



## **Banana Plugs**

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



**Contents**

**BANANA PLUGS**

Introduction ..... 20-4 to 20-5  
Finder guide ..... 20-6 to 20-7

**4MM SERIES**

Introduction ..... 20-8  
Characteristics ..... 20-9  
Packaging ..... 20-9  
Safety series - Plugs ..... 20-10  
                          - Sockets ..... 20-11  
                          - Patch cords ..... 20-11 to 20-13  
Standard series - Plugs ..... 20-14 to 20-15  
                          - Sockets ..... 20-15  
                          - Patch cords ..... 20-16 to 20-17  
Accessories ..... 20-18

**2MM SERIES**

Introduction ..... 20-19 to 20-20  
Characteristics ..... 20-21 to 20-22  
Packaging ..... 20-22  
Plugs ..... 20-23 / 20-25  
Sockets ..... 20-24  
Patch cords ..... 20-24  
20 way fixed connectors ..... 20-26  
Contact blocks ..... 20-27  
Ribbon patch cords ..... 20-28  
Accessories ..... 20-28

**BANANA ADAPTERS**

Introduction ..... 20-29  
Characteristics ..... 20-29  
Packaging ..... 20-29  
Adapters ..... 20-30  
Adapters patch cords ..... 20-31  
Panel drilling ..... 20-32

# 4MM/2MM SERIES

## 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



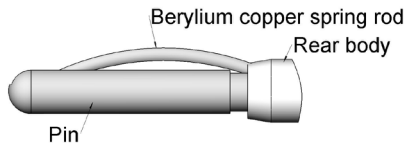
**Introduction**

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

Finder guide

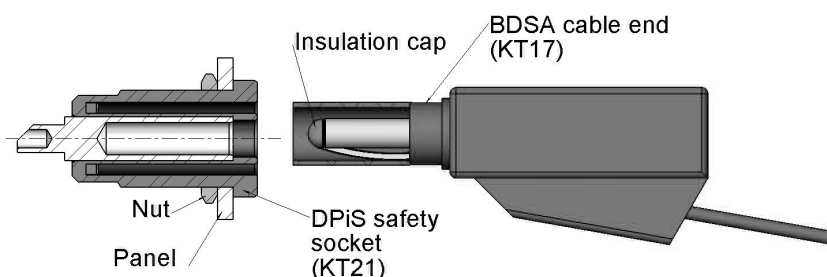
Series	Image	Category		Description	Page	
2mm		Standard series	Multi-contact 20-way fixed connectors	Solder cup - 12mm contact pitch	26	
				Solder cup - 6mm contact pitch		
				Pin - 12mm contact pitch		
				Pin - 6mm contact pitch		
		Short cut circuit		12mm contact pitch		
				6mm contact pitch		
		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		
		BNC/Banana adapters				
			Banana adapters patch cords	BLM/BM	33	
				BLDM/BDM		
	BLM/DM					
	Coaxial patch cords		BNC/BCX			

## Introduction

### 4mm SAFETY SERIES

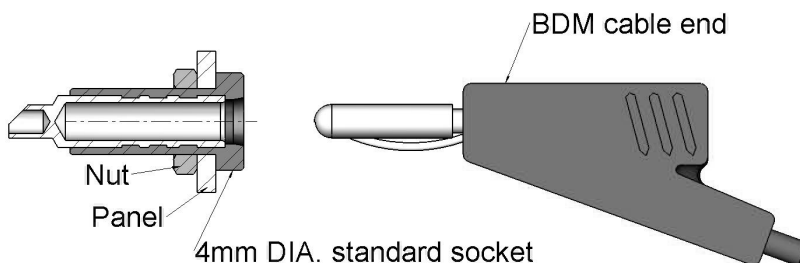
Due to safety being an important criteria when using test and measurement instrumentation, especially for high voltage use, Radiall developed the 4mm Safety Series, which offers an improved protection system that eliminates all risk of contact with live elements when handling components.

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 1.5mm<sup>2</sup> 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
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### ELECTRICAL CHARACTERISTICS

Current rating, max. • 4mm safety • 4mm standard	30A (@ 20°C)	15 A (@ 20°C) patch cords 1mm <sup>2</sup> 15 A (@ 20°C) patch cords 1mm <sup>2</sup> 30 A (@ 20°C) 2 an 2.5mm <sup>2</sup>
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
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### 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

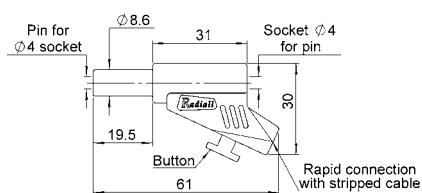
## Packaging

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



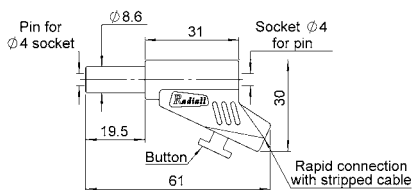
Plugs

**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)**

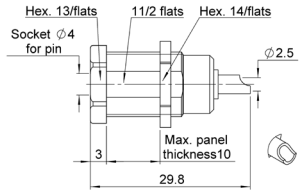


Part number	Color	Standard
R941 480 600	Black	NFC 93440-KT12R DCN 5935 BA
R941 481 600	Red	

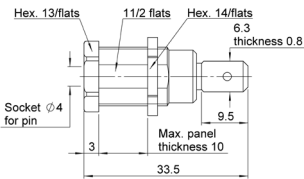
**Sockets**

**INSULATED SAFETY PANEL-MOUNT SOCKETS (DPIS)**

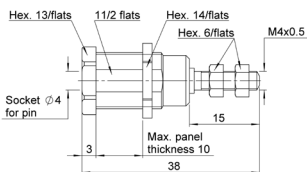
Insulated safety panel sockets are mateable with standard 4mm BM/BDM patch cords and BDSR/BDSA safety patch cords.



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			



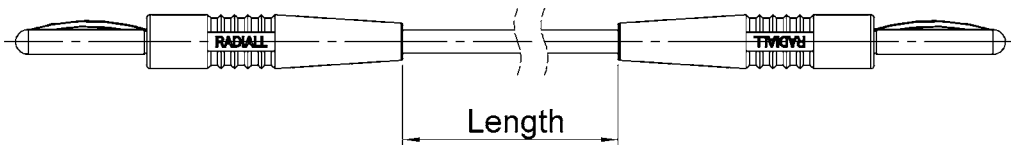
Part number	Color	Termination	Standard	Panel drilling
R941 920 602	Black	Flat for FASTON lug type	NFC 93440-KT21L	P05
R941 921 602	Red			



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, 1mm<sup>2</sup> conductor, 3.5mm insulation
- PVC, 2mm<sup>2</sup> conductor, 3.5mm insulation
- Silicone, 2.5mm<sup>2</sup> 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 1mm<sup>2</sup> 3.5mm
- 02:** PVC 2mm<sup>2</sup> 3.5mm
- 29:** Silicone 2.5mm<sup>2</sup> 4mm

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

Cable type:

- PVC, 1mm<sup>2</sup> conductor, 3.5mm insulation
- PVC, 2mm<sup>2</sup> conductor, 3.5mm insulation
- Silicone, 2.5mm<sup>2</sup> 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 1mm<sup>2</sup> 3.5mm
- 02:** PVC 2mm<sup>2</sup> 3.5mm
- 29:** Silicone 2.5mm<sup>2</sup> 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
<b>BDSR type</b> R949 100 600 / Black R949 101 600 / Red	<b>PVC, 1mm<sup>2</sup></b> C290 110 / Black C290 111 / Red <b>SILICONE, 1mm<sup>2</sup></b> C290 010 / Black C290 011 / Red	XXX: cable length in cm	<b>BDSR type</b> R949 100 600 / Black R949 101 600 / Red

**EXAMPLE TO ORDER:**

1 black BDSR plug / red silicone 1 mm<sup>2</sup> 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)	

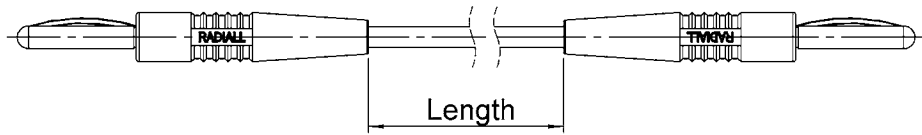
**INSULATED PANEL SOCKETS (DPI)**

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, 1mm<sup>2</sup> 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

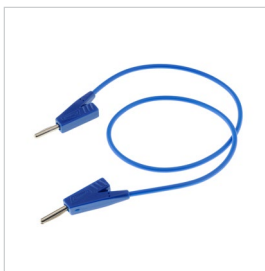
### STACKABLE PATCH CORDS (BDM/BDM)

Cable type:

PVC, 1mm<sup>2</sup> conductor, 3.5mm insulation

PVC, 2mm<sup>2</sup> conductor, insulation

Silicone, 2.5mm<sup>2</sup> 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 1mm<sup>2</sup> 3.5mm
- 02:** PVC 2mm<sup>2</sup> 3.5mm
- 29:** Silicone 2.5mm<sup>2</sup> 4mm

Patch cords

**TEST PROBE PATCH CORDS (PTM/BM)**

Cable types: PVC, 1mm<sup>2</sup>, 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><b>BM type</b></p> <p>R949 000 / Black R949 001 / Red R949 003 / Blue</p>	<p><b>BDM type</b></p> <p>R949 100 / Black R949 101 / Red</p> <p><b>DM type</b></p> <p>R949 500 / Black R949 501 / Red</p>	<p><b>PVC 1mm<sup>2</sup> cross section:</b> C 290 11x x=0: Black, 1: Red, 2: Green, 3: Blue, 4: Yellow</p> <p><b>PVC 2mm<sup>2</sup> cross section:</b> C 290 10x x=0: Black, 1: Red, 2: Green, 3: Blue, 4: Yellow</p>	<p><b>xxx cm:</b> 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 1mm<sup>2</sup> with 80cm / 1 Red BDM plug.  
Part number: R949 100 / C290 012-80cm / R949101

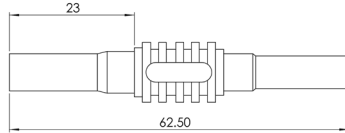
**For free end:** please write the word "free"



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

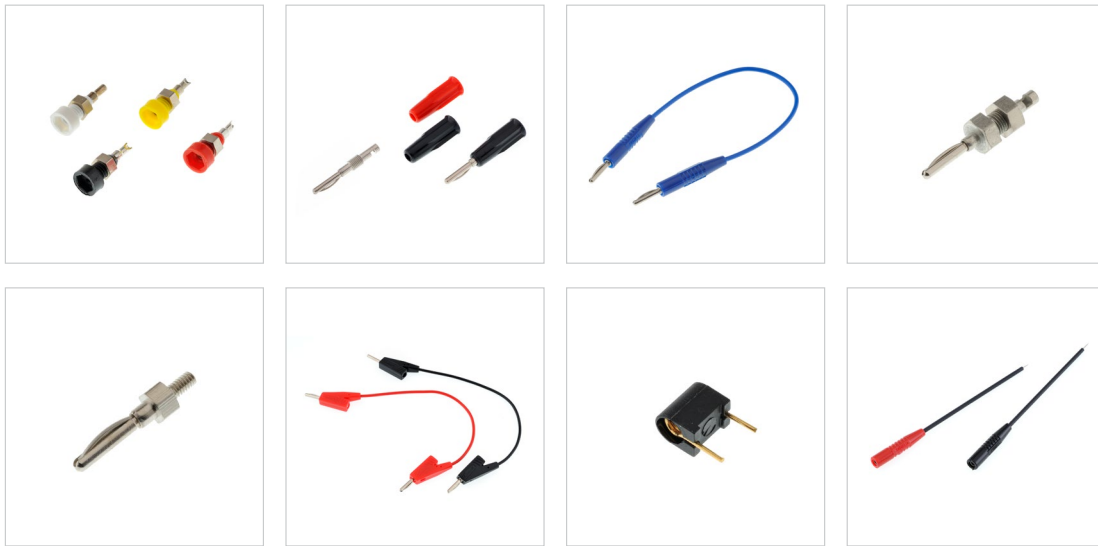
**TEST CLIPS**

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	

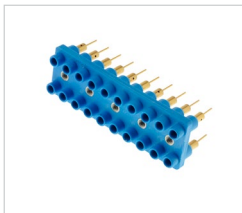
## Introduction

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



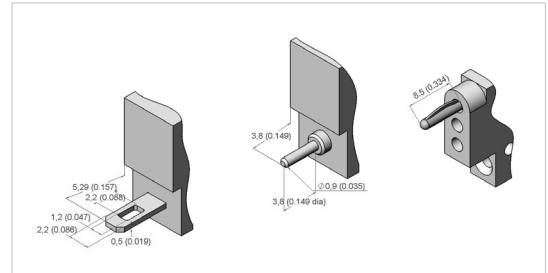
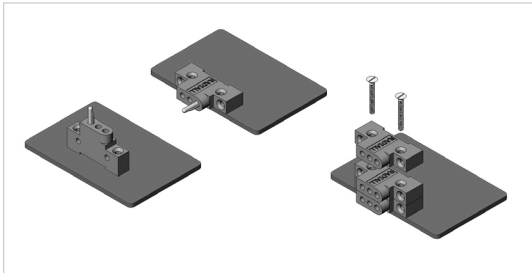
The short-circuit U link is a complementary component to the 20-way fixed connector and can be used to make shunts. It is fitted with a rear-mounted 2mm socket.

## Introduction

### 2mm CONTACT BLOCKS AND RIBBON PATCH CORDS SERIES

This series includes: contact blocks and ribbon patch cords.

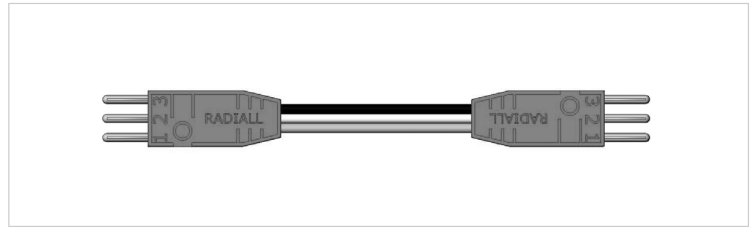
Dimensions of contact outlets and projections.



### 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 <sup>2</sup> 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	
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**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		
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**ENVIRONMENTAL CHARACTERISTICS**

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

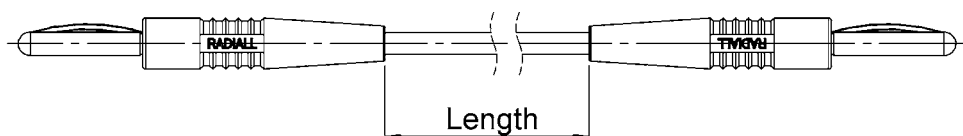
Figure	Part number	Color	Description	Panel drilling
	R921 920 000	Black	Machined panel-mount socket Tin-plated solder termination Strip length: 4mm Cable: AWG 20	P02
	R921 921 000	Red		
	R921 922 000	Green		
	R921 923 000	Blue		
	R921 924 000	Yellow		
	R921 926 000	White		
	R921 930 000	Black	Stamped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

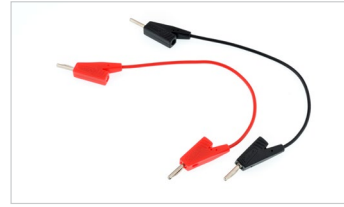
Cable: PVC cable 0.3 mm<sup>2</sup>



**R928 0xx 000**

**MOLDED STACKABLE (BLDM)**

Cable: PVC cable 0.3 mm<sup>2</sup>



**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 0.3mm<sup>2</sup>:** 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

**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 993 004	Yellow	
	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

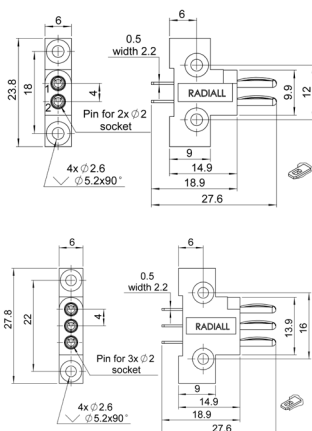
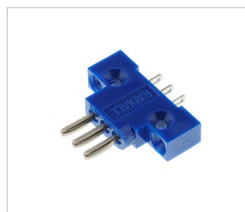
Figure	Part number	Color
	R644 543 020	Black
	R644 543 021	Red
	R644 543 022	Green
	R644 543 023	Blue
	R644 543 024	Yellow

## Contact blocks

The contact blocks are available for different types of connections:

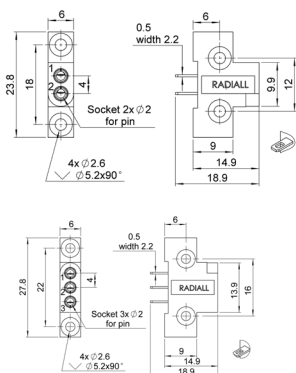
- Wire soldering
- Straight pins for PCB
- Elbow pins for PCB (contact your Radiall sales representative)
- Wrapping pins (contact your Radiall sales representative)

### MALE CONTACT BLOCKS

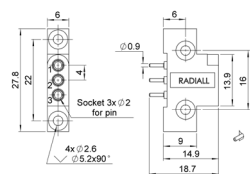
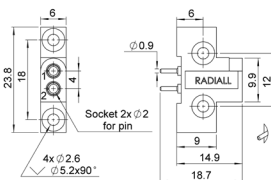


Part number	Note
R644 020 000	Tin-plated solder cup
R644 030 000	

### 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

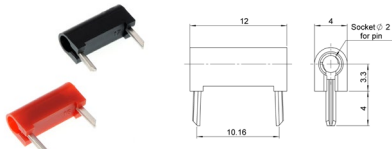
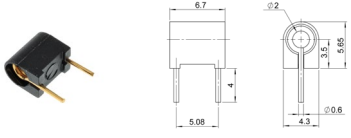
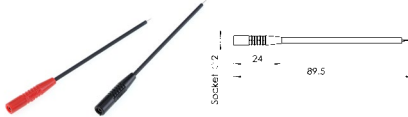
The contact blocks are available for different types of connections:

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
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### MATERIALS


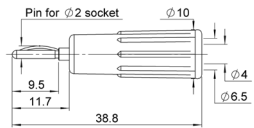
Insulator (banana plug/socket side)	Thermoplastic
Electrical contacts	Nickel or tin plated Copper alloy/brass

## Packaging


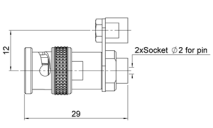
Description	Packaging
2mm / 4mm	100 pieces
BNC / 2mm	1 piece
BNC / 2mm	1 piece
Patch cords	10 pieces

Adapters

2MM PIN TO 4MM SOCKET ADAPTERS


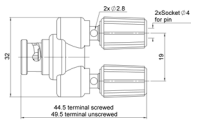

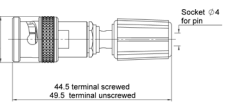

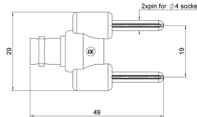
Figure	Part number	Color	Note
 	R921 390 000	Black	2mm male - 4mm female adapter
	R921 391 000	Red	

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 mm<sup>2</sup>, 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**

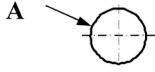
The BCX coaxial cords are normally connected to the terminals of measuring devices in order to uncouple the central core from the braid of a coaxial cable. The BCX plug is non-removable. The cable core is soldered to the center contact and the braid is soldered to the socket.

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

## Panel drilling

### P01

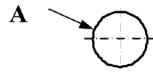
PANEL CUT OUT



mm		
	Maxi	mini
A	6.2	6.1

### P02

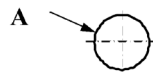
PANEL CUT OUT



mm		
	Maxi	mini
A	5.2	5.1

### P03

PANEL CUT OUT



mm		
	Maxi	mini
A	4.2	4.1

### P04

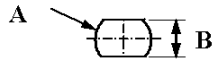
PANEL CUT OUT



mm		
	Maxi	mini
A	3.7	3.6

### P05

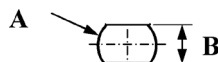
PANEL CUT OUT



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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