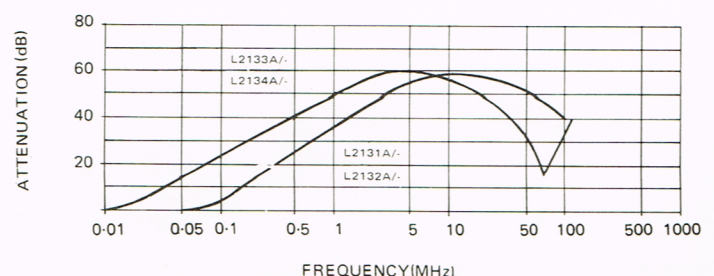
L2131A/- L2133A/-  
L2132A/- L2134A/-

These filtered inlets are intended for incorporation in business machines and similar equipments which are required to comply with the relevant section of BS 800 and VDE specifications. The mating face is in accordance with publications CEE 22 and IEC 320, standard sheet VI, and accepts connectors to standard sheet V, such as our L1920, L1948 and L1949. Two sizes of solderless snap-on or solder termination are available.

|                                                |                                                                                                                                                                                                                                       |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lines:</b>                                  | 2 plus earth                                                                                                                                                                                                                          |
| <b>Current rating:</b>                         | L2131A, L2132A 6 A<br>L2133A, L2134A 2 A                                                                                                                                                                                              |
| <b>Frequency:</b>                              | 0 – 400 Hz                                                                                                                                                                                                                            |
| <b>Operating voltage:</b>                      | 250 V maximum                                                                                                                                                                                                                         |
| <b>Voltage drop per line at rated current:</b> | ≤ 1 V                                                                                                                                                                                                                                 |
| <b>Earth leakage current:</b>                  | ≤ 0,75 mA (at 250 V 50 Hz)                                                                                                                                                                                                            |
| <b>Maximum working temperature:</b>            | 70 °C                                                                                                                                                                                                                                 |
| <b>Capacitance:</b>                            | 4,7 nF per line to earth (Class Y)<br>10 nF between lines (Class X)<br>Inductance of coil:<br>2 A 1 mH 6A 350µH                                                                                                                       |
| <b>Terminations:</b>                           | -/L version accepts 6,3 mm x 0,81 mm<br>0.250 inch x 0.032 inch,<br>solderless snap-on connections or<br>solder.<br>-/S version accepts 4,75 mm x 0,51 mm<br>0.187 inch x 0.020 inch,<br>solderless snap-on connections or<br>solder. |
| <b>Weight (average):</b>                       | 48 g 1.7 oz                                                                                                                                                                                                                           |

| List Number | L2131A/L, L2133A/L | L2132A/L, L2134A/L | L2131A/S, L2132A/S | L2133A/S, L2134A/S |
|-------------|--------------------|--------------------|--------------------|--------------------|
| Dim.        | mm                 | inch               | mm                 | inch               |
| A           | 22,5               | 0.885              | 22,5               | 0.885              |
| B           | 50,0               | 1.968              | 50,0               | 1.968              |
| C           | 40,0               | 1.574              | 40,0               | 1.574              |
| D           | 30,0               | 1.181              | 30,0               | 1.181              |
| E           | 2,0                | 0.078              | 2,0                | 0.078              |
| F           | 40,0               | 1.574              | 40,0               | 1.574              |
| G           | 4,0                | 0.157              | 4,0                | 0.157              |
| H           | 15,0               | 0.591              | 12,0               | 0.472              |
| J           | 17,5               | 0.689              | 17,0               | 0.669              |
| K           | 11,0               | 0.433              | 8,0                | 0.315              |
| L           | 28,0               | 1.102              | 28,0               | 1.102              |
| M           | 20,5               | 0.806              | 20,5               | 0.806              |

### Performance

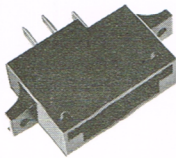




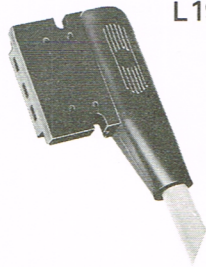
- L 1953** 3-Pole mains connector, free, with cable  
**L 1954A** 3-Pole mains connector, fixed  
 appliance inlet  
**L 1955** 3-Pole right angle mains connector, free,  
 with cable

Scale 1:2

**L 1954A**



**L 1955**



**L 1953**



A miniature 3-pole mains coupler with the free member moulded onto the cable and fully shrouded to B.S. 415 requirements.

The connector may be locked together to prevent inadvertent or unauthorised disconnection.

|                                       |                            |
|---------------------------------------|----------------------------|
| <b>Operating voltage:</b>             | 250 V.a.c.                 |
| <b>Current rating:</b>                | 6 A                        |
| <b>Contact resistance:</b>            | ≤ 10 milliohms             |
| <b>Insulation resistance:</b>         | > 10 <sup>3</sup> mehoohms |
| <b>Temperature range:</b>             | -40 °C to +70 °C (Ambient) |
| <b>Insertion/withdrawal force:</b>    | < 44 N 10 lbf              |
| <b>Cable retention (free member):</b> | 178 N 40 lbf               |

**Termination (fixed member):** Solder, or solderless snap-on connectors 0.110 x 0.032 inch 2.8 x 0.81 mm

|                          |          |       |        |
|--------------------------|----------|-------|--------|
| <b>Weight (average):</b> | L 1953   | 156 g | 5.5 oz |
|                          | L 1954 A | 14 g  | 0.5 oz |
|                          | L 1955   | 128 g | 4.5 oz |

**Cable:** L 1953, L 1955 supplied with \* 2 metres black PVC cable. Inner sheaths coloured blue, brown and green/yellow.

3 core mains cable complies with BS.6500 Table II and C.E.E. 13 (53); conductors 0.75 mm<sup>2</sup>

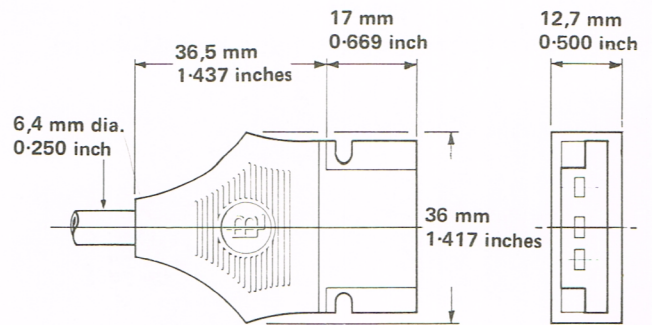
|                   |                 |                        |
|-------------------|-----------------|------------------------|
| <b>Materials:</b> | Fixed connector | — ABS polymer          |
|                   | Free connector  | — PVC                  |
|                   | Contacts        | — brass, silver-plated |

**Trimming dimensions:** Outer sheath stripped length - 50 mm 1.97 inches  
 Inner insulator stripped length 10 mm 0.4 inch

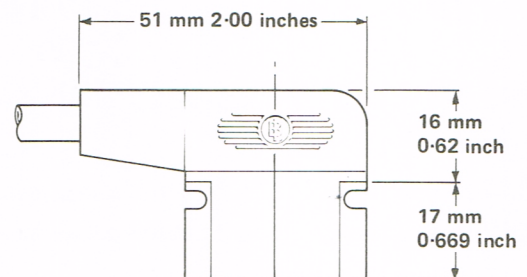
**Colour:** Black

**Ordering information:** L 1953 - 3-pole mains connector, free, with cable  
 L 1954A - 3-pole mains connector, fixed  
 L 1955 - 3-pole right angle mains connector free, with cable

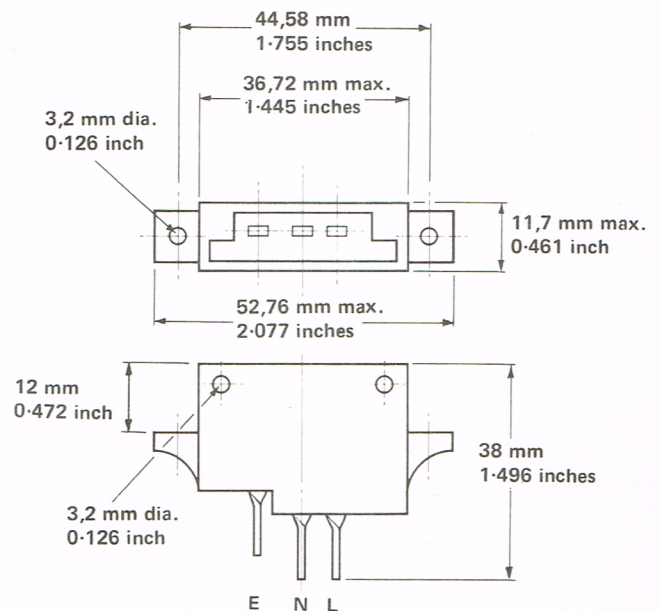
\* Alternative cables and lengths are available to special order.



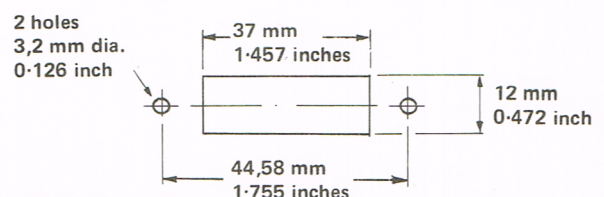
**L 1953 3-pole mains connector, free, with cable**



**L 1955 3-pole right angle mains connector, free, with cable**



**L 1954A 3-pole mains connector, fixed**



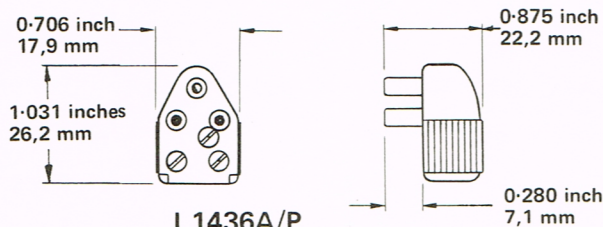
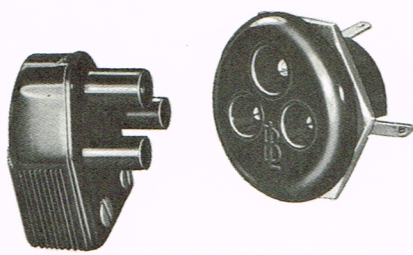
**Panel cut-out**



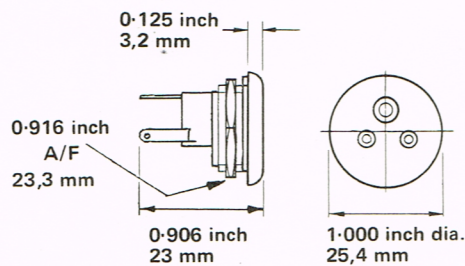
## 3 - Pole miniature mains connector

L1436A/P Free connector

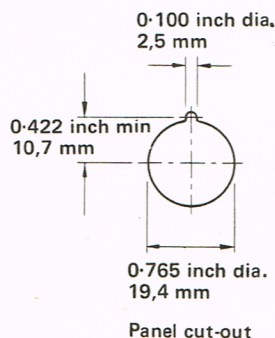
L1436B/S Fixed connector



L1436A/P



L1436B/S



Panel cut-out

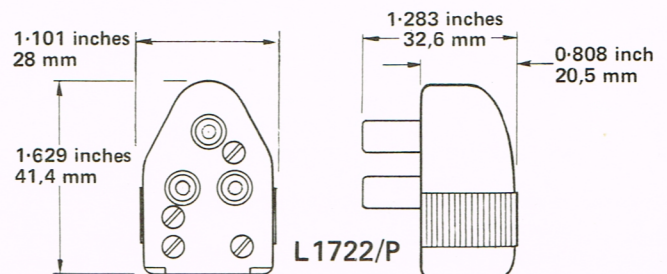
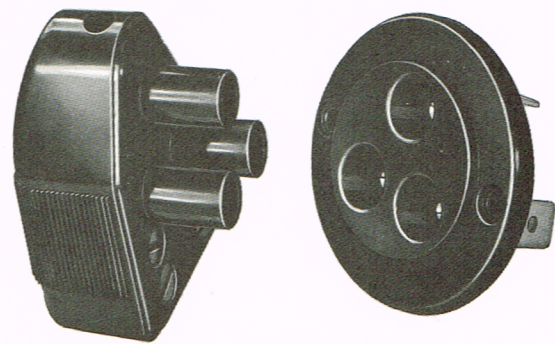
This miniature 3-pole mains connector combines modern styling and compact design with safety, pins and sockets being fully shrouded and finger proof. Single hole fixing requires only one nut, a spigot preventing rotation of the socket. An inspection knock-out is provided in the plug cover to allow instant inspection of the earth wire connection.

|                                              |                                                                                                 |
|----------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Current rating:</b>                       | 3 A a.c./d.c. for $< 5^{\circ}\text{C}$ temperature rise                                        |
| <b>Current breaking:</b>                     | Satisfactory to BS 546 at 3.9 A                                                                 |
| <b>Breakdown (d.c.):</b>                     | $> 5.5\text{ kV}$                                                                               |
| <b>Insulation resistance:</b>                | $> 5 \times 10^3$ megohms                                                                       |
| <b>Contact resistance (maximum):</b>         | 5 milliohms per pole                                                                            |
| <b>Humidity:</b>                             | A 4 (BS 2011)                                                                                   |
| <b>Temperature range:</b>                    | $-25^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ (Ambient)                                        |
| <b>Insertion/withdrawal force (Maximum):</b> | 8 lbf 35 N                                                                                      |
| <b>Cable size (overall maximum):</b>         | 0.291 inch 7.4 mm                                                                               |
| <b>Fixing torque:</b>                        | 50 - 200 ozf inch 1.4 - 0.35 N m                                                                |
| <b>Terminations:</b>                         | Plug, screws, Socket, solder or solderless snap-on connectors, 0.110 x 0.020 inch 2.8 x 0.51 mm |
| <b>Panel thickness:</b>                      | 0.094 - 0.188 inch 4.8 - 2.4 mm                                                                 |
| <b>Materials:</b>                            | Contacts — silver-plated brass<br>Insulants — plug, nylon;<br>— socket, phenolic resin          |
| <b>Weights (average):</b>                    | Plug 5.2 g 0.18 oz<br>Socket 7.3 g 0.25 oz                                                      |

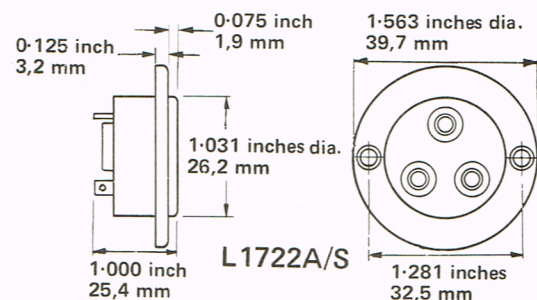
## 3 - Pole mains connector

L1722/P Free connector

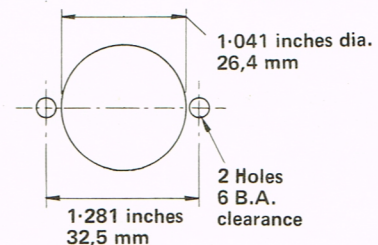
L1722A/S Fixed connector



L1722/P



L1722A/S



Panel cut-out

This connector is a larger version of the L1436 described opposite. The plug cover retaining screws fit into threaded metal inserts, and the shallow depth socket can be front or rear panel mounting. An inspection port is provided in the plug cover to allow instant inspection of the earth wire connection.

|                                              |                                                                                                                         |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Current rating:</b>                       | 10 A a.c./d.c. for $< 15^{\circ}\text{C}$ temperature rise                                                              |
| <b>Current breaking:</b>                     | Satisfactory to BS 546 at 13 A                                                                                          |
| <b>Breakdown (d.c.):</b>                     | $> 6\text{ kV}$                                                                                                         |
| <b>Insulation resistance:</b>                | $> 5 \times 10^3$ megohms                                                                                               |
| <b>Contact resistance (maximum):</b>         | 5 milliohms per pole                                                                                                    |
| <b>Humidity:</b>                             | A4 (BS 2011)                                                                                                            |
| <b>Temperature range:</b>                    | $-10^{\circ}\text{C}$ to $+55^{\circ}\text{C}$ (Ambient)                                                                |
| <b>Insertion/withdrawal force (maximum):</b> | 11 lbf 50 N insertion<br>15 lbf 67 N withdrawal                                                                         |
| <b>Cable size (overall maximum):</b>         | 0.375 inch 9.5 mm                                                                                                       |
| <b>Terminations:</b>                         | Plug, screws, socket, solder or solderless snap-on connectors, 0.250 x 0.032 inch 6.3 x 0.81 mm                         |
| <b>Materials:</b>                            | Contacts — plug, nickel-plated brass<br>Sockets — silver-plated brass<br>Insulants — plug, nylon; socket phenolic resin |
| <b>Weights (average):</b>                    | Plug 20.5 g 0.72 oz<br>Socket 15.1 g 0.53 oz                                                                            |



## Belling-Lee Bleecon connectors

### Design innovations

These multipole shielded connectors are designed to meet fully the requirements of both the equipment manufacturers and the equipment user. The design innovations incorporated make the Belling-Lee Bleecon connector series one of the most versatile, reliable and attractive connectors available.

The mating face details meet the relevant DIN and IEC specifications.

### Reliability

The high degree of connector expertise and manufacturing technology embodied in the design and production makes Belling-Lee Bleecon invaluable where the highest standards of reliability are required.

### Wide range

A wide range of types means that there is a version to meet most application requirements. Belling-Lee engineers will be pleased to discuss any special design requirements.

### Shielding

Screen continuity is ensured by a resilient wiping contact between the mating members. This is terminated by a solder lug in the fixed member and a mechanical braid clamp in the free member.

### Economic pricing

Cost analysis at all stages of design, and advanced production techniques have resulted in an agreeably low selling price, which has greatly extended the area in which Belling-Lee Bleecon connectors are realistically specified.

### Current rating:

### Voltage rating:

### Contact resistance:

### Housing (shell) continuity:

### Insulation resistance:

### Temperature range:

(Ambient)

### Engaging force:

### Separating force:

### Contact termination:

2 A.d.c. (temperature rise  $\leq 5^{\circ}\text{C}$ )

All layouts will withstand a test voltage of 2 kV, AC, Rms for 1 minute without breakdown or failure.

2 milliohms maximum

5 milliohms maximum

$10^3$  megohms minimum

$-25^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  (Suitable for Steam Sterilization)

$\leq 8\text{ N}$  30 ozf per pole

$\leq 6\text{ N}$  22 ozf per pole

Free connectors: Crimp or solder

bucket, Crimping Tool Erma

Buchanan 612118 with locator 600253

Fixed receptacles: Solder lug

Maximum conductor diameter - 0,9

mm or 16/0,2 mm

$\geq 30\text{ N}$  110 ozf for 100 seconds

Plug insulators - polypropylene and

glass-filled nylon

Receptacle insulator - glass-filled nylon

Plug insulators - glass-filled nylon

Receptacle insulator - glass-filled

nylon

Contact material - brass, silver-plated

6 mm diameter maximum

L1904/CS 9,5 g 0.34 oz

L1904/CSF 23,7 g 0.84 oz

L1904/FP 20,6 g 0.73 oz

L1904/FS 19,7 g 0.69 oz

### Cable retention (pull):

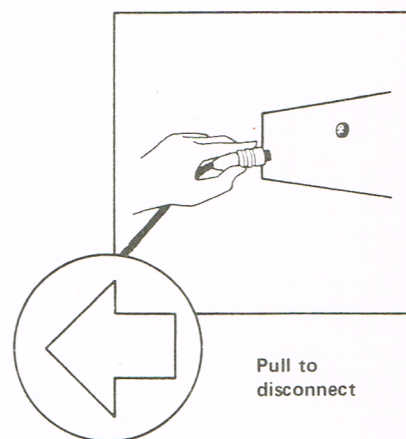
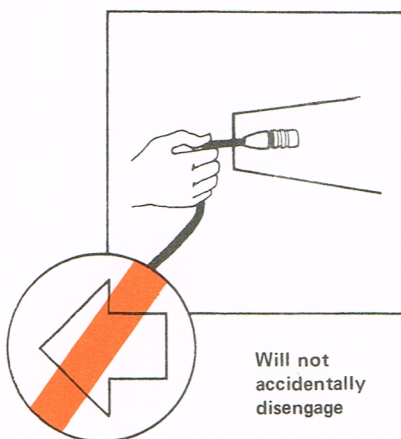
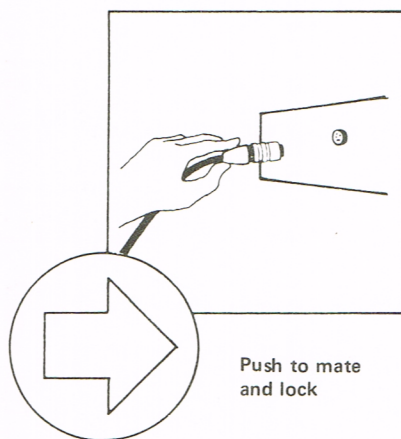
### Materials:

### Cable diameter:

### Weights (average):

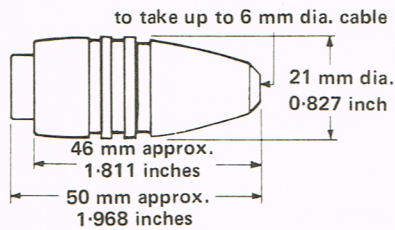
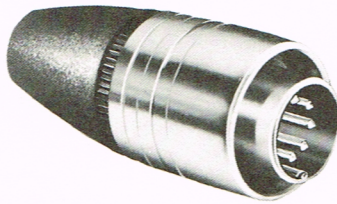
## Push-Pull locking

An ingenious push-pull locking device provides positive locking against accidental disconnection but allows instant release when required. A one-piece moulded grip, ensures firm clamping of the cable.

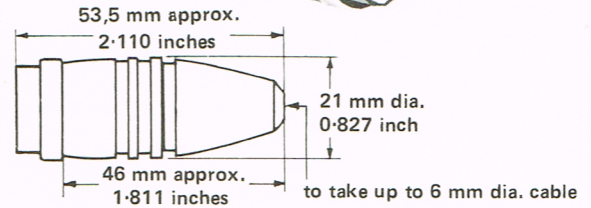




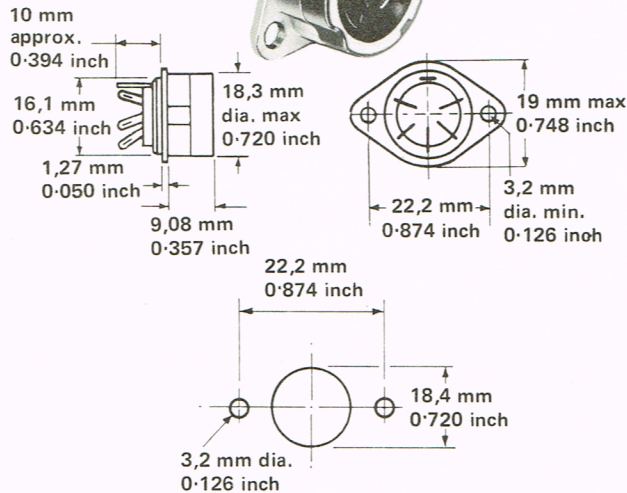
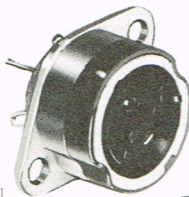
Free plug



Free socket

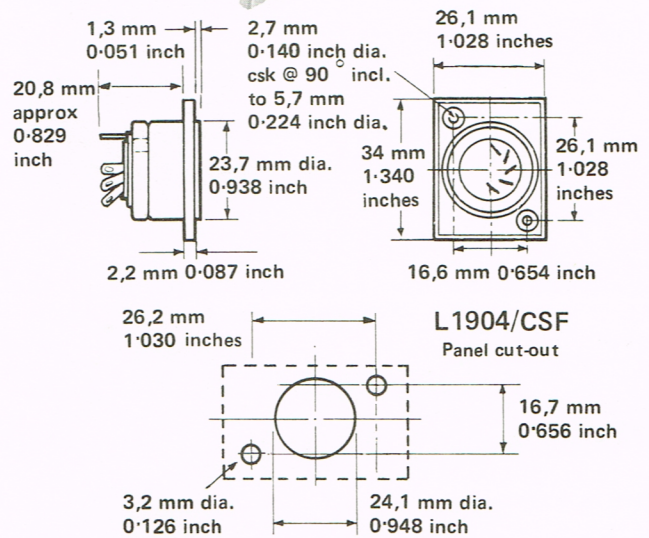
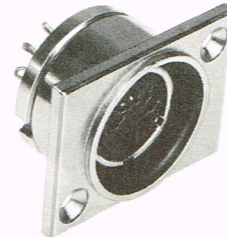


Surface mounting socket



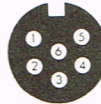
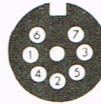
L1904/CS  
Panel cut-out

Flush mounting socket



| *Contact Identification                                                                                                     | Ordering information    |             |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------|
|  <p>3 – pole</p>                         | Free plug               | L1904/3/FP  |
|                                                                                                                             | Free socket             | L1904/3/FS  |
|                                                                                                                             | Socket surface mounting | L1904/3/CS  |
|                                                                                                                             | Socket flush mounting   | L1904/3/CSF |
|  <p>4 – pole</p>                         | Free plug               | L1904/4/FP  |
|                                                                                                                             | Free socket             | L1904/4/FS  |
|                                                                                                                             | Socket surface mounting | L1904/4/CS  |
|                                                                                                                             | Socket flush mounting   | L1904/4/CSF |
|  <p>5 – pole<br/>45° contact spacing</p> | Free plug               | L1904/5/FP  |
|                                                                                                                             | Free socket             | L1904/5/FS  |
|                                                                                                                             | Socket surface mounting | L1904/5/CS  |
|                                                                                                                             | Socket flush mounting   | L1904/5/CSF |

\*Viewed on plug mating face

| * Contact Identification                                                                                                    | Ordering information    |              |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------|
|  <p>5 – pole<br/>60° contact spacing</p> | Free plug               | L1904/5A/FP  |
|                                                                                                                             | Free socket             | L1904/5A/FS  |
|                                                                                                                             | Socket surface mounting | L1904/5A/CS  |
|                                                                                                                             | Socket flush mounting   | L1904/5A/CSF |
|  <p>6 – pole</p>                         | Free plug               | L1904/6/FP   |
|                                                                                                                             | Free socket             | L1904/6/FS   |
|                                                                                                                             | Socket surface mounting | L1904/6/CS   |
|                                                                                                                             | Socket flush mounting   | L1904/6/CSF  |
|  <p>7 – pole</p>                         | Free plug               | L1904/7/FP   |
|                                                                                                                             | Free socket             | L1904/7/FS   |
|                                                                                                                             | Socket surface mounting | L1904/7/CS   |
|                                                                                                                             | Socket flush mounting   | L1904/7/CSF  |

\*Viewed on plug mating face



## Miniature unitors

**L1387/P/Ag** Connector, 8 pole, four large and four small male contacts

**L1387/S/Ag** Connector, 8 pole, four large and four small female contacts

**L1388/P/Ag** Connector, 8 pole, small male contacts

**L1388/S/Ag** Connector, 8 pole, small female contacts

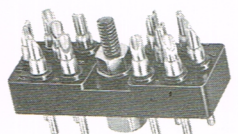
**L1389/P/Ag** Connector, 12 pole, small male contacts

**L1389/S/Ag** Connector, 12 pole, small female contacts

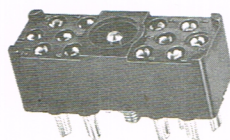
**L1390/P/Ag** Connector, 2 pole, large male contacts

**L1390/S/Ag** Connector, 2 pole, large female contacts

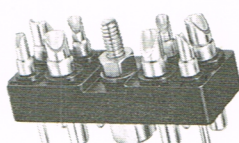
### L1389/P



### L1389/S

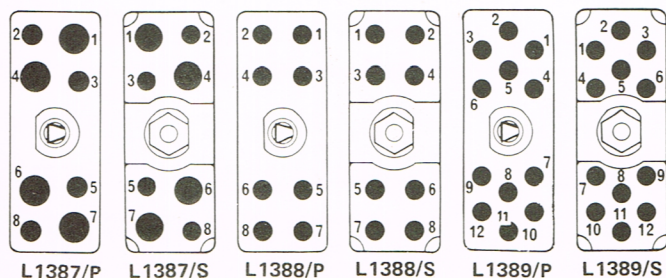


### L1387/P



### L1387/S

|                                       |                                                                                      |                        |                          |
|---------------------------------------|--------------------------------------------------------------------------------------|------------------------|--------------------------|
| <b>Current rating:</b>                | Small poles, 9 A    Large poles, 10 A<br>(temperature rise $\leq 10^\circ\text{C}$ ) |                        |                          |
| <b>Breakdown (d.c.):</b>              |                                                                                      |                        |                          |
| <b>Between poles</b>                  |                                                                                      |                        |                          |
| (a) at sea level                      | L1387 > 2.5 kV                                                                       | L1388 > 2.5 kV         | L1389 > 2 kV             |
| (b) at 20 000 m 68 000 ft:            | 1 kV                                                                                 | 1 kV                   | 700 V                    |
| <b>Poles to earth:</b>                |                                                                                      |                        |                          |
| (a) at sea level                      | 2.5 kV                                                                               | 2.5 kV                 | 2 kV                     |
| (b) at 20 000 m 68 000 ft:            | 900 V                                                                                | 900 V                  | 600 V                    |
| <b>Contact resistance (maximum):</b>  | Small poles 2 milliohms                                                              | Large poles 1 milliohm | Locating key 5 milliohms |
| <b>Insulation resistance:</b>         | > 100 x 10 <sup>3</sup> megohms                                                      |                        |                          |
| <b>Temperature range:</b>             | -40 °C to +100 °C (Ambient)                                                          |                        |                          |
| <b>Humidity:</b>                      | Class H5 (DEF - 5011)                                                                |                        |                          |
| <b>Withdrawal force (maximum):</b>    | 2.1 N 7.5 ozf per pole                                                               |                        |                          |
| <b>Wire sizes:</b>                    | Small poles, 0.042 inch or 19 s.w.g. 1.1 mm                                          |                        |                          |
|                                       | Large poles, 0.079 inch or 15 s.w.g. 2 mm                                            |                        |                          |
| <b>Panel thickness:</b>               | Male 0.125 inch 3.2 mm                                                               |                        |                          |
|                                       | No limits in shrouds                                                                 |                        |                          |
|                                       | Female 0.064 inch 1.6 mm                                                             |                        |                          |
| <b>Fixing torque:</b>                 | 0.18 N m 25 ozf in                                                                   |                        |                          |
| <b>Materials:</b>                     | Body - phenolic resin moulding                                                       |                        |                          |
|                                       | Pins - brass                                                                         |                        |                          |
|                                       | Socket - beryllium-copper, silver-plated                                             |                        |                          |
| <b>Weight (average) (mated pair):</b> | L1387 8.4 g 0.30 oz                                                                  | L1388 7.1 g 0.25 oz    | L1389 8.7 g 0.31 oz      |

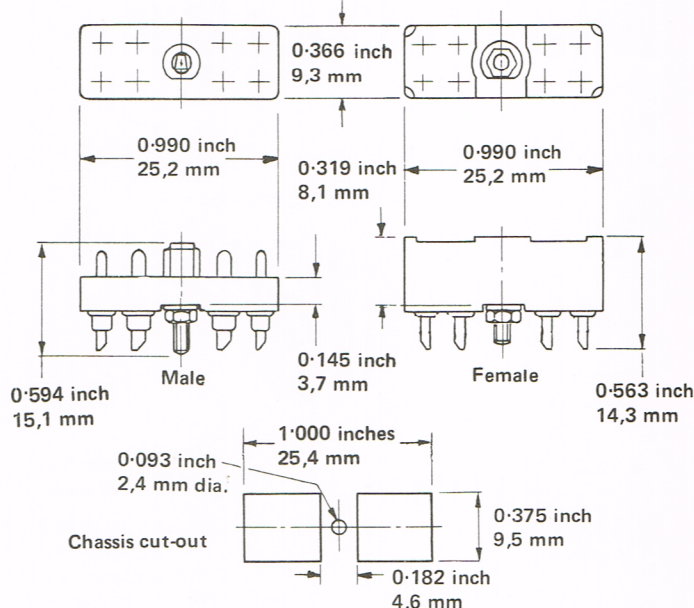


Smaller, lighter, but equal in performance to Pattern 102 Unitors,\* this range includes r.f. and high voltage connectors, and all units are physically interchangeable.

A special feature of this series is the central earthing contact, which also fulfils the functions of mating location and polarization and fixing.

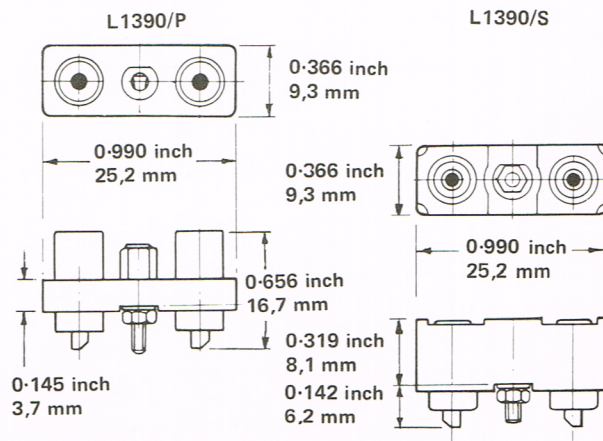
The unitors may be mounted directly on panels and chassis, or if preferred, shrouds are available to accommodate one, two or three units. Raised flats on the mating faces of the mouldings ensure an adequate gap through which air can circulate to dispel moisture. Thus, from a few basic units it is possible to assemble a very large variety of non-interchangeable multiple connectors.

\* See elsewhere in orange section.



### L1390/P & S Connectors, high voltage

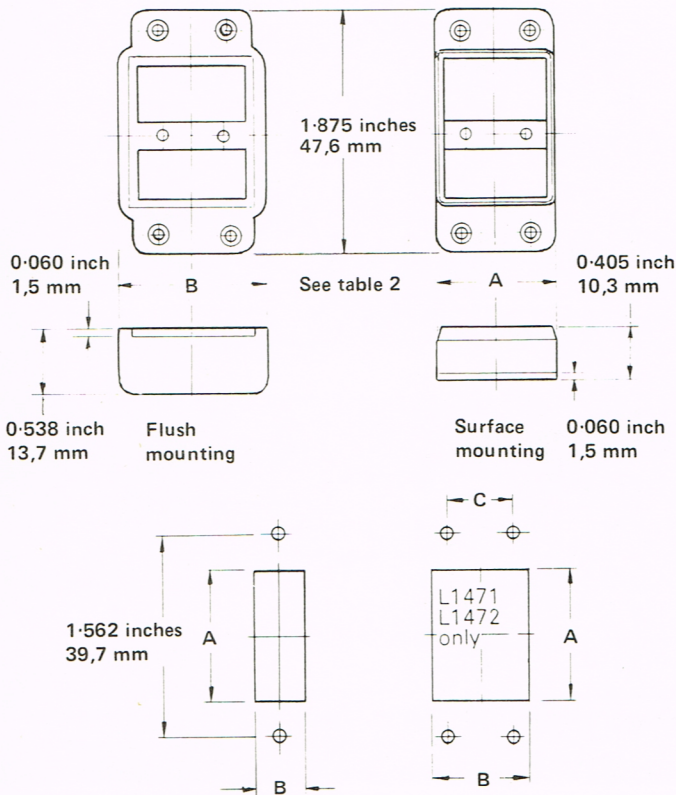
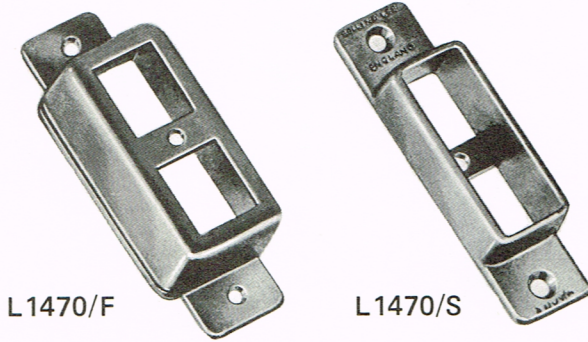
|                                   |                                                       |                          |
|-----------------------------------|-------------------------------------------------------|--------------------------|
| <b>Current rating:</b>            | 10 A (temperature rise $\leq 10^\circ\text{C}$ )      |                          |
| <b>Breakdown voltage (d.c.):</b>  | At sea level                                          | At 18 000 m              |
|                                   | > 10 kV                                               | 60 000 ft                |
|                                   | > 6 kV                                                | > 2 kV                   |
|                                   | > 10 x 10 <sup>3</sup> megohms                        | > 1 kV                   |
| <b>Insulation resistance:</b>     | 1 milliohm maximum                                    |                          |
| <b>Contact resistance:</b>        | (5 milliohms locating key)                            |                          |
| <b>Temperature range:</b>         | -40 °C to +100 °C (Ambient)                           |                          |
| <b>Withdrawal force:</b>          | 13.7-7.8 N 1.75-3 lbf                                 |                          |
| <b>Wire size</b>                  | 0.079 inch 15 s.w.g. 2 mm                             |                          |
| <b>Panel thickness (maximum):</b> | Male 0.125 inch 3.2 mm                                | Female 0.064 inch 1.6 mm |
|                                   | No limit in shrouds                                   |                          |
| <b>Fixing torque:</b>             | 0.18 N m 25 ozf in                                    |                          |
| <b>Materials:</b>                 | Body, epoxy resin                                     |                          |
|                                   | Male contacts, silver-plated (Ag) brass.              |                          |
|                                   | Female contacts, silver-plated (Ag) beryllium-copper. |                          |
| <b>Weight (mated pair):</b>       | 0.28 oz 8.2 g                                         |                          |





## Miniature unit accessories — Flush and surface mounting shrouds

- L1470/F Single flush mounting shroud
- L1470/S Single surface mounting shroud
- L1471/F Double flush mounting shroud
- L1471/S Double surface mounting shroud
- L1472/F Treble flush mounting shroud
- L1472/S Treble surface mounting shroud



Panel cut-out see table 1

Material: Aluminium alloy

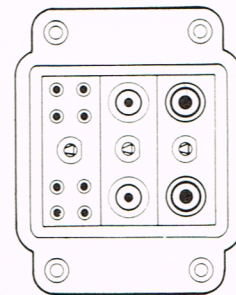
| Table 1 |       |      |       |      |       |      |
|---------|-------|------|-------|------|-------|------|
| Types   | A     |      | B     |      | C     |      |
|         | inch  | mm   | inch  | mm   | inch  | mm   |
| L1470/F | 1.360 | 34,5 | 0.715 | 18,2 | —     | —    |
| L1470/S | 1.031 | 26,2 | 0.406 | 10,3 | —     | —    |
| L1471/F | 1.360 | 34,5 | 1.093 | 27,8 | 0.500 | 12,7 |
| L1471/S | 1.031 | 26,2 | 0.781 | 19,8 | 0.500 | 12,7 |
| L1472/F | 1.360 | 34,5 | 1.468 | 37,3 | 0.937 | 23,8 |
| L1472/S | 1.031 | 26,2 | 1.156 | 29,4 | 0.937 | 23,8 |

Table 2

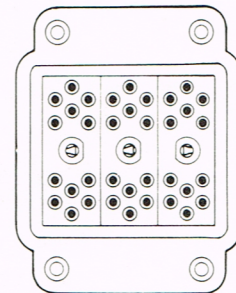
| Type    | A     |      | B     |      |
|---------|-------|------|-------|------|
|         | inch  | mm   | inch  | mm   |
| L1470/F | —     | —    | 0.719 | 18,3 |
| L1470/S | 0.502 | 12,8 | —     | —    |
| L1471/F | —     | —    | 1.093 | 27,8 |
| L1471/S | 0.878 | 22,3 | —     | —    |
| L1472/F | —     | —    | 1.469 | 37,3 |
| L1472/S | 1.253 | 31,8 | —     | —    |

These metal Shrouds can be used for mounting one, two or three Miniature Units on a plug-in unit and on the equipment rack.

All Belling-Lee Miniature Units have a common face area and central fixing point, and are therefore physically interchangeable. In addition they are polarized so that each unit can be mounted in two alternative ways on any site.

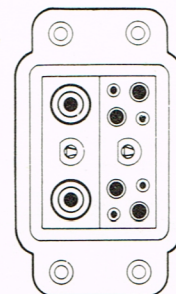


L1388, L1390, and L1580 side-by-side, enabling power supplies and r.f. or pulse signals to be grouped together in one unit.



Three L1389 Miniature Units giving 36 poles in an area of only 1.32 square inches.

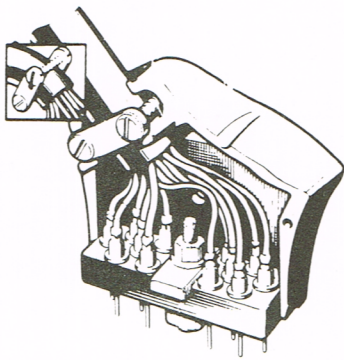
Note: The arrangement of the polarizing keys, one of 8 possible variations.



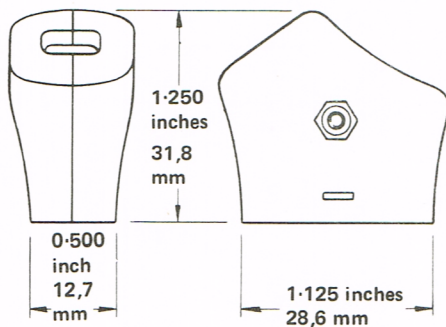
An L1390 and L1387 side-by-side in a double shroud.



## L1588/C Cable outlet

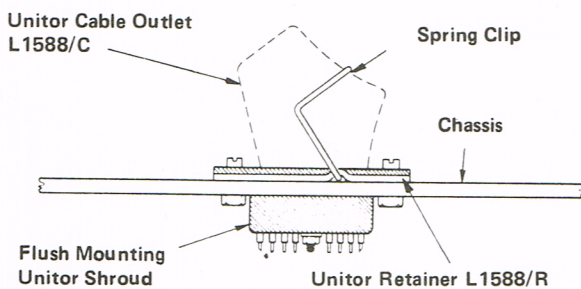


This moulded cable outlet accommodates any member of the Miniature Unitor range, male or female permitting cable connection to the appropriate fixed unit.

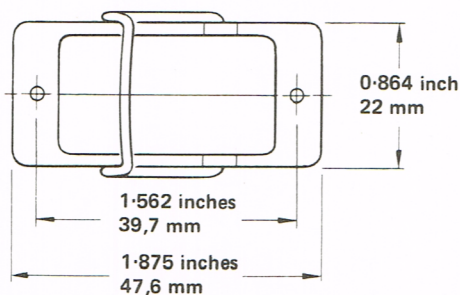


**Humidity:** H5 (DEF - 5011)  
**Cable entry size:** 0.375 x 0.250 inch 9,5 x 6,4 mm  
**Material:** Butyrate  
**Weight (average):** 9,2 g 0.32 oz

## L1588/R Retainer



This retainer is intended for use with flush mounted fixed members, and is secured between the flange of the unitor shroud and the panel, using common fixing screws.

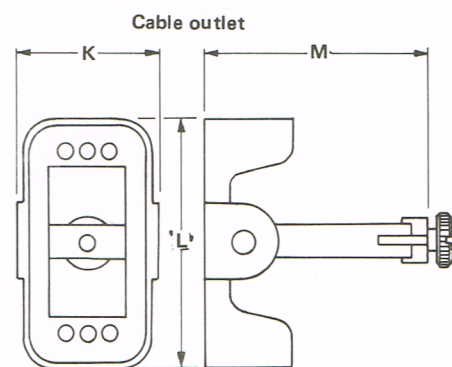
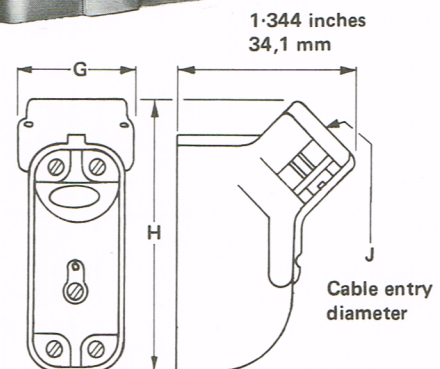
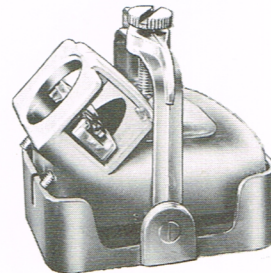


**Materials:** Base-plate, brass, cadmium-plated  
 Retaining clip, spring steel  
**Weight (average):** 5,1 g 0.18 oz

## Unitors, pattern 102, cable outlets and shroud retainers

|         |                 |                                         |
|---------|-----------------|-----------------------------------------|
| L653/C3 | Cable outlet    | For use with                            |
| L653/R3 | Shroud retainer | 4-pole unitor                           |
| L654/C3 | Cable outlet    | For use with                            |
| L654/R3 | Shroud retainer | 8-pole unitor                           |
| L655/C3 | Cable outlet    | For use with                            |
| L655/R3 | Shroud retainer | 12-pole unitor                          |
| L656/C3 | Cable outlet    | For use with                            |
| L656/R3 | Shroud retainer | 18-pole unitor                          |
| L657/C3 | Cable outlet    | For use with                            |
| L657/R3 | Shroud retainer | 25-pole unitor (including L1328 series) |

Scale 1:2



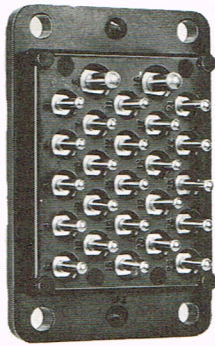
| Material:          | Aluminium alloy |         |  |
|--------------------|-----------------|---------|--|
| Weights (average): |                 |         |  |
| L653/C3            | 21,2 g          | 0.75 oz |  |
| L653/R3            | 12,8 g          | 0.45 oz |  |
| L654/C3            | 22,7 g          | 0.81 oz |  |
| L654/R3            | 14 g            | 0.50 oz |  |
| L655/C3            | 27,9 g          | 0.99 oz |  |
| L655/R3            | 15,5 g          | 0.55 oz |  |
| L656/C3            | 31,2 g          | 1.10 oz |  |
| L656/R3            | 17,2 g          | 0.61 oz |  |
| L657/C3            | 38 g            | 1.34 oz |  |
| L657/R3            | 19,2 g          | 0.68 oz |  |

|   | 4-pole |      | 8-pole |      | 12-pole |      | 18-pole |      | 25-pole |      |
|---|--------|------|--------|------|---------|------|---------|------|---------|------|
|   | inch   | mm   | inch   | mm   | inch    | mm   | inch    | mm   | inch    | mm   |
| G | 0.813  | 20,6 | 0.906  | 23   | 0.969   | 24,6 | 0.969   | 24,6 | 1.313   | 33,3 |
| H | 1.906  | 48,4 | 1.906  | 48,4 | 1.906   | 48,4 | 2.313   | 58,7 | 2.047   | 52   |
| J | 0.313  | 7,9  | 0.438  | 11,1 | 0.484   | 12,3 | 0.578   | 14,7 | 0.676   | 17,2 |
| K | 0.875  | 22,2 | 1.031  | 26,2 | 1.281   | 32,5 | 1.281   | 32,5 | 1.641   | 41,7 |
| L | 1.750  | 44,5 | 1.812  | 46   | 1.812   | 46   | 2.281   | 57,9 | 2.063   | 52,4 |
| M | 1.719  | 43,7 | 1.719  | 43,7 | 1.812   | 46   | 1.812   | 46   | 1.812   | 46   |

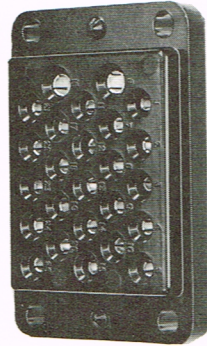


## Unitors, pattern 102 connectors

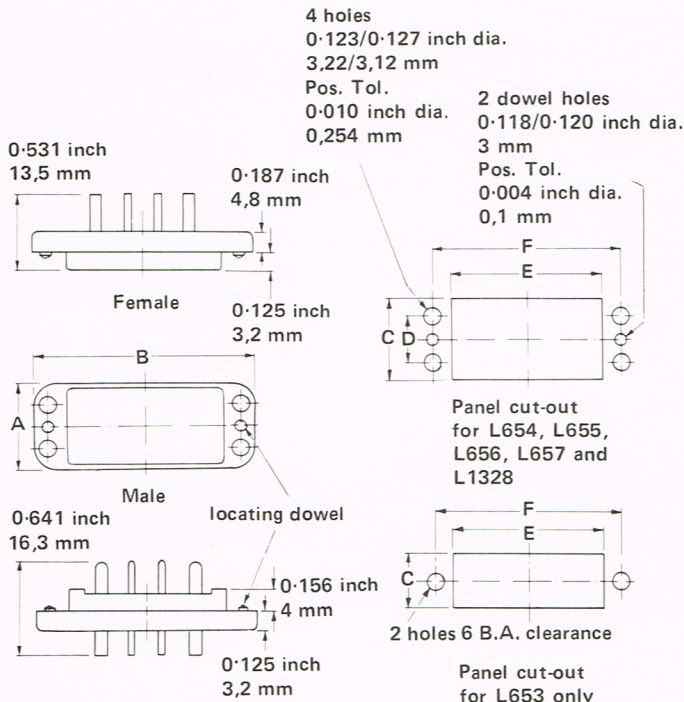
|                        |                         |
|------------------------|-------------------------|
| L653/P 4-pole, male    | L656/P 18-pole, male    |
| L653/S 4-pole, female  | L656/S 18-pole, female  |
| L654/P 8-pole, male    | L657/P 25-pole, male    |
| L654/S 8-pole, female  | L657/S 25-pole, female  |
| L655/P 12-pole, male   | L1328/P 25-pole, male   |
| L655/S 12-pole, female | L1328/S 25-pole, female |



L657/P



L657/S



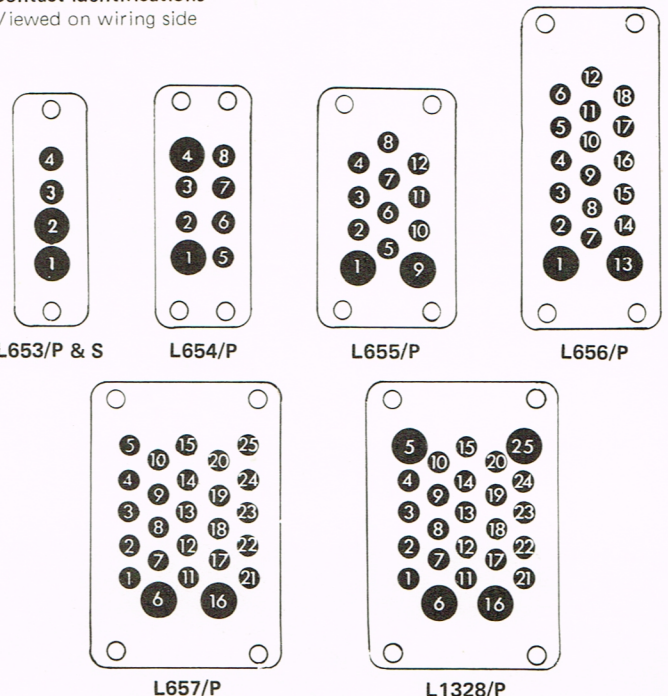
|                                  |      | A     | B     | C     | D     | E     | F     |
|----------------------------------|------|-------|-------|-------|-------|-------|-------|
| 4 - pole<br>2 large<br>2 small   | inch | 0.406 | 1.437 | 0.365 | -     | 1.015 | 1.250 |
|                                  | mm   | 10,3  | 36,5  | 9,3   | -     | 25,8  | 31,8  |
| 8 - pole<br>2 large<br>6 small   | inch | 0.578 | 1.484 | 0.537 | 0.312 | 1.060 | 1.296 |
|                                  | mm   | 14,7  | 37,7  | 13,6  | 7,9   | 26,9  | 32,9  |
| 12 - pole<br>2 large<br>10 small | inch | 0.843 | 1.500 | 0.740 | 0.500 | 1.061 | 1.296 |
|                                  | mm   | 21,4  | 38,1  | 18,8  | 12,7  | 27    | 32,9  |
| 18 - pole<br>2 large<br>16 small | inch | 0.843 | 2.000 | 0.740 | 0.500 | 1.515 | 1.750 |
|                                  | mm   | 21,4  | 50,8  | 18,8  | 12,7  | 38,5  | 44,5  |
| 25 - pole<br>2 or 4 large        | inch | 1.187 | 1.750 | 1.077 | 0.875 | 1.265 | 1.500 |
|                                  | mm   | 30,2  | 44,5  | 27,4  | 22,2  | 32,1  | 38,1  |

These unitors were originally developed under a Government Contract in which reliability was a paramount requirement. The male contacts have a controlled degree of float to facilitate blind engagement, and the configuration is designed to obviate incorrect mating. The mouldings are track resistant, and clearance is provided between the mating faces for air to circulate and dispel any moisture deposited. All unitors have two, heavy current poles, but the 25-pole has a choice of two or four.

While originally devised for direct chassis-to-chassis connections their versatility has been extended by the ancillary range of aluminium alloy cable outlets and shroud retainers.

|                                              |                                                                                                                                                                                                                                     |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Specification:</b>                        | DEF - 5321                                                                                                                                                                                                                          |
| <b>Current rating:</b>                       | Small poles, 3 A<br>Large poles, 10 A<br>(temperature rise $\leq 20^{\circ}\text{C}$ )<br>At sea level 3 kV, at 20 000 m<br>66 000 feet 750 V                                                                                       |
| <b>Breakdown (d.c.):</b>                     | 3,1 mm 0.12 inch between poles<br>4,2 mm 0.17 inch between any pole<br>and chassis                                                                                                                                                  |
| <b>Creepage distance:</b>                    | 2 milliohms (small poles)<br>1.2 milliohms (large poles)<br>> 100 megohms                                                                                                                                                           |
| <b>Insulation resistance:</b>                | 4 pF (between poles) at 800 Hz                                                                                                                                                                                                      |
| <b>Capacitance:</b>                          | Class H5 (DEF - 5011)                                                                                                                                                                                                               |
| <b>Humidity:</b>                             | -40 $^{\circ}\text{C}$ to + 100 $^{\circ}\text{C}$ (Ambient)                                                                                                                                                                        |
| <b>Temperature range:</b>                    |                                                                                                                                                                                                                                     |
| <b>Insertion/withdrawal force (maximum):</b> | 4,4 N 1 lbf per contact                                                                                                                                                                                                             |
| <b>Wire sizes (maximum):</b>                 | Small poles 0.04 inch 1 mm 19 s.w.g.<br>Large poles 0.067 inch 1,7 mm<br>16 s.w.g.                                                                                                                                                  |
| <b>Panel thickness:</b>                      | Flange on wiring side of panel, 0.125<br>inch 3,2 mm<br>Flange on mating side of panel, no<br>limit.                                                                                                                                |
| <b>Materials:</b>                            | Black nylon-filled phenolic resin<br>mouldings, silver or gold plated solid<br>brass pins and beryllium copper<br>sockets.<br>For silver finish quote part number<br>e.g. L653/P<br>For gold finish add suffix Au<br>e.g. L653/P/Au |
| <b>Weight (average, mated pair):</b>         | L653 0.3 oz 8,4 g<br>L654 0.48 oz 13,5 g<br>L655 0.69 oz 19,6 g<br>L656 0.98 oz 27,8 g<br>L657 1.16 oz 32,8 g<br>L1328 1.3 oz 37,2 g                                                                                                |

### Contact identifications Viewed on wiring side



All plug and socket contacts are numbered on the face and reverse side of mouldings.



## Printed circuit standard edge connectors

### 0.1 inch module

L1486/Au 32-way connector

Y20697 64-way connector (without end feet)

### 0.15 inch module

L1369/Au 8-way connector

Y20197 8-way connector (without end feet)

L1370/Au 12-way connector

L1372/Au 18-way connector

L1740A/Au 24-way connector

Domed beryllium-copper contacts of unique design, carefully heat treated, ensure gentle and consistent connection with minimum wear and low resistance. The contact positions are numbered on the top and underside of the mouldings.

#### Current rating:

3 A per contact (printed wiring)  
4 A per contact (free wiring)  
Temperature rise  $\leq 10^{\circ}\text{C}$

#### Breakdown voltage(d.c.):

At sea level At 20 000 m 68 000 ft.

Between contacts 0.1 inch module

$> 2\text{ kV}$  400 V

Between contacts 0.15 inch module

$> 3\text{ kV}$   $> 500\text{ V}$

#### Insulation resistance:

$\geq 10 \times 10^3$  megohms after climatic exposure

#### Contact resistance(per pole):

5 milliohms

#### Capacitance:

0.1 pF between contacts

#### Temperature range:

$-40^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$  (Ambient)

#### Humidity:

A4 (BS 2111)

#### Contact pressure (each):

2.7 N 10 ozf

#### Insertion/withdrawal force:

1.33 - 1 N 4.8 - 3.6 ozf per contact

#### Board thickness:

0.057-0.068 inch 1.45 mm-1.73 mm

#### Panel thickness:

0.125 inch 3 mm maximum

#### Contact width:

0.048 inch 1.2 mm maximum

0.042 inch 1.07 mm minimum

0.070 inch 1.8 mm

#### Printed contact width:

#### Board insertion:

0.268 inch 6.81 mm

#### Contacts:

Beryllium-copper, gold-plated.

Maximum conductor size (free wiring)

0.020 inch dia, 25 s.w.g, 0.5 mm dia.

#### Weights(average):

L1486/Au 12 g 0.43 oz

L1369/Au 4.9 g 0.17 oz

L1370/Au 6.7 g 0.24 oz

L1372/Au 9.8 g 0.35 oz

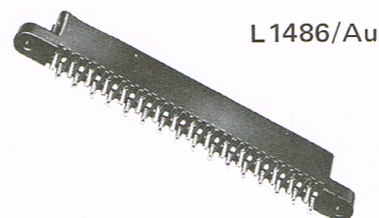
L1740A/Au 17 g 0.60 oz

Y20197 3.9 g 0.14 oz

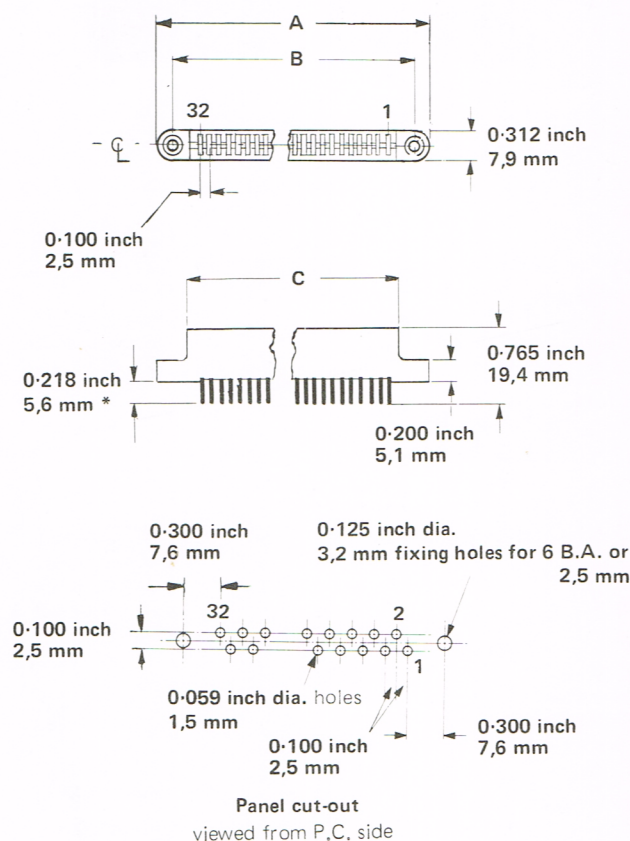
Y20697 21.2 g 0.75 oz

## 0.1 inch module connector

Scale 1:2



L1486/Au



\*Y20697 dimension 0.156 inch 3.96 mm

|        | A      |       | B      |    | C      |       |
|--------|--------|-------|--------|----|--------|-------|
|        | inches | mm    | inches | mm | inches | mm    |
| L1486  | 4.012  | 101.9 | 3.700  | 94 | 3.320  | 84.3  |
| Y20697 | —      | —     | —      | —  | 6.512  | 165.4 |



## 0.15 inch module connectors

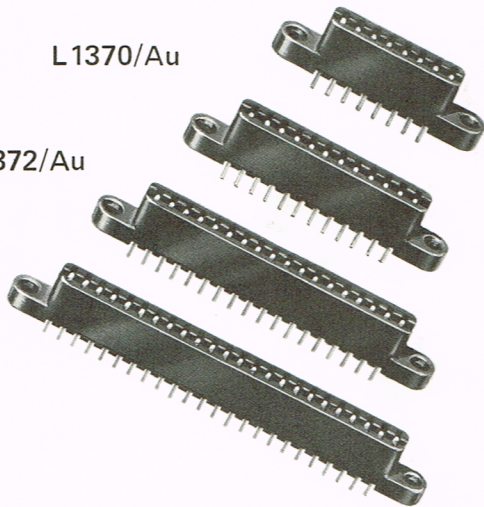
Scale 1:2

L 1369/Au

L 1370/Au

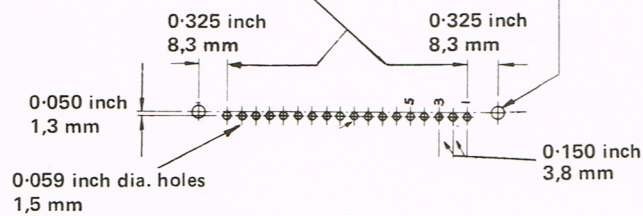
L 1372/Au

L1740A/Au

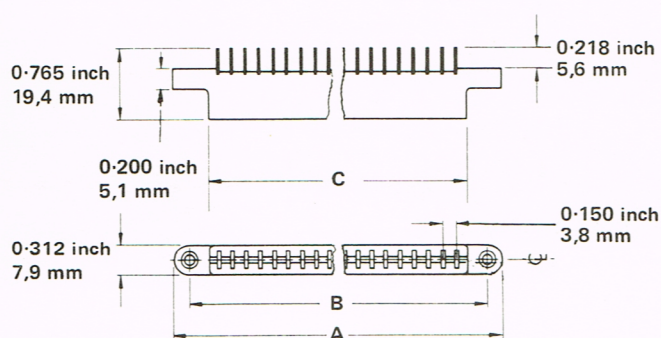


0.325 inch dim. standard on all 0.150 inch module connectors (from 6 B.A. fixing centre to centre 1, and last tag to 6 B.A. fixing centre.

0.125 inch dia. 3.2 mm fixing holes for 6 B.A. or 2.5 mm clearance



Panel cut-out viewed from p.c. side

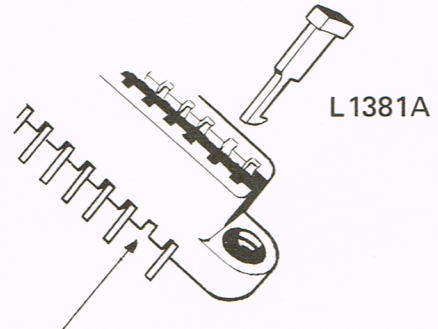


|           | A      |      | B      |       | C      |      |
|-----------|--------|------|--------|-------|--------|------|
|           | inches | mm   | inches | mm    | inches | mm   |
| L 1369/Au | 2.012  | 51.1 | 1.700  | 43.2  | 1.265  | 32.1 |
| L 1370/Au | 2.612  | 66.3 | 2.300  | 58.4  | 1.915  | 48.6 |
| L 1372/Au | 3.512  | 89.2 | 3.200  | 81.3  | 2.760  | 70.1 |
| L1740A/Au | 4.412  | 112  | 4.100  | 104.1 | 3.670  | 93.2 |
| Y20197    | —      | —    | —      | —     | 1.265  | 32.1 |

## Accessories

### L1381A Polarizing key

Positioning of a P.C. board in relation to individual contacts is controlled by the polarizing key and not by the supports.



Contacts may be removed from moulding to permit insertion of polarizing keys, L1381A.

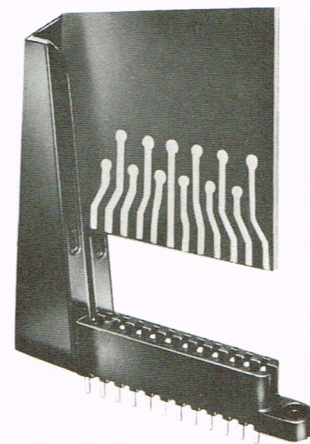
Weight (average):

0.06 g 0.002 oz

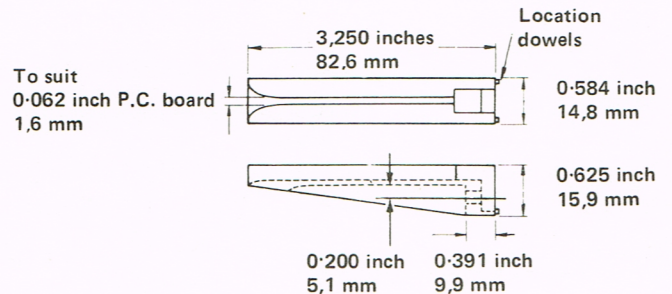
### L1380 Support

Scale 1:2

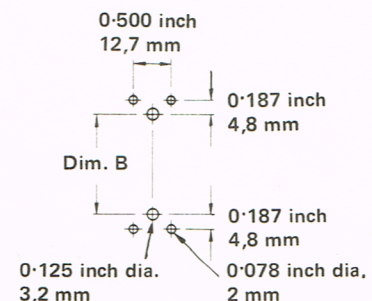
L1380



Moulded supports may either be mounted on the same fixing centres as the connector, or stood off to accommodate wider boards.



Average weight: 26 g 0.92 oz

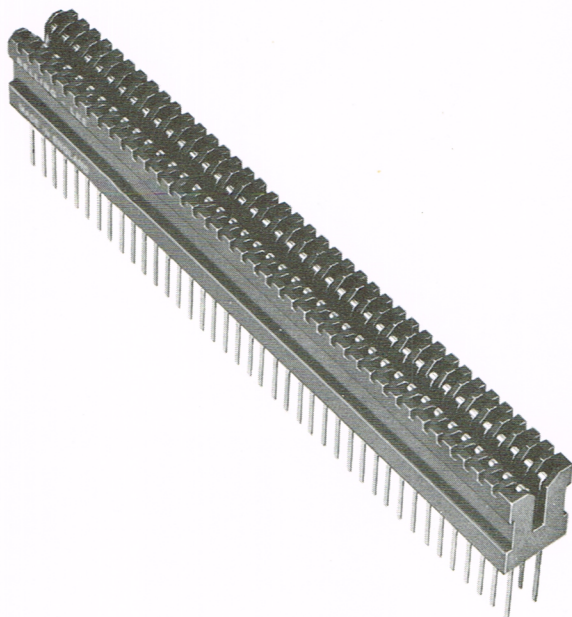


Panel cut-out viewed from P.C. side

Dimension 'B' to be fixing centres of any P.C. connector. Location dowel holes to be within 0.002 inch 0.05 mm dia. of true position.



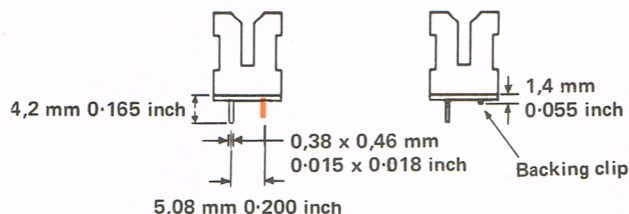
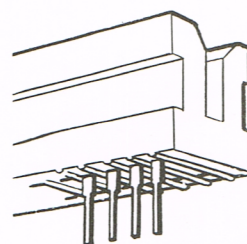
## Belling-Lee series 2100 modular edge connector 2,54 mm 0.1 inch pitch



### Terminations

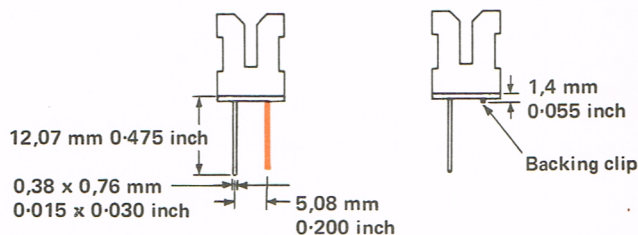
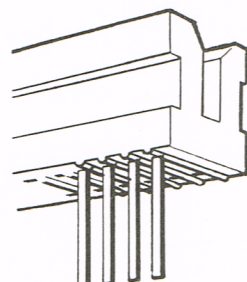
#### Flow solder

- L2100/A Single-sided, from 8 to 90 contacts  
L2100/B Single-sided, with backing clips, from 8 to 90 contacts  
L2100/C Double-sided, from 16 (8 + 8) to 180 (90 + 90) contacts second row of contacts is shown in orange outline.



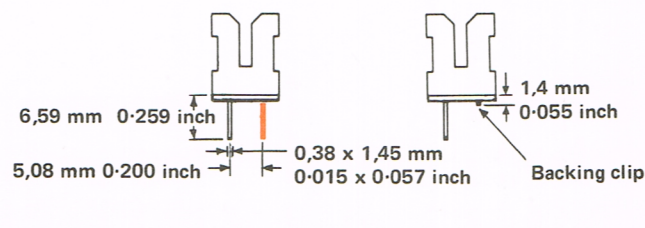
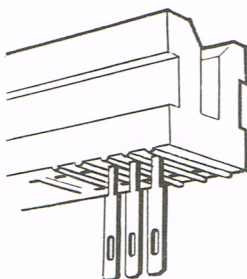
#### Mini-wrap

- L2100/D Single-sided, from 8 to 90 contacts  
L2100/E Single-sided, with backing clips, from 8 to 90 contacts  
L2100/F Double-sided, from 16 (8 + 8) to 180 (90 + 90) contacts second row of contacts is shown in orange outline.



#### Solder lugs

- L2100/G Single-sided, from 8 to 90 contacts  
L2100/H Single-sided, with backing clips, from 8 to 90 contacts  
L2100/J Double-sided, from 16 (8 + 8) to 180 (90 + 90) contacts second row of contacts is shown in orange outline.



|                                |                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Current rating:</b>         | 1,5 Ad.c. per contact at 25 °C<br>1 Ad.c. per contact at 100 °C<br>3 A for a single contact                           |
| <b>Breakdown voltage:</b>      | 2200 Vd.c. or a.c. peak at sea level (N.T.P.)                                                                         |
| <b>Contact resistance:</b>     | 10 milliohms                                                                                                          |
| <b>Insulation resistance:</b>  | > 100 x 10 <sup>3</sup> megohms                                                                                       |
| <b>Terminations:</b>           | Solder lug; Flow solder; Mini-wrap.                                                                                   |
| <b>Number of contacts:</b>     | 8 to 90 single-sided; 16 to 180 double-sided.                                                                         |
| <b>Environmental category:</b> | 55/125/21 to BS 2011 (-55 °C to 125 °C 21 days long term damp heat). (50/100/21 if plastic polarizing key is fitted). |
| <b>Board insertion force:</b>  | 1,56 N 5.5 oz maximum, one pair of contacts.                                                                          |
| <b>Board thickness:</b>        | 1,8 to 1,4 mm 0.071 - 0.055 inch                                                                                      |

#### Materials:

|                           |                                                                                                                                                                                                          |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Moulding                  | Glass fibre DAP                                                                                                                                                                                          |
| Contact and Backing clip  | Phosphor-bronze                                                                                                                                                                                          |
| Contact finish            | 0,45 µm gold over 2,5 µm nickel or<br>0,45 µm gold over 2,5 µm nickel, with contact areas locally plated 5 µm gold.<br>Other finishes are available on special request.                                  |
| Backing clip finish       | 2,5 µm nickel                                                                                                                                                                                            |
| Fixing brackets           | Mild steel, nickel-plated                                                                                                                                                                                |
| <b>Weights (average):</b> | Moulding 0,34 n + 0,2 g<br>0,34 n + 0.007 oz<br>where n = number of ways<br>Flow solder contact 0,073 g 0.003 oz<br>Miniwrap 0,097 g 0.003 oz<br>Solder lug 0,090 g 0.003 oz<br>Backing 0,068 g 0.002 oz |



## How to order

The following ordering code will help you in specifying the connector required.

### Standard connectors

|       |   |    |   |
|-------|---|----|---|
| L2100 | 0 | 00 | 0 |
|-------|---|----|---|

#### Series

#### Termination style

| Single-sided    | Single-sided, with backing clip | Double-sided    |
|-----------------|---------------------------------|-----------------|
| A — Flow solder | B — Flow solder                 | C — Flow solder |
| D — Mini-wrap   | E — Mini-wrap                   | F — Mini-wrap   |
| G — Solder lug  | H — Solder lug                  | J — Solder lug  |

#### Number of contacts or pairs of contacts

For single-sided configuration state number of contacts.  
For double-sided configurations state number of pairs of contacts.

#### Finish

- F — 0,45 µm gold over 2,5 µm nickel  
G — 0,45 µm gold over 2,5 µm nickel with contact areas locally plated 5 µm gold.

### Fixing brackets and polarizing keys

Fixing brackets and polarizing keys should be ordered separately. (Supplied in packs of 20).

#### Metal polarizing key

Please state 'metal' on order and specify position required.

#### Example: L2100/B/27/F

This is a 27-way single-sided connector with backing clips and flow solder terminations. Contacts are plated 0,45 µm gold over 2,5 µm nickel.

### Camac connector L2102

This variant of the Series 2100 connector meets the European CAMAC specification, being a 43 + 43 way double-sided connector.

|       |   |    |   |
|-------|---|----|---|
| L2102 | 0 | 43 | 0 |
|-------|---|----|---|

#### Type number

#### Termination arrangement

C, F and J  
See above

#### Number of pairs of contacts

#### Contact finish

F or G  
See above

### Fixing brackets and polarizing keys

Polarizing keys and Camac fixing bracket L2108 should be ordered separately. (Supplied in packs of 20).

#### Example: L2102/J/43/G

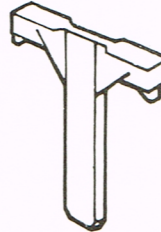
This is a 43-way double-sided connector, with solder lug terminations. Contacts are plated 0,45 µm gold over 2,5 µm nickel with contact areas locally plated 5 µm gold.

## Polarizing keys



#### L2112 (supplied in packs of 20)

A plastic key for insertion in a pair of contact cavities, so replacing one set of contacts, for polarizing or locating.  
Weight (average): 0,077g 0-003 oz



#### L2113 (supplied in packs of 20)

A plastic polarizing key for insertion between contacts. Achieves polarization without reducing the number of ways.  
Weight (average): 0-039g 0-001 oz



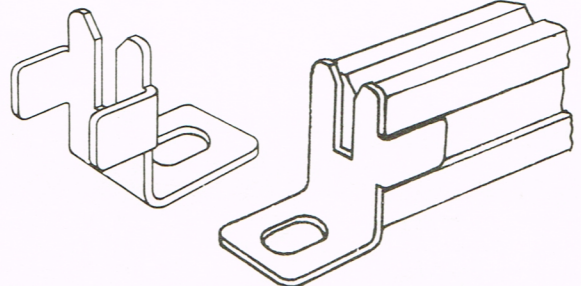
#### Metal polarizing key

This metal polarizing key occupies a pair of contact positions and is factory inserted. Positioning requirements must be given at the time of ordering  
Weight (average): 0,206g 0-007 oz

## Fixing brackets

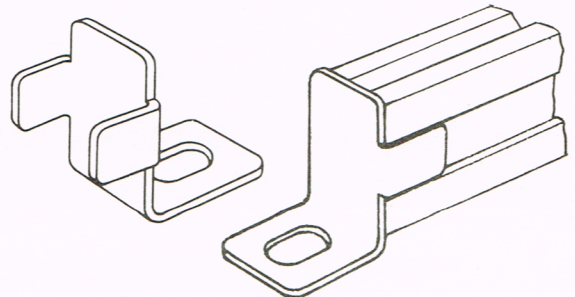
#### L2106 (supplied in packs of 20) Open end

Weight (average): 1,27 g 0-05 oz



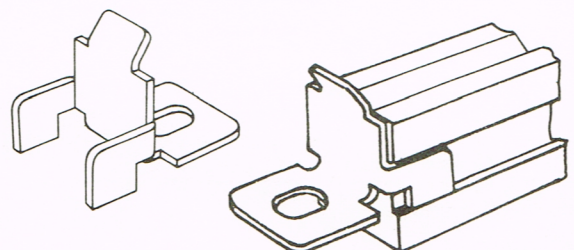
#### L2107 (supplied in packs of 20) Closed end

Weight (average): 1,34 g 0-05 oz

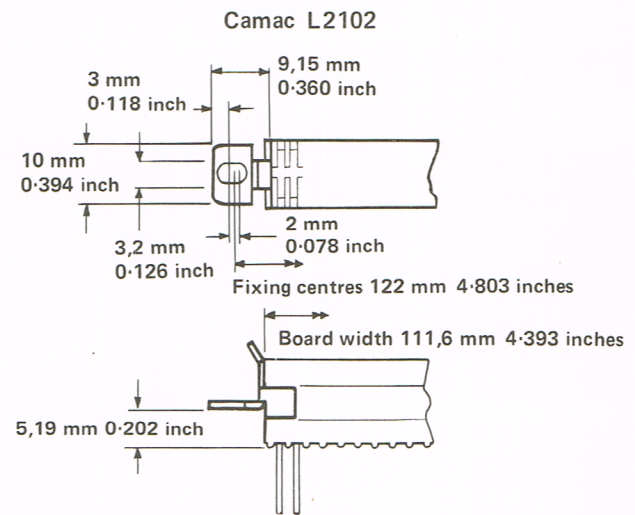
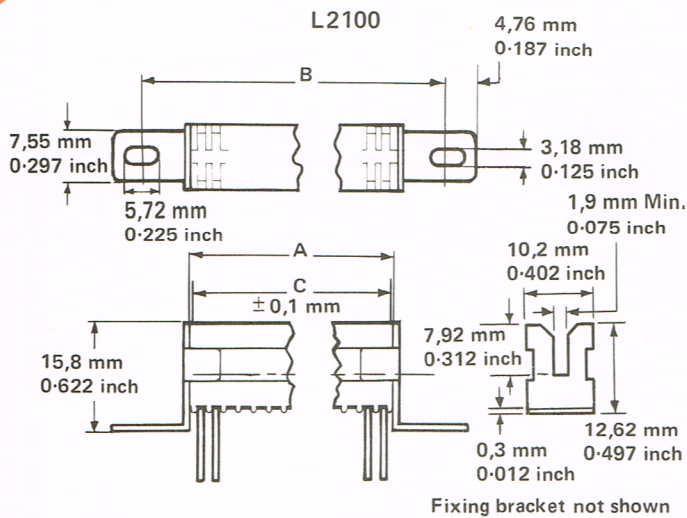


#### L2108 (supplied in packs of 20) CAMAC style

Weight (average): 1,12 g 0-04 oz



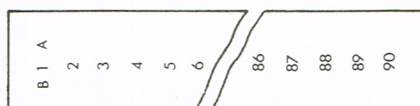




| Number of contacts |              | Moulding length A |       | Fixing hole centres B |       | Board width C for closed end fixing bracket |       |
|--------------------|--------------|-------------------|-------|-----------------------|-------|---------------------------------------------|-------|
| Single Sided       | Double Sided | mm                | inch  | mm                    | inch  | mm                                          | inch  |
| 8                  | 8 + 8        | 21,29             | 0.839 | 35,57                 | 1.401 | 21,03                                       | 0.829 |
| 9                  | 9 + 9        | 23,83             | 0.939 | 38,11                 | 1.502 | 23,57                                       | 0.929 |
| 10                 | 10 + 10      | 26,37             | 1.039 | 40,65                 | 1.602 | 26,11                                       | 1.029 |
| 11                 | 11 + 11      | 28,91             | 1.139 | 43,19                 | 1.702 | 28,65                                       | 1.129 |
| 12                 | 12 + 12      | 31,45             | 1.239 | 45,73                 | 1.802 | 31,19                                       | 1.229 |
| 13                 | 13 + 13      | 33,99             | 1.339 | 48,27                 | 1.902 | 33,73                                       | 1.329 |
| 14                 | 14 + 14      | 36,53             | 1.439 | 50,81                 | 2.002 | 36,27                                       | 1.429 |
| 15                 | 15 + 15      | 39,07             | 1.539 | 53,35                 | 2.102 | 38,81                                       | 1.529 |
| 16                 | 16 + 16      | 41,61             | 1.639 | 55,89                 | 2.202 | 41,35                                       | 1.629 |
| 17                 | 17 + 17      | 44,15             | 1.740 | 58,43                 | 2.302 | 43,89                                       | 1.729 |
| 18                 | 18 + 18      | 46,69             | 1.840 | 60,97                 | 2.402 | 46,43                                       | 1.829 |
| 19                 | 19 + 19      | 49,23             | 1.940 | 63,51                 | 2.502 | 48,97                                       | 1.929 |
| 20                 | 20 + 20      | 51,77             | 2.040 | 66,05                 | 2.602 | 51,51                                       | 2.029 |
| 21                 | 21 + 21      | 54,31             | 2.140 | 68,59                 | 2.702 | 54,05                                       | 2.130 |
| 22                 | 22 + 22      | 56,85             | 2.240 | 71,13                 | 2.803 | 56,59                                       | 2.230 |
| 23                 | 23 + 23      | 59,39             | 2.340 | 73,67                 | 2.903 | 59,13                                       | 2.330 |
| 24                 | 24 + 24      | 61,93             | 2.440 | 76,21                 | 3.003 | 61,67                                       | 2.430 |
| 25                 | 25 + 25      | 64,47             | 2.540 | 78,75                 | 3.103 | 64,21                                       | 2.530 |
| 26                 | 26 + 26      | 67,01             | 2.640 | 81,29                 | 3.203 | 66,75                                       | 2.630 |
| 27                 | 27 + 27      | 69,55             | 2.740 | 83,83                 | 3.303 | 69,29                                       | 2.730 |
| 28                 | 28 + 28      | 72,09             | 2.840 | 86,37                 | 3.403 | 71,83                                       | 2.830 |
| 29                 | 29 + 29      | 74,63             | 2.940 | 88,91                 | 3.503 | 74,37                                       | 2.930 |
| 30                 | 30 + 30      | 77,17             | 3.041 | 91,45                 | 3.603 | 76,91                                       | 3.030 |
| 31                 | 31 + 31      | 79,71             | 3.141 | 93,99                 | 3.703 | 79,45                                       | 3.130 |
| 32                 | 32 + 32      | 82,25             | 3.241 | 96,53                 | 3.803 | 81,99                                       | 3.230 |
| 33                 | 33 + 33      | 84,79             | 3.341 | 99,07                 | 3.903 | 84,53                                       | 3.331 |
| 34                 | 34 + 34      | 87,33             | 3.441 | 101,61                | 4.003 | 87,07                                       | 3.431 |
| 35                 | 35 + 35      | 89,87             | 3.541 | 104,15                | 4.104 | 89,61                                       | 3.531 |
| 36                 | 36 + 36      | 92,41             | 3.641 | 106,69                | 4.204 | 92,15                                       | 3.631 |
| 37                 | 37 + 37      | 94,95             | 3.741 | 109,23                | 4.304 | 94,69                                       | 3.731 |
| 38                 | 38 + 38      | 97,49             | 3.841 | 111,77                | 4.404 | 97,23                                       | 3.831 |
| 39                 | 39 + 39      | 100,03            | 3.941 | 114,31                | 4.504 | 99,77                                       | 3.931 |
| 40                 | 40 + 40      | 102,57            | 4.041 | 116,85                | 4.604 | 102,31                                      | 4.031 |
| 41                 | 41 + 41      | 105,11            | 4.141 | 119,39                | 4.704 | 104,85                                      | 4.131 |
| 42                 | 42 + 42      | 107,65            | 4.241 | 121,93                | 4.804 | 107,39                                      | 4.231 |
| 43                 | 43 + 43      | 110,19            | 4.342 | 124,47                | 4.904 | 109,93                                      | 4.331 |
| 44                 | 44 + 44      | 112,73            | 4.442 | 127,01                | 5.004 | 112,47                                      | 4.431 |
| 45                 | 45 + 45      | 115,27            | 4.542 | 129,55                | 5.104 | 115,01                                      | 4.531 |
| 46                 | 46 + 46      | 117,81            | 4.642 | 132,09                | 5.204 | 117,55                                      | 4.632 |
| 47                 | 47 + 47      | 120,35            | 4.742 | 134,63                | 5.304 | 120,09                                      | 4.732 |
| 48                 | 48 + 48      | 122,89            | 4.842 | 137,17                | 5.405 | 122,63                                      | 4.832 |
| 49                 | 49 + 49      | 125,43            | 4.942 | 139,71                | 5.505 | 125,17                                      | 4.932 |

Preferred sizes are shown in orange bands

## Terminal Identification



Viewed on wiring side

For single-sided arrangements, contacts are fitted to side A unless otherwise specified.

| Number of Contacts |              | Moulding length A |       | Fixing hole centres B |       | Board width C for closed end fixing bracket |       |
|--------------------|--------------|-------------------|-------|-----------------------|-------|---------------------------------------------|-------|
| Single Sided       | Double Sided | mm                | inch  | mm                    | inch  | mm                                          | inch  |
| 50                 | 50 + 50      | 127,97            | 5.042 | 142,25                | 5.605 | 127,71                                      | 5.032 |
| 51                 | 51 + 51      | 130,51            | 5.142 | 144,79                | 5.705 | 130,25                                      | 5.132 |
| 52                 | 52 + 52      | 133,05            | 5.242 | 147,33                | 5.805 | 132,79                                      | 5.232 |
| 53                 | 53 + 53      | 135,59            | 5.342 | 149,87                | 5.905 | 135,33                                      | 5.332 |
| 54                 | 54 + 54      | 138,13            | 5.442 | 152,41                | 6.005 | 137,87                                      | 5.432 |
| 55                 | 55 + 55      | 140,67            | 5.543 | 154,95                | 6.105 | 140,41                                      | 5.532 |
| 56                 | 56 + 56      | 143,21            | 5.643 | 157,49                | 6.205 | 142,95                                      | 5.632 |
| 57                 | 57 + 57      | 145,75            | 5.743 | 160,03                | 6.305 | 145,49                                      | 5.732 |
| 58                 | 58 + 58      | 148,29            | 5.843 | 162,57                | 6.405 | 148,03                                      | 5.832 |
| 59                 | 59 + 59      | 150,83            | 5.943 | 165,11                | 6.505 | 150,57                                      | 5.933 |
| 60                 | 60 + 60      | 153,37            | 6.043 | 167,65                | 6.605 | 153,11                                      | 6.033 |
| 61                 | 61 + 61      | 155,91            | 6.143 | 170,19                | 6.706 | 155,65                                      | 6.133 |
| 62                 | 62 + 62      | 158,45            | 6.243 | 172,73                | 6.808 | 158,19                                      | 6.233 |
| 63                 | 63 + 63      | 160,99            | 6.343 | 175,27                | 6.906 | 160,73                                      | 6.333 |
| 64                 | 64 + 64      | 163,53            | 6.443 | 177,81                | 7.006 | 163,27                                      | 6.433 |
| 65                 | 65 + 65      | 166,07            | 6.543 | 180,35                | 7.106 | 165,81                                      | 6.533 |
| 66                 | 66 + 66      | 168,61            | 6.643 | 182,89                | 7.206 | 168,35                                      | 6.633 |
| 67                 | 67 + 67      | 171,15            | 6.743 | 185,43                | 7.306 | 170,89                                      | 6.733 |
| 68                 | 68 + 68      | 173,69            | 6.843 | 187,97                | 7.406 | 173,43                                      | 6.833 |
| 69                 | 69 + 69      | 176,23            | 6.944 | 190,51                | 7.506 | 175,97                                      | 6.933 |
| 70                 | 70 + 70      | 178,77            | 7.044 | 193,05                | 7.606 | 178,51                                      | 7.033 |
| 71                 | 71 + 71      | 181,31            | 7.144 | 195,59                | 7.706 | 181,05                                      | 7.133 |
| 72                 | 72 + 72      | 183,85            | 7.244 | 198,13                | 7.806 | 183,59                                      | 7.233 |
| 73                 | 73 + 73      | 186,39            | 7.344 | 200,67                | 7.906 | 186,13                                      | 7.334 |
| 74                 | 74 + 74      | 188,93            | 7.444 | 203,21                | 8.007 | 188,67                                      | 7.434 |
| 75                 | 75 + 75      | 191,47            | 7.544 | 205,75                | 8.107 | 191,21                                      | 7.534 |
| 76                 | 76 + 76      | 194,01            | 7.644 | 208,29                | 8.207 | 193,75                                      | 7.634 |
| 77                 | 77 + 77      | 196,55            | 7.744 | 210,83                | 8.307 | 196,29                                      | 7.734 |
| 78                 | 78 + 78      | 199,09            | 7.844 | 213,37                | 8.407 | 198,83                                      | 7.834 |
| 79                 | 79 + 79      | 201,63            | 7.944 | 215,91                | 8.507 | 201,37                                      | 7.934 |
| 80                 | 80 + 80      | 204,17            | 8.044 | 218,45                | 8.607 | 203,91                                      | 8.034 |
| 81                 | 81 + 81      | 206,71            | 8.144 | 220,99                | 8.707 | 206,45                                      | 8.134 |
| 82                 | 82 + 82      | 209,25            | 8.245 | 223,53                | 8.807 | 208,99                                      | 8.234 |
| 83                 | 83 + 83      | 211,79            | 8.345 | 226,07                | 8.907 | 211,53                                      | 8.334 |
| 84                 | 84 + 84      | 214,33            | 8.445 | 228,61                | 9.007 | 214,07                                      | 8.434 |
| 85                 | 85 + 85      | 216,87            | 8.545 | 231,15                | 9.107 | 216,61                                      | 8.534 |
| 86                 | 86 + 86      | 219,41            | 8.645 | 233,69                | 9.207 | 219,15                                      | 8.635 |
| 87                 | 87 + 87      | 221,95            | 8.745 | 236,23                | 9.308 | 221,69                                      | 8.735 |
| 88                 | 88 + 88      | 224,49            | 8.845 | 238,77                | 9.408 | 224,23                                      | 8.835 |
| 89                 | 89 + 89      | 227,03            | 8.945 | 241,31                | 9.508 | 226,77                                      | 8.935 |
| 90                 | 90 + 90      | 229,57            | 9.045 | 243,85                | 9.608 | 229,31                                      | 9.035 |

All dimensions nominal unless otherwise stated  
All inch dimensions are approximate equivalents

## Recommended board cut-out

