



Banana Plugs

R644 / R921 / R929 / R941 / R948 / R995 / R999



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Introduction

Radiall offers a wide selection of high quality and reliable professional banana plugs for the most demanding test and measurement applications.

Radiall's professional banana plugs consist of two major series and adapters:

The 4mm Series

- Safety plugs and sockets
- Safety patch cords
- Standard plugs and sockets
- Standard patch cords
- Accessories

The 2mm Series

- Plugs and sockets
- Patch cords
- PCB test points
- 20-way fixed connector
- Short circuit links
- Contact block and ribbon patch cords
- Accessories

Adapters

- 2mm/4mm banana adapter
- BNC/2mm banana adapter
- BNC/4mm banana adapter
- Banana adapter patch cord
- Coaxial banana adapter patch cord



Applications

- Research institutes and laboratories
- Education
- Instrumentations
- Low voltage
- Electronics
- Engineering



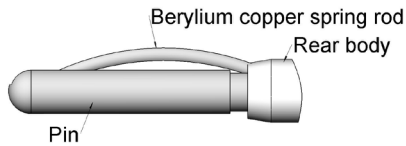
Introduction

FEATURES AND BENEFITS

Radiall's in-house technologies ensure high reliable product solutions due to its expertise and advanced design technology.

Radiall's contacts consists of a monobloc pin fitted with a copper beryllium spring finger. Depending on the model, the pin may or may not have a protective sleeve.

| | 4mm series | 2mm series |
|----------------------------|----------------------|------------|
| Contact resistance | 0.5 mΩ | 1mΩ |
| Current rating, max @ 20°C | 30 A | 10 A |
| Contact durability, min. | 10,000 mating cycles | |



Benefits

- Excellent electrical conduction
- Very low contact resistance
- Robust contact point pressure when connected
- High durability for high number of mating cycles

GLOSSARY OF ABBREVIATIONS












| Abbreviation series | | Destination |
|---------------------|---------|---|
| 4mm | 2mm | |
| B1 | BL-I | Insulated plug with solder connection |
| B2 | | Insulated plug with crimp or solder connection |
| | BL-PI | Insulated panel plug |
| B4 | BL | Uninsulated plug |
| | BL2-4 | Uninsulated threaded plug |
| | BLP-4 | Uninsulated panel plus with solder connection |
| DPI | DL-PL | Insulated panel socket |
| DPIS | | Insulated safety panel socket |
| DP | DLP | Uninsulated panel socket |
| | BLP D-2 | Uninsulated panel plug/2mm dia. socket |
| BDR-4 | BDR-2 | Stackable plug with quick grip cable clamp |
| BDR-SR | | Stackable plug, partial safety |
| BDR-PR | | Stackable plug, partial safety non thermofusible sleeve |
| BDM | BLDM | Stackable patch cord |
| BDSA | | Stackable patch cord, total safety |
| BDSR | | Stackable patch cord, partial safety |
| BM | BLM | Extension patch cord |
| DM | DLM | Extension female patch cord |
| PTM | | Test probe patch cord |
| | FL | Contact block |
| | ML | Ribbon patch cords |

4MM/2MM SERIES

Finder guide

| Series | Image | Category | Description | Page | |
|-------------------------------------|--|--|--|---|----|
| 4mm | | Safety series | Banana plugs | Stackable plug (BDR-SR) | 11 |
| | | | Panel sockets | Stackable plug, non-thermofusible sleeve (BDR-PR) | |
| | | Patch cords | Insulated safety panel socket (DPIS) | 12 | |
| | | | Plug/Plug stackable, retractable sleeve (BDSA) | | |
| | | Plug/Plug stackable, non-retractable sleeve (BDSA) | 13 | | |
| | | Patch cords made to order | | | |
| | | Standard series | Banana plugs | Uninsulated plug (B4) | 14 |
| | | | | Insulated plug with solder connection (B1) | |
| | | | | Insulated plug with crimp or solder connection (B2) | |
| | | | | Stackable plug with quick grip cable clamp (BDR-4) | |
| | | Panel sockets | Uninsulated panel sockets (DP) | 15 | |
| | | | Insulated panel sockets (DP) | | |
| | | Patch cords | BM/BM extension patch cords | 16 | |
| | | | BDM/BDM stackable patch cords | | |
| | | | PTM/BM Test probe patch cords | | |
| | | Patch cords made to order | 17 | | |
| | | Accessories and Adapter | Test clip - with alligator clip | 18 | |
| Test clip - with flexible steel rod | | | | | |
| Crocodile clip | | | | | |
| Safety test probe | | | | | |
| Safety female - female adapter | | | | | |
| 2mm | | Standard series | Banana plugs | Uninsulated plug with crimp or solder connection (BL) | 23 |
| | | | | Uninsulated panel plug with solder connection (BLP-4) | |
| | | | | Uninsulated panel plug/2mm dia. socket (BLP D-2) | |
| | | | | Insulated plugs with solder connection (BL-I) | |
| | | | | Insulated panel plug (BL-PI) | |
| | Stackable plug with quick grip cable clamp (BDR-2) | | | | |
| | Panel sockets | Uninsulated panel sockets (DLP) | 24 | | |
| | | Insulated panel sockets (DL-PI) | | | |
| | Patch cords | BLM extension patch cords | 25 | | |
| | | BLDM stackable patch cords | | | |
| Patch cords made to order | | | | | |

Finder guide

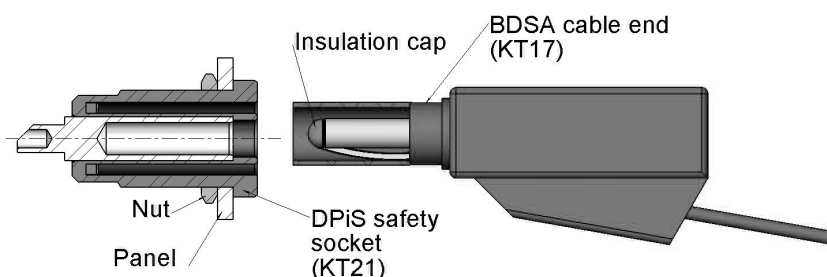
| Series | Image | Category | | Description | Page |
|---|---|-------------------------------------|---------------------------------------|--|------|
| 2mm |    | Standard series | Multi-contact 20-way fixed connectors | Solder cup - 12mm contact pitch | 26 |
| | | | | Solder cup - 6mm contact pitch | |
| | | | | Pin - 12mm contact pitch | |
| | | | | Pin - 6mm contact pitch | |
| | | | Short cut circuit | 12mm contact pitch | 26 |
| | | | | 6mm contact pitch | |
| |  | Contact Blocks & Ribbon patch cords | Contact blocks | Male contact blocks (FL M) | 27 |
| | | | | Female contact blocks (FL F) | |
| |  | Patch leads | | Male - male ribbon patch cords (ML MM) | 28 |
| | | | | Female - female ribbon patch cords (ML FF) | |
|   | Accessories | | PCB Test socket | 30 | |
| | | | Test probe | | |
| Adapters |   | Banana adapters | Banana adapters | 2mm male - 4mm female | 32 |
| | | | | BNC/2mm Banana adapter | |
| | | | | BNC/4mm Banana adapter | |
| |   | Banana adapters patch cords | | BLM/BM | 33 |
| | | | | BLDM/BDM | |
| | | | | BLM/DM | |
| | Coaxial patch cords | | BNC/BCX | | |

Introduction

4mm SAFETY SERIES

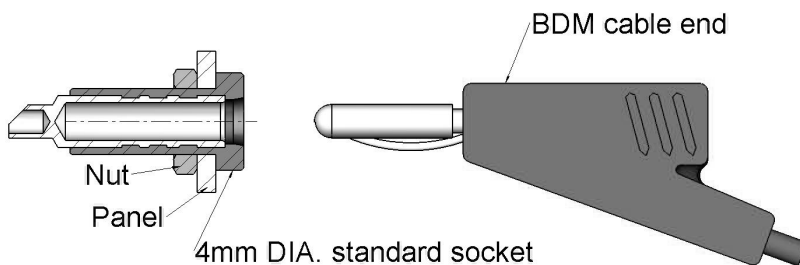
Due to safety being an important criteria when using test and measurement instrumentation, especially for high voltage use, Radiall developed the 4mm Safety Series, which offers an improved protection system that eliminates all risk of contact with live elements when handling components.

Safety connectors are reinforced by a protective sleeve and an insulation cap on the top of the contact. The protective sleeve may be retractable or non-retractable. All plugs with non-retractable sleeves are rated at 600V, CAT III or 1000V, CAT II according to the safety standard IEC 61010-031 version 2002.



4mm STANDARD SERIES

The 4mm Standard Series meets the requirements of NF C 93 440 standards. The product in this series are not intended for hand-held use at voltage above 30Vac/60Vdc.



Example of a regular connection: the contact is exposed.

ACCESSORIES: TEST CLIPS

- With sliding hook: The contact hook guarantees a good grip on wires, components and PCB pin up to 1.5mm² thick.
- Alligator Test Clips: Features a large opening and gripping efficiency for use on motors, fuse holders, terminals, etc.
- Flexible Steel Rod Test Clips: The thin flexible steel rod allows testing of hard-to-reach points in dense circuitry.
- Crocodile Test Clips: Features a large 20mm opening to allow attachment to larger test points.
- Safety Test Probe: An extra thin probe allows contact through coatings and some insulations. It can also be used for PCB measurements. Fitted with a rear-mounted 4mm socket, it can be used with BM patch cords.

Characteristics

| | Plugs | Sockets | Patch Cords |
|--|-------|---------|-------------|
|--|-------|---------|-------------|

ELECTRICAL CHARACTERISTICS

| | | |
|--|------------------|---|
| Current rating, max. • 4mm safety • 4mm standard | 30A (@ 20°C) | 15 A (@ 20°C) patch cords 1mm ² 15 A (@ 20°C) patch cords 1mm ² 30 A (@ 20°C) 2 an 2.5mm ² |
| Dielectric withstanding voltage | 2500 Vrms @ 50Hz | |
| Operating voltage | 750 Vrms @ 50Hz | |
| Insulation resistance, min. | 5000 MΩ | |
| Contact resistance, max. | 0.5mΩ | |

MECHANICAL CHARACTERISTICS

| | | | |
|---|----------------|-------------------------|--|
| Mechanical, durability, min. | 10,000 matings | | |
| Average insertion force | 25N | | |
| Tightening torque • 4mm safety • 4mm standard | | Max 140 N.cm 120 Ncm | |

ENVIRONMENTAL CHARACTERISTICS

| | | | |
|---|---|----------------|--|
| Temperature range • 4mm safety • 4mm standard | -40°C / +85°C | -40°C / +100°C | BDSR patch cords -40°C / +85°C BDSA patch cords -25MC / +70°C |
| Damp heat | [uninsulated] -65°C / +155°C [insulated models] -60°C / +100°C | | -40°C / +70°C |

MATERIALS

| | | | |
|------------|--|--|--|
| Insulation | Thermoplastic | | |
| Contacts | Nickel or tin plated Copper alloy/brass | | |

Characteristics accessories

| | with Sliding Hook | with Alligator Clip | with Flexible Steel Rods | with Crocodile Die | Safety Test Probe |
|--|-------------------|---------------------|--------------------------|--------------------|-------------------|
|--|-------------------|---------------------|--------------------------|--------------------|-------------------|

ELECTRICAL CHARACTERISTICS

| | | | | | |
|-------------------------|------------------------------|------|-----|------|-----------|
| Operating voltage, max. | 1000 Vrms | | | | 1500 Vrms |
| Current rating max | 4A (@20°C) | 2.5A | 32A | 32A | |
| Clip opening (max) | 1.5mm (max hooking capacity) | - | - | 20mm | - |

MATERIALS

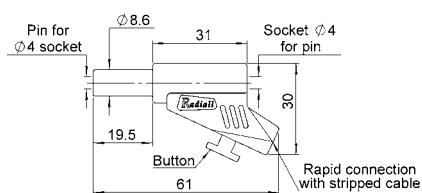
| | | | | | |
|---------|-----------------|--|--|--|-------|
| Body | Thermoplastic | | | | |
| Contact | Stainless steel | | | | Steel |

Packaging

| | 2mm Safety Series | 4mm Standard Series |
|---------------|-------------------|---------------------|
| Plugs | 10 pieces | 100 pieces |
| Panel sockets | | 100 pieces |
| Patch cords | | 10 pieces |
| Accessories | | 10 pieces |

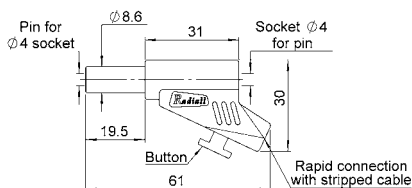
Plugs

STACKABLE PLUG, PARTIAL SAFETY (BDR-SR)



| Part number | Color | Standard |
|--------------|--------|-----------------|
| R941 460 600 | Black | NFC 93440-KT12R |
| R941 461 600 | Red | |
| R941 462 600 | Green | |
| R941 463 600 | Blue | |
| R941 464 600 | Yellow | |

STACKABLE PLUG, PARTIAL SAFETY-NON-THERMOFUSIBLE SLEEVE (BDR-PR)

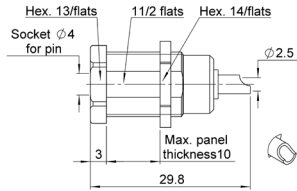


| Part number | Color | Standard |
|--------------|-------|-----------------|
| R941 480 600 | Black | NFC 93440-KT12R |
| R941 481 600 | Red | DCN 5935 BA |

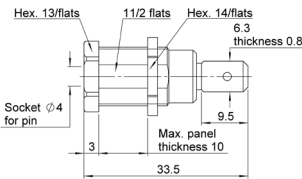
Sockets

INSULATED SAFETY PANEL-MOUNT SOCKETS (DPIS)

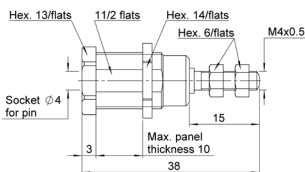
Insulated safety panel sockets are mateable with standard 4mm BM/BDM patch cords and BDSR/BDSA safety patch cords.



| Part number | Color | Termination | Standard | Panel drilling |
|--------------|--------|-------------|-----------------|----------------|
| R941 920 600 | Black | Solder cup | NFC 93440-KT21F | P05 |
| R941 921 600 | Red | | | |
| R941 922 600 | Green | | | |
| R941 923 600 | Blue | | | |
| R941 924 600 | Yellow | | | |



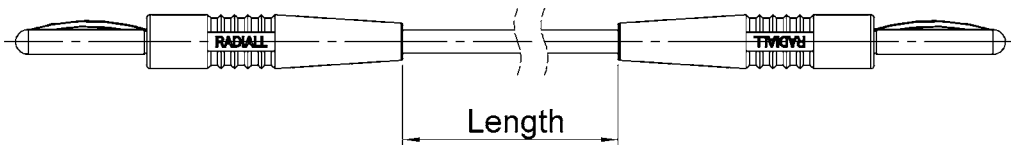
| Part number | Color | Termination | Standard | Panel drilling |
|--------------|-------|--------------------------|-----------------|----------------|
| R941 920 602 | Black | Flat for FASTON lug type | NFC 93440-KT21L | P05 |
| R941 921 602 | Red | | | |



| Part number | Color | Termination | Standard | Panel drilling |
|--------------|--------|--------------|-----------------|----------------|
| R941 920 603 | Black | For fork lug | NFC 93440-KT21V | P05 |
| R941 921 603 | Red | | | |
| R941 924 603 | Yellow | | | |

Patch cords

Except where specified, all patch cords lengths are defined by the length of the cable without connectors or strain relief.



Radiall Patch Cord Series includes:

- **BDSR/BDSR:** Retractable sleeve for partial security
- **BDSA/BDSA:** Non-retractable sleeve where secure connections are critical; The cable assembly is rated at 1000V, CAT II according to the safety standard IEC61010-31
- **Patch cords made-to-order**

Patch cords

PLUG/PLUG STACKABLE PATCH CORDS - RETRACTABLE SLEEVE (BDSR/BDSR)

Cable type:

- PVC, 1mm² conductor, 3.5mm insulation
- PVC, 2mm² conductor, 3.5mm insulation
- Silicone, 2.5mm² conductor, 4mm insulation



R948 1xx 6xx

PATCH CORDS LENGTH:

- 3:** 25cm
- 4:** 50cm
- 5:** 100cm
- 6:** 150cm
- 7:** 200cm

COLOR:

- 0:** Black
- 1:** Red

CABLE TYPE:

- 00:** PVC 1mm² 3.5mm
- 02:** PVC 2mm² 3.5mm
- 29:** Silicone 2.5mm² 4mm

PLUG/PLUG STACKABLE PATCH CORDS - NON-RETRACTABLE SLEEVE (BDSA/BDSA)

Cable type:

- PVC, 1mm² conductor, 3.5mm insulation
- PVC, 2mm² conductor, 3.5mm insulation
- Silicone, 2.5mm² conductor, 4mm insulation



R948 3xx 6xx

PATCH CORDS LENGTH:

- 3:** 25cm
- 4:** 50cm
- 5:** 100cm
- 6:** 150cm
- 7:** 200cm

COLOR:

- 0:** Black
- 1:** Red

CABLE TYPE:

- 00:** PVC 1mm² 3.5mm
- 02:** PVC 2mm² 3.5mm
- 29:** Silicone 2.5mm² 4mm

Patch cords

MADE-TO-ORDER PATCH CORDS

Customized patch cords using BDSR plugs can be made-to-order to meet your specifications. Choices include connector style, cable type, color, and cable length.

HOW TO ORDER

| CONNECTOR 1 | CABLE TYPE | LENGTH | CONNECTOR 2 |
|--|---|-------------------------|--|
| BDSR type R949 100 600 / Black R949 101 600 / Red | PVC, 1mm² C290 110 / Black C290 111 / Red SILICONE, 1mm² C290 010 / Black C290 011 / Red | XXX: cable length in cm | BDSR type R949 100 600 / Black R949 101 600 / Red |

EXAMPLE TO ORDER:

1 black BDSR plug / red silicone 1 mm² cable length 125cm / 1 Red BDSR plug.
 Part number: R949 100 600 / C290 011-125cm / R949 100 600

NOTE:

- (1) For other options, please contact your local representative
- (2) Refer to the table below to select your insert class:

Plugs

UNINSULATED BANANA PLUGS

| Figure | Part number | Description | Panel drilling |
|--------|--------------|--|----------------|
| | R941 019 000 | Solder or crimp 15mm solder post Strip length: 5mm Crimp tool: Buchanan R612 548 000 Positioner Radiall R282 561 000 Crimp setting: 1.20 (18 AWG) 1.08 (22 AWG) Maxi 15A | |
| | R941 029 000 | Solder or crimp 2mm solder post Strip length: 5mm Crimp tool: Buchanan R612 548 000 Positioner Radiall R282 561 000 Crimp setting: 1.50 (14 AWG) 1.25 (18 AWG) | |
| | R941 049 000 | Threaded panel connection 8mm rear length | P03 |
| | R941 069 000 | Threaded panel connection 18mm rear length | P03 |
| | R941 149 000 | Panel banana plug 4mm with rear socket for mating with 4mm plug | P01 |

Plugs

INSULATED BANANA PLUGS

| Figure | Part number | Color | Description |
|--------|--------------|--------|--|
| | R941 330 000 | Black | - Tin-plated solder cup or - Rear socket for 2mm banana plug (14 AWG) |
| | R941 331 000 | Red | |
| | R941 332 000 | Green | |
| | R941 333 000 | Blue | |
| | R941 334 000 | Yellow | |
| | R941 336 000 | White | |
| | R941 340 000 | Black | - Tin-plated solder cup or - Screw tightening or - Rear socket for 2mm banana plug (14 AWG) |
| | R941 341 000 | Red | |
| | R941 342 000 | Green | |
| | R941 343 000 | Blue | |
| | R941 344 000 | Yellow | |
| | R941 346 000 | White | |
| | R941 460 000 | Black | - Stackable banana with quick-grip clamp for stripped cable - 2 & 4mm socket for banana plugs |
| | R941 461 000 | Red | |

Sockets

UNINSULATED PANEL SOCKETS (DP)

| Figure | Part number | Description | Panel drilling |
|--------|---|--|----------------|
| | R941 619 000 | Solder cup Cup tripping dimension 4mm | P01 |
| | R941 629 000 (nickel plated version) | (14 AWG) | |

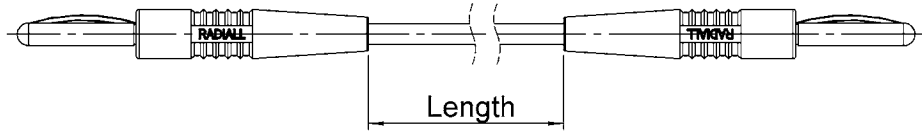
INSULATED PANEL SOCKETS (DPI)

| Figure | Part number | Color | Description | Panel drilling |
|--------|--------------|--------|--|----------------|
| | R941 920 001 | Black | Tin-plated solder cup UL 94V-0 thermoplastic insulation | P06 |
| | R941 921 001 | Red | | |
| | R941 922 001 | Green | | |
| | R941 923 001 | Blue | | |
| | R941 924 001 | Yellow | | |
| | R941 926 001 | White | | |

Our Most Important Connection is with You.™

Patch cords

Except where specified, all patch cords lengths are defined by the length of the cable without connectors or strain relief.



Radiall Patch Cord Series includes:

- **BM/BM:** Molded extension patch cords
- **BDM/BDM:** Molded stackable patch cords
- **PTM/BM:** Molded test probe patch cords
- **Patch cords made-to-order**

EXTENSION PATCH CORDS (BM/BM)

Cable type: PVC, 1mm² conductor, 3.5mm insulation



R948 0xx 000

PATCH CORDS LENGTH:

- 0:** 20cm
- 4:** 50cm
- 5:** 100cm
- 6:** 150cm
- 7:** 200cm

COLOR:

- 0:** Black
- 1:** Red
- 2:** Green
- 3:** Blue

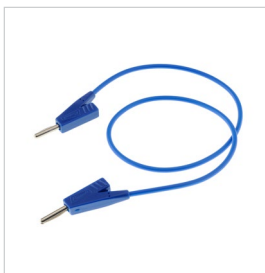
STACKABLE PATCH CORDS (BDM/BDM)

Cable type:

PVC, 1mm² conductor, 3.5mm insulation

PVC, 2mm² conductor, insulation

Silicone, 2.5mm² conductor, 4mm insulation



R948 1xx 0xx

PATCH CORDS LENGTH:

- 3:** 25cm
- 4:** 50cm
- 5:** 100cm
- 6:** 150cm
- 7:** 200cm

COLOR:

- 0:** Black
- 1:** Red
- 2:** Green
- 3:** Blue
- 4:** Yellow

CABLE TYPE:

- 00:** PVC 1mm² 3.5mm
- 02:** PVC 2mm² 3.5mm
- 29:** Silicone 2.5mm² 4mm

Patch cords

TEST PROBE PATCH CORDS (PTM/BM)

Cable types: PVC, 1mm², 3.5mm insulation



| Part number | Color | Cord Length |
|--------------|-------|-------------|
| R948 250 000 | Black | 100cm |
| R948 251 000 | Red | 100cm |

MADE-TO-ORDER PATCH CORDS

The series comprises the following extremities: BM, BDM, DM. Choices include connector style, cable type, color, and cable length.

HOW TO ORDER

| CONNECTOR 1 | CABLE TYPE | LENGTH | CONNECTOR 2 |
|--|--|---|---|
| <p>BM type</p> <p>R949 000 / Black R949 001 / Red R949 003 / Blue</p> | <p>BDM type</p> <p>R949 100 / Black R949 101 / Red</p> <p>DM type</p> <p>R949 500 / Black R949 501 / Red</p> | <p>PVC 1mm² cross section: C 290 11x</p> <p>x=0: Black, 1: Red, 2: Green, 3: Blue, 4: Yellow</p> <p>PVC 2mm² cross section: C 290 10x</p> <p>x=0: Black, 1: Red, 2: Green, 3: Blue, 4: Yellow</p> | <p>xxx cm: over cable length in centimeter</p> |

BM type
R949 000 / Black
R949 001 / Red
R949 003 / Blue

BDM type
R949 100 / Black
R949 101 / Red

DM type
R949 500 / Black
R949 501 / Red

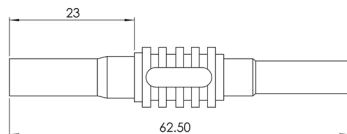
EXAMPLE TO ORDER:
1 black BDSR plug / green PVC 1mm² with 80cm / 1 Red BDM plug.
Part number: R949 100 / C290 012-80cm / R949101

For free end: please write the word "free"

Accessories

FEMALE / FEMALE ADAPTERS

These adapters allow for the connection between two standard patch cords with BM extremities.



| Part number | Color |
|--------------|-------|
| R941 960 600 | Black |
| R941 961 600 | Red |

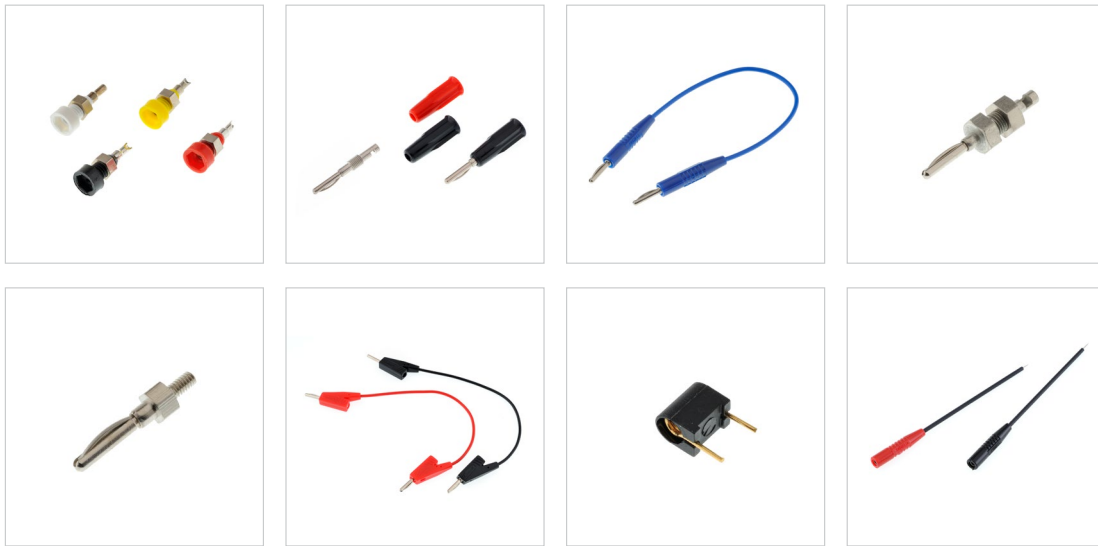
TEST CLIPS

| Figure | Description | Part number | Color | Series |
|--------|-----------------------------------|--------------|-------|---------------------|
| | With sliding hook | R999 700 600 | Black | 4mm safety series |
| | | R999 701 600 | Red | |
| | With alligator test clip | R999 710 600 | Black | |
| | | R999 711 600 | Red | |
| | With flexible steel rod test clip | R999 720 600 | Black | |
| | | R999 721 600 | Red | |
| | Safety test probe | R941 850 600 | Black | |
| | | R941 851 600 | Red | |
| | | R941 850 000 | Black | 4mm standard series |
| | | R941 851 000 | Red | |

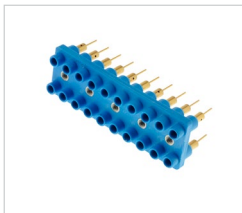
Introduction

Radiall's high-quality and reliable 2mm Series are designed for high-density test and measurement applications. This series includes a wide range of plugs, sockets, patch cords, test accessories, multiway connectors, short-circuit link, and other configurations.

- Plugs
- Sockets
- Patch cords
- PCB test points
- 20-way fixed connector
- Short circuit links
- Contact block and ribbon patch cords
- Accessories



20-WAY FIXED CONNECTORS



These connectors contain twenty 2mm sockets molded into a low-profile housing. The tight pitch between sockets makes them particularly suitable for use in circuit breakers and test batteries.

ADVANTAGES:

- Quick assembly time with single mounting operation for multi-connections
- Space savings
- Simplified panel piercing
- Orientation of solder shafts



Has the potential to be able to remove the cable harness without disconnecting each socket.

SHORT-CIRCUIT U LINKS



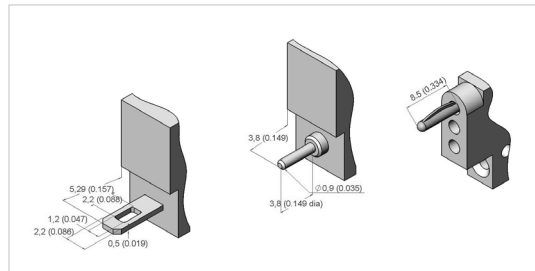
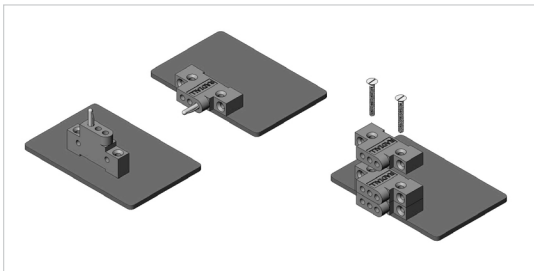
The short-circuit U link is a complementary component to the 20-way fixed connector and can be used to make shunts. It is fitted with a rear-mounted 2mm socket.

Introduction

2mm CONTACT BLOCKS AND RIBBON PATCH CORDS SERIES

This series includes: contact blocks and ribbon patch cords.

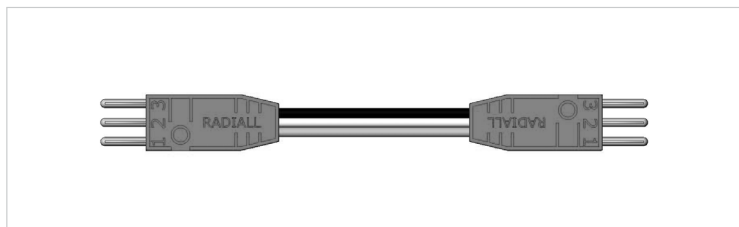
Dimensions of contact outlets and projections.



RIBBON PATCH CORDS

The contact blocks can mate with ribbon patch cords, which have:

- Excellent contact
- Sturdy construction
- Contact polarization options
- Low bulk
- High retention



They can be used for several field applications such as: electronics, laboratories, education and telecommunications, etc.

ACCESSORIES PCB TEST SOCKET

Test sockets simplify testing and maintenance of equipment where direct contact with components should be avoided.

- **Test Socket entrax 10.16mm:** This model, with the particular disposition of the pins, allows the unmobilization on the circuit board. This version is particularly adapted for a wave soldering operation.
- **Test Socket entrax 5.08mm:** This test socket is made up of a joined spiral spring with a nickel over plated protection.

ACCESSORIES TEST PROBE

An extra thin probe allows contact through coatings and some insulations. It can also be used for PCB measurements. They are fitted with a rear-mounted 2mm socket and can be used with BLM and BLDM patch cords.

Characteristics

| | Plugs | Sockets | Patch Cords |
|--|-------|---------|-------------|
|--|-------|---------|-------------|

ELECTRICAL CHARACTERISTICS

| | | | |
|---------------------------------|------------------|--------------------------------------|--------------|
| Current rating, max. | 10A (@ 20 °C) | PVC cable 0.3mm ² section | 5A (@ 20 °C) |
| Dielectric withstanding voltage | 1500 Vrms @ 50Hz | | |
| Operating voltage | 250 Vrms @ 50Hz | | |
| Insulation resistance, min. | 5000 MΩ | | |
| Contact resistance, max. | 1mΩ | | |

MECHANICAL CHARACTERISTICS

| | | | |
|------------------------------|----------------|--|--|
| Mechanical, durability, min. | 10,000 matings | | |
| Average insertion force | 14N | | |

ENVIRONMENTAL CHARACTERISTICS

| | | | |
|-------------------|---|-----------------|--|
| Temperature range | Uninsulated -65 °C / +155 °C Insulated models -60 °C / +100 °C | -40 °C / +70 °C | |
|-------------------|---|-----------------|--|

MATERIALS

| | | | |
|------------|--|--|--|
| Insulation | Thermoplastic | | |
| Contacts | Nickel or tin plated Copper alloy/brass | | |

ELECTRICAL CHARACTERISTICS

| | 20-way Fixed Connector | Short-Circuit U Links |
|---------------------------------|------------------------|-----------------------|
| Current rating max | 7A (@20 °C) | |
| Dielectric withstanding voltage | 2000 Vrms 50Hz | |
| Operating voltage | 500 Vrms 50Hz | |
| Insulation resistance | 5000 MΩ | |

MECHANICAL CHARACTERISTICS

| | | | |
|----------------------|----------------|--|--|
| Mechanical endurance | 10,000 matings | | |
|----------------------|----------------|--|--|

ENVIRONMENTAL CHARACTERISTICS

| | | | |
|-------------------|----------------|---------------|--|
| Temperature range | -40 °C/+125 °C | -40 °C/+70 °C | |
|-------------------|----------------|---------------|--|

MATERIAL

| | | | |
|------------|---------------------------------|--------------|--|
| Insulation | Self-extinguishable PBT UL 94V0 | PVC | |
| Contacts | Brass with gold plating | Brass/Bronze | |

Characteristics

CONTACT BLOCKS & RIBBON PATCH CORDS

ELECTRICAL CHARACTERISTICS

| | |
|--|----------------------------|
| Current rating, max. • Contact blocks • Ribbon patch cords | 7A (@ 20°C) 5A (@ 20°C) |
| Dielectric withstanding voltage | 1500 Vrms @ 50Hz |
| Operating voltage | 250 Vrms @ 50Hz |
| Insulation resistance (insulated models) | 5000 MΩ |
| Contact resistance | 1mΩ |

MECHANICAL CHARACTERISTICS

| | |
|-----------|-----------------|
| Endurance | >10,000 matings |
|-----------|-----------------|

ENVIRONMENTAL CHARACTERISTICS

| | |
|---|---------------------------------|
| Temperature range • Contact blocks • Ribbon patch cords | -65°C / +120°C -40°C / +85°C |
|---|---------------------------------|

MATERIALS

| | |
|------------|--|
| Insulation | Thermoplastic |
| Body | Nickel or tin plated (solder connection) Copper alloy / brass |

ACCESSORIES

ELECTRICAL CHARACTERISTICS

| | PCB Test Sockets | Test Probe |
|---|--------------------------|---------------|
| Dielectric withstand voltage • Extra 10.16 model • Other models | 1500 Vrms 50Hz 1000 V | 1000 Vrms |
| Operating voltage | 250 Vrms 50Hz | 250 Vrms 50Hz |

MECHANICAL

| | | |
|-----------------------|----------|--------|
| Insulation resistance | 10,000MΩ | 5000MΩ |
|-----------------------|----------|--------|

ENVIRONMENTAL

| | | |
|-----------------------|----------------|---------------|
| Operating temperature | -40°C / +100°C | -25°C / +70°C |
|-----------------------|----------------|---------------|

Packaging

| | |
|------------------------|-------------------------------------|
| Plugs | 100 pieces (except BDR-2=10 pieces) |
| PCB test sockets | 100 pieces |
| Patch cords | 10 pieces |
| 20-way fixed connector | 1 piece |
| Short-circuit u links | 100 pieces |
| PCB test sockets | 100 pieces |
| Test probe | 10 pieces |
| Contact blocks | 50 pieces |
| Ribbon patch cords | 10 pieces |

Plugs

UNINSULATED BANANA

| Figure | Part number | Description | Panel drilling |
|--------|--------------|---|----------------|
| | R921 019 000 | Solder or crimp Strip length: 4mm Crimp tool: Buchanan R612 548 000 Positioner Radiall R282 982 000 Cable: AWG 20, 22, 24 | |
| | R921 029 000 | Threaded Rear length 4mm | |
| | R921 119 000 | Nut-tin-plated solder Strip length: 4mm Cable: AWG 20 | P03 |
| | R921 149 000 | Male-female adapter with nut | P03 |

INSULATED BANANA PLUGS

| Figure | Part number | Color | Description | Panel drilling |
|--------|--------------|--------|---|----------------|
| | R921 330 000 | Black | Tin-plated solder Cable: AWG 20 | |
| | R921 331 000 | Red | | |
| | R921 332 000 | Green | | |
| | R921 333 000 | Blue | | |
| | R921 334 000 | Yellow | | |
| | R921 336 000 | White | | |
| | R921 461 000 | Red | Stackable plug with quick grip clamp 2mm rear socket | |

Sockets

UNINSULATED BANANA SOCKETS

| Figure | Part number | Description | Panel drilling |
|--------|--------------|--|----------------|
| | R921 609 000 | Tin-plated solder Panel mount: M3.5 x 0.35 thread Strip length: 4mm Cable: AWG 20 | P04 |
| | R921 629 000 | Tin-plated solder Panel mount: M4 x 0.5 thread Strip length: 4mm Cable: AWG 20 | P03 |

INSULATED BANANA SOCKETS

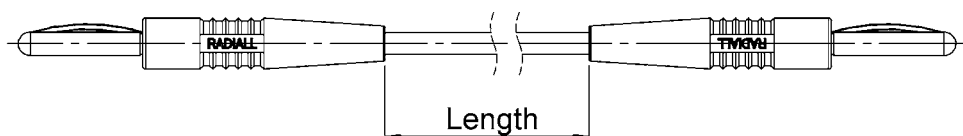
| Figure | Part number | Color | Description | Panel drilling |
|--------|--------------|--------|--|----------------|
| | R921 920 000 | Black | Machined panel-mount socket Tin-plated solder termination Strip length: 4mm Cable: AWG 20 | P02 |
| | R921 921 000 | Red | | |
| | R921 922 000 | Green | | |
| | R921 923 000 | Blue | | |
| | R921 924 000 | Yellow | | |
| | R921 926 000 | White | | |
| | R921 930 000 | Black | Stamped panel-mount socket Tin-plated solder termination Strip length: 4mm AWG 20 wire | P02 |
| | R921 931 000 | Red | | |
| | R921 932 000 | Green | | |
| | R921 933 000 | Blue | | |
| | R921 934 000 | Yellow | | |
| | R921 936 000 | White | | |

Patch cords

Except where specified, all patch cords lengths are defined by the length of the cable without connectors or strain relief.

Radiall Patch Cord Series includes:

- **BLM:** Molded miniature extension patch cords
- **BLDM:** Molded miniature stackable patch cords
- **Patch cords made-to-order**



Each plug is soldered onto the cable in order to assure an excellent electrical connection with very stable transfer resistance.

Plugs

MOLDED EXTENSION (BLM)

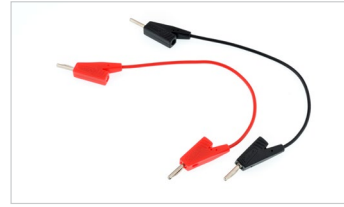
Cable: PVC cable 0.3 mm²



R928 0xx 000

MOLDED STACKABLE (BLDM)

Cable: PVC cable 0.3 mm²



R928 1xx 000

PATCH CORDS LENGTH:
1: 10cm
5: 100cm

COLOR:
0: Black
1: Red
3: Blue

PATCH CORDS LENGTH:
1: 10cm
2: 20cm
4: 50cm
5: 100cm

COLOR:
0: Black
1: Red
2: Green
3: Blue
4: Yellow

MADE-TO-ORDER PATCH CORDS

Customized patch cords using BLM, BLDM, or DLM plugs can be made-to-order to your specifications. Choices include connector style, cable type, color, and cable length. Packaging: 10 identical patch cords.

HOW TO ORDER

BM type

R929 000 / Black
 R929 001 / Red

BDLM type

R929 100 / Black
 R929 101 / Red

DLM type

R929 500 / Black
 R929 501 / Red

PVC section 0.3mm²: C 290 00x
 x=0: Black, 1: Red, 2: Green, 3: Blue, 4: Yellow

xxx cm: over cable length in centimeter

BM type

R929 000 / Black
 R929 001 / Red

BDM type

R929 100 / Black
 R929 101 / Red

DM type

R929 500 / Black
 R929 501 / Red

| CONNECTOR 1 | CABLE TYPE | LENGTH | CONNECTOR 2 |
|---|------------|--------|-------------|
| <p>BM type R929 000 / Black R929 001 / Red</p> <p>BDLM type R929 100 / Black R929 101 / Red</p> <p>DLM type R929 500 / Black R929 501 / Red</p> <p>PVC section 0.3mm²: C 290 00x x=0: Black, 1: Red, 2: Green, 3: Blue, 4: Yellow</p> <p>xxx cm: over cable length in centimeter</p> | | | |

EXAMPLE TO ORDER:

1 black BLM extremity / red PVC cable length 40cm / 1 red BLM plug.
 Part number: R929 000 / C290 001-40cm / R929501

For free end: please write the word "free"

20-way fixed connectors

12mm CONTACT PITCH

| Figure | Part number | Color | Termination |
|--------|--------------|--------|-------------|
| | R929 991 000 | Black | Solder cup |
| | R929 991 001 | Red | |
| | R929 991 002 | Green | |
| | R929 991 003 | Blue | |
| | R929 991 004 | Yellow | |
| | R929 992 000 | Blue | Pin |

6mm CONTACT PITCH

| Figure | Part number | Color | Termination |
|--------|--------------|-------|-------------|
| | R929 993 000 | Black | Solder cup |
| | R929 993 001 | Red | |
| | R929 993 002 | Green | |
| | R929 993 003 | Blue | |
| | R929 994 003 | Black | Pin |

Short-Circuit U Link

12mm CONTACT PITCH

| Figure | Part number | Color |
|--------|--------------|--------|
| | R644 543 000 | Black |
| | R644 543 001 | Red |
| | R644 543 002 | Green |
| | R644 543 003 | Blue |
| | R644 543 004 | Yellow |

6mm CONTACT PITCH

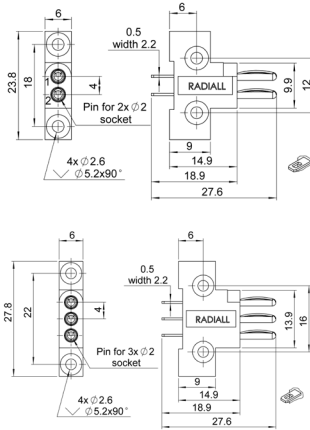
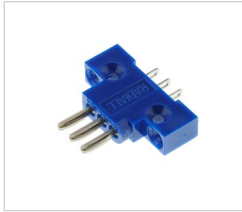
| Figure | Part number | Color |
|--------|--------------|--------|
| | R644 543 020 | Black |
| | R644 543 021 | Red |
| | R644 543 022 | Green |
| | R644 543 023 | Blue |
| | R644 543 024 | Yellow |

Contact blocks

The contact blocks are available for different types of connections:

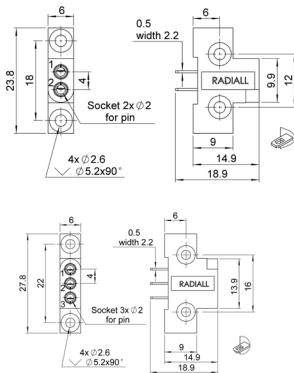
- Wire soldering
- Straight pins for PCB
- Elbow pins for PCB (contact your Radiall sales representative)
- Wrapping pins (contact your Radiall sales representative)

MALE CONTACT BLOCKS

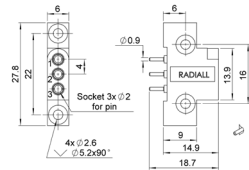
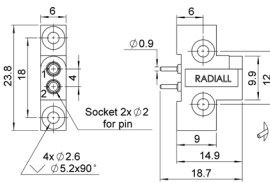


| Part number | Note |
|--------------|-----------------------|
| R644 020 000 | Tin-plated solder cup |
| R644 030 000 | |

FEMALE CONTACT BLOCKS




| Part number | Note |
|--------------|-----------------------|
| R644 120 000 | Tin-plated solder cup |
| R644 130 000 | |
| R644 121 000 | PCB Pins |
| R644 131 000 | |



Ribbon patch cords

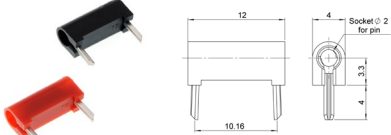
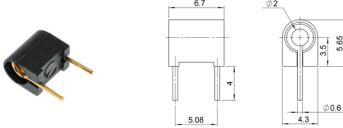
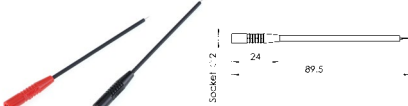
The contact blocks are available for different types of connections:

MALE-MALE RIBBON PATCH CORDS 100cm LENGTHS

| Figure | Part number | Destination | Number of contact |
|---|--------------|-------------|-------------------|
|  | R644 823 000 | ML 2 MM | 2 |
| | R644 833 000 | ML 3 MM | 3 |

Accessories

TEST SOCKETS AND TEST PROBE

| Figure | Part number | Color | Description |
|---|--------------|--------|----------------------------|
|  | R921 910 000 | Black | Test socket entrax 10.16mm |
| | R921 911 000 | Red | |
| | R921 912 000 | Green | |
| | R921 913 000 | Blue | |
| | R921 914 000 | Yellow | |
| | R921 914 000 | White | |
|  | R921 820 070 | Black | Test socket entrax 5.08mm |
| | R921 820 071 | Red | |
| | R921 820 072 | Green | |
| | R921 820 073 | Blue | |
| | R921 820 074 | Yellow | |
| | R921 820 076 | White | |
|  | R921 850 000 | Black | Test probe |
| | R921 851 000 | Red | |

Introduction

The connection may be attached to a coaxial line. You will find at the end of the catalog the adapters which allow connecting between 2mm and 4mm or between BNC coaxial connectors with banana plugs for both 2mm and 4mm connectors.



Characteristics

| | 2mm / 4mm Adapter | BNC / 2mm Adapter | BNC / 4mm Adapter | Adapter Patch Cords |
|--|-------------------|-------------------|-------------------|---------------------|
|--|-------------------|-------------------|-------------------|---------------------|

ELECTRICAL CHARACTERISTICS

| | | | | |
|--|------------------|--|---|------------------|
| Current rating, max. | 10A (@ 20°C) | | | 5A (@ 20°C) |
| Dielectric withstanding voltage | 1500 Vrms @ 50Hz | | Two: 2500 Vrms @50Hz One-way: 750 Vrms @50Hz | 1500 Vrms @ 50Hz |
| Operating voltage | 250 Vrms @ 50Hz | | | 250 Vrms @ 50Hz |
| Insulation resistance (insulated models) | 5000 MΩ | | Two: 5000 MΩ One-way: 5000 MΩ | 5000MΩ |

ENVIRONMENTAL CHARACTERISTICS

| | | | |
|-------------------|---------------|----------------|---------------|
| Temperature range | -40°C / +70°C | -40°C / +100°C | -40°C / +70°C |
|-------------------|---------------|----------------|---------------|

MATERIALS

| | |
|-------------------------------------|--|
| Insulator (banana plug/socket side) | Thermoplastic |
| Electrical contacts | Nickel or tin plated Copper alloy/brass |

Packaging

| Description | Packaging |
|-------------|------------|
| 2mm / 4mm | 100 pieces |
| BNC / 2mm | 1 piece |
| BNC / 2mm | 1 piece |
| Patch cords | 10 pieces |

Adapters

2MM PIN TO 4MM SOCKET ADAPTERS

| Figure | Part number | Color | Note |
|--------|--------------|-------|-------------------------------|
| | R921 390 000 | Black | 2mm male - 4mm female adapter |
| | R921 391 000 | Red | |

2MM TO BNC ADAPTERS

| Figure | Part number | Color | Note |
|--------|--------------|-------|------------------------|
| | R191 450 000 | Black | Packaging individually |

4MM TO BNC ADAPTERS

These adapters are designed to uncouple electric signals from input and output terminals of a measuring device fitted with male or female BNC fixed connectors.




| Figure | Part number | Note |
|--------|--------------|--------------------------------------|
| | R191 453 000 | BNC: male Banana: two 4mm sockets |
| | R191 454 000 | BNC: male Banana: one 4mm socket |
| | R191 455 000 | BNC: female Banana: two 4mm plugs |

Patch cords

BANANA ADAPTER PATCH CORDS

Patch cords are designed to provide continuity between two pieces of equipment or create patch cords with 2mm interfaces on one end and 4mm interface on the other.


Cable Type: 0.3 mm², PVC

| Figure | Part number | Color | Configuration |
|---|--------------|--------|----------------------------|
|  | R999 251 000 | Red | BLM / BM 100cm length |
|  | R999 350 000 | Black | BLDM / BDM 100cm length |
| | R999 351 000 | Red | |
| | R999 352 000 | Green | |
| | R999 353 000 | Blue | |
| | R999 354 000 | Yellow | |
|  | R999 520 000 | Black | BLM / DM 20cm length |
| | R999 521 000 | Red | |

COAXIAL PATCH CORDS/4mm BANANA PLUG

BCX COAXIAL PATCH CORDS

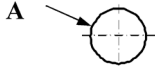
The BCX coaxial cords are normally connected to the terminals of measuring devices in order to uncouple the central core from the braid of a coaxial cable. The BCX plug is non-removable. The cable core is soldered to the center contact and the braid is soldered to the socket.

| Figure | Part number | Color | Configuration |
|---|--------------|-------|------------------------------------|
|  | R948 450 000 | Black | Length: 100cm (with connectors) |

Panel drilling

P01

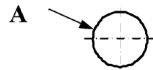
PANEL CUT OUT



| mm | | |
|----|------|------|
| | Maxi | mini |
| A | 6.2 | 6.1 |

P02

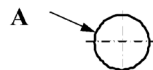
PANEL CUT OUT



| mm | | |
|----|------|------|
| | Maxi | mini |
| A | 5.2 | 5.1 |

P03

PANEL CUT OUT



| mm | | |
|----|------|------|
| | Maxi | mini |
| A | 4.2 | 4.1 |

P04

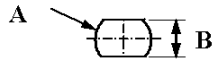
PANEL CUT OUT



| mm | | |
|----|------|------|
| | Maxi | mini |
| A | 3.7 | 3.6 |

P05

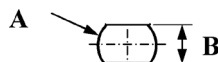
PANEL CUT OUT



| mm | | |
|----|------|------|
| | Maxi | mini |
| A | 12.2 | 12.1 |
| B | 11.2 | 11.1 |

P06

PANEL CUT OUT



| mm | | |
|----|------|------|
| | Maxi | mini |
| A | 8.2 | 8.1 |
| B | 7.2 | 7.1 |

Our Most Important Connection is with You.™

NOTE

Our Most Important Connection is with You.™

NOTE



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