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INTRODUCTION

The range of professional banana plugs consists of two major series :

- The 4 mm dia. series comprises
 - Safety plugs and sockets
 - Safety patch cords
 - Standard plugs and sockets
 - Standard patch cords
 - Adaptors (BNC/Banana, 2mm/4mm dia.)
 - BNC/Banana patch cords
 - Accessories (wire grips, test probes...)
- The 2 mm dia. series comprises
 - Plugs and sockets
 - Patch cords
 - PCB test points
 - 20 way fixed connector
 - Short circuit u links
 - Contact blocks and patch leads

APPLICABLE STANDARDS

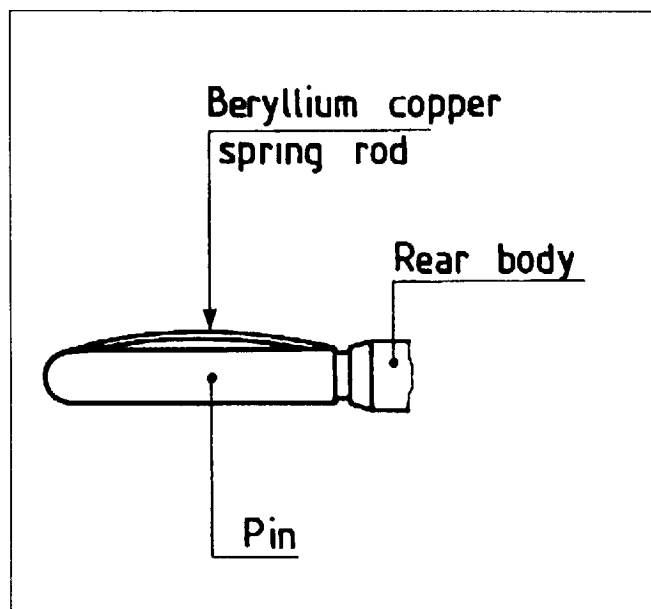
- NF C 93 440 – 4 mm dia. safety series

APPLICATIONS

- Education
- Research centres and laboratories
- Electronics
- Medical
- Instrumentation and measurements
- Low voltage
- Maintenance

BANANA PLUGS

TECHNICAL CHARACTERISTICS 4mm and 2 mm dia.



RADIAL CONTACT DESIGN

The RADIAL contact consists of a monobloc pin fitted with a copper beryllium spring rod. (In the safety version, this pin is completely protected by a sheath *p8*).

With this design, **perfect electrical conduction** can be obtained with **very low contact resistance**. The rod is anchored at one end and free at the other which allows **excellent contact-point pressure** even after **thousands of matings**.

	4 mm dia. serie	2 mm dia. serie
Contact resistance	$\leq 0.5 \text{ m}\Omega$	$\leq 1 \text{ m}\Omega$
Current rating (at 20°C)	until 30 A	until 10 A
Contact-point endurance	> 10.000 matings	

PATCH CORDS LENGHT :

Except special mention near the part number, all patch cords lengths are defined by the lenght of the cable without extremities.

Tolerances : $\pm 1 \text{ cm}$ of the length for patch cords $\leq 100 \text{ cm}$
 $\pm 1\%$ of the length for patch cords $> 100 \text{ cm}$

SALES NETWORK

Different marketing channels are available dependant upon location :

- Subsidiaries in main countries and head office in France
(See back of catalogue).
- Agents for others countries
(See back of catalogue, list available on request).

MINIMUM PACKAGING

4 mm dia. SAFETY SERIES

Plugs	10	pieces
Panel sockets	100	pieces
Patch cords	10	pieces
Accessories	10	pieces

4 mm dia. STANDARD SERIES

Plugs	100	pieces
Panel sockets	100	pieces
Patch cords	10	pieces
Accessories	10	pieces

2 mm dia. SERIES

Plugs	100	pieces
Panel sockets	100	pieces
Patch cords	10	pieces
PCB test points	100	pieces
Test probes	10	pieces
20 way fixed connector	10	pieces
Short circuit u links	100	pieces
Contact blocks	50	pieces
Patch leads	10	pieces

AVAILABILITY :

All of our standard products are generally available from factory stock.

For all 4 mm dia. or 2 mm dia. "made to order" patch cords and part number marked with an "*" , please contact RADIAL.

BANANA PLUGS

GLOSSARY OF ABBREVIATIONS

4 mm dia. SERIES

Abbreviation	Designation	Page
B1	Insulated plug with solder connection	24
B2	Insulated plug with crimp or solder connection	24
B4	Uninsulated plug	22 - 23
BCX	Coaxial patch cord	56
BDM	Stackable patch cords	27 - 28 and 55
BDR-4	Stackable plug with quick grip cable clamp	24
BDR-SR	Stackable plug, partial safety	9
BDR-PR	Stackable plug, partial safety non thermofusible sheath	9
BDSA	Stackable patch cord, total safety	13 and 15
BDSR	Stackable patch cord, partial safety	13 - 14 and 15
BDPR	Stackable patch cord, partial safety non thermofusible sheath	13
BM	Extension patch cord	27 - 28 and 55
BMS	Extension patch cord, total safety	12 - 14 and 15
DM	Female extension patch cord	28 and 55
DP	Panel socket	25
DPI	Insulated panel socket	25
DPIS	Insulated safety panel socket	10 - 11
PTM	Test probe patch cord	27 and 29
PTS	Safety test probe patch cord	14 - 15 and 27
PTSE	Safety test probe patch cord with spring blade	14 and 16

2 mm dia. SERIES

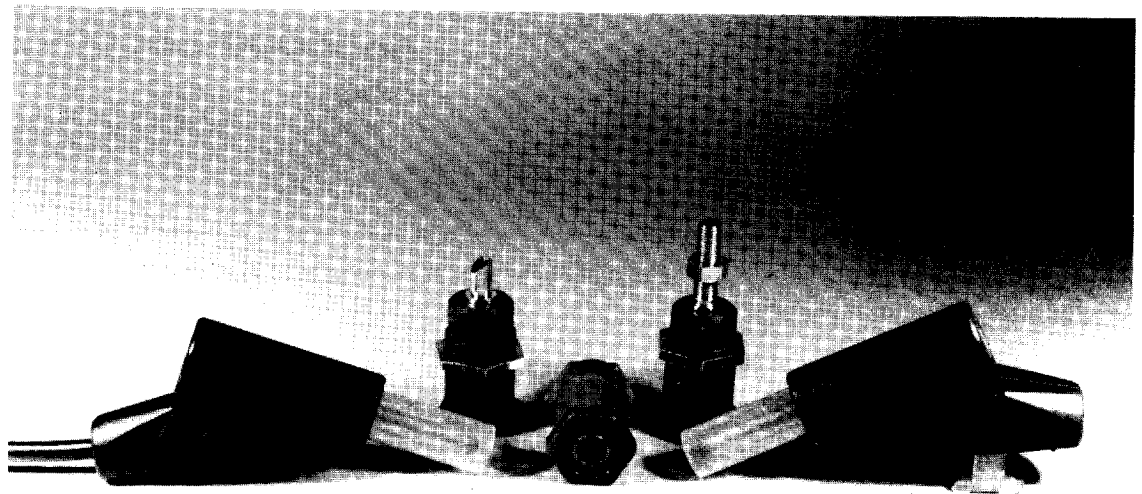
Abbreviation	Designation	Page
BDR-2	Stackable plug with quick grip cable clamp	34
BL	Uninsulated miniature plug	32
BLDM	Stackable miniature patch cord	37 - 38
BL-I	Insulated miniature plug	34
BLM	Extension miniature patch cord	37 - 38
BLP-D2	Uninsulated miniature panel plug/ 2 mm dia. socket	33
BL-PI	Insulated miniature panel plug	34
BLP-4	Uninsulated miniature panel plug with solder connection	33
BL2-4	Uninsulated threaded miniature plug	32
DLM	Extension miniature female patch cord	38
DLP	Uninsulated miniature panel socket	35
DL-PI	Insulated miniature panel socket	36
DLP-I-W	Insulated panel socket with wire wrap	36
FL	Contact block	47 - 48 - 49
ML	Patch lead	50
PL-FF	Uninsulated female-female miniature panel extension	35
PL-FF-I	Insulated female-female miniature panel extension	36

4 mm dia. SAFETY SERIES

PRESENTATION

This series of products consists of :

- Plugs
- Sockets
- Extension patch cords
- Stackable patch cords
- Test probe patch cords
- Patch cords made to order
- Wire grips
- Test probe
- Adaptors



Applications :

- *Research institutes and laboratories*
- *Education*
- *Instrumentation*
- *Low voltage*
- *Electronics.*

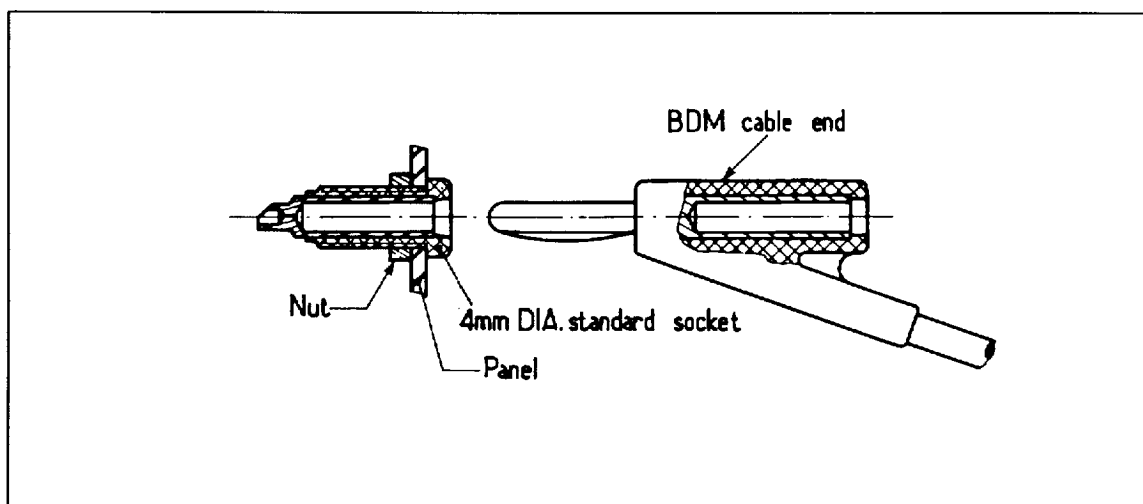
4 mm dia. SAFETY SERIES

PRESENTATION

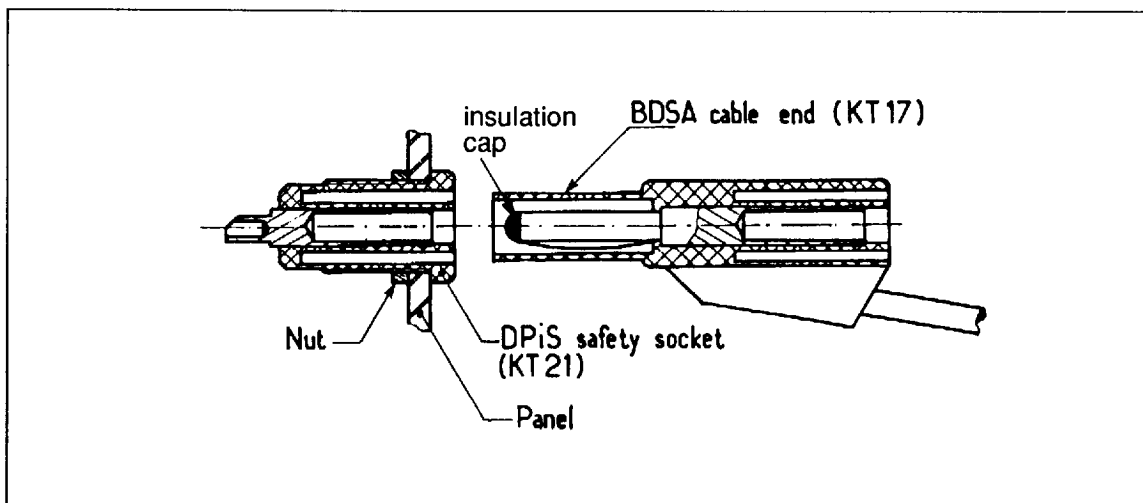
In accordance with NF C 93 440 standards

Today, safety is a major preoccupation in the design of electrical components, whether for professional, industrial or general use.

The design of professional banana plugs has been modified by the development of a protection system in order to eliminate all risk of contact with live elements when handling components.



Example of a regular connection : The contact is exposed.



Example of a safety connection : The contact is completely protected.

4 mm dia. SAFETY SERIES

BANANA PLUGS

BDR-SR/BDR-PR BANANA PLUGS NFC 93440 standard

Compatible with all 4 mm dia. sockets

Connection can be made onto : – cable (max. 2.5 mm² cross section)
– 4 mm dia. banana

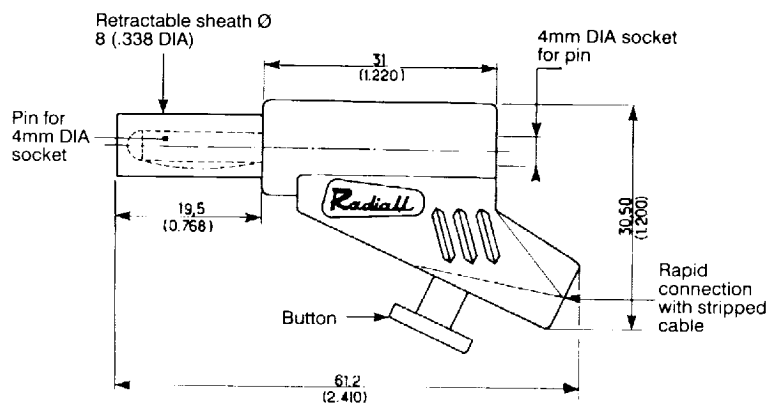
CHARACTERISTICS

– Current rating max	: 30 A (at 20°C)
– Dielectric withstanding voltage	: 2 500 V rms 50 Hz
– Operating voltage	: 750 V rms 50 Hz
– Insulation resistance	: $\geq 5\,000\text{ M}\Omega$
– Contact resistance	: $\leq 0,5\text{ m}\Omega$
– Mechanical endurance	: $\geq 10\,000$ matings
– Average insertion force	: 25 N
– Operating temperature	: $-40^{\circ}\text{C} + 85^{\circ}\text{C}$
– Insulation	: thermoplastic

► Packaging : 10 pieces of the same part number.

• BDR-SR BANANA PLUGS

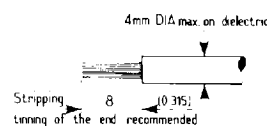
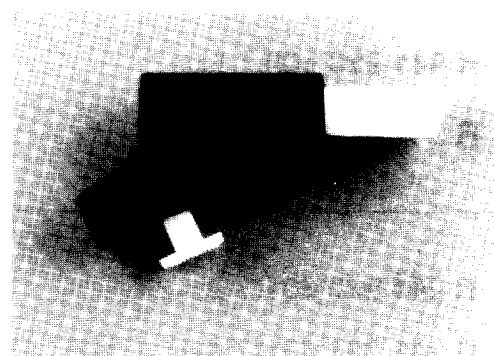
Part number	Standard
R 941 460 600 / Black	NFC 93440 – KT12R
R 941 461 600 / Red	
R 941 462 600 / Green	
R 941 463 600 / Blue	
R 941 464 600 / Yellow	



• BDR-PR BANANA PLUGS

These plugs are fitted with a **NON THERMO-FUSIBLE** retractable sheath in PTFE (withstands a $350^{\circ}\text{C} \pm 10^{\circ}\text{C}$ temperature during 10 seconds without deformation).

Part number	Standard
R 941 480 600 / Black	NFC 93440 – KT12R DCN 5935 BA
R 941 481 600 / Red	
R 941 482 600 / Green	
R 941 483 600 / Blue	
R 941 484 600 / Yellow	



4 mm dia. SAFETY SERIES

PANEL SOCKETS

• INSULATED PANEL SOCKETS - DPIS – NFC 93440 standard

Insulated safety panel sockets are used to connect 4 mm dia. standard **BM/BDM** (p 26 to 29) banana patch cords and **BMS/BDSR/BDSA** (p 12 to 16) safety patch cords.

CHARACTERISTICS

ELECTRICAL

– Current rating max	: 30 A (at 20°C)
– Dielectric withstanding voltage	: 2 500 V
– Operating voltage	: 750 V rms 50 Hz
– Insulation resistance	: $\geq 5\,000\text{ M}\Omega$
– Tightening torque	: max 14 cm daN

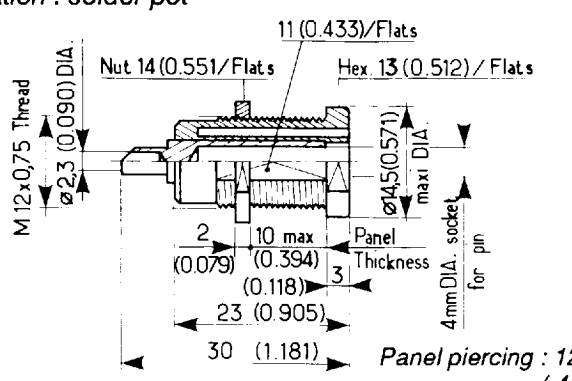
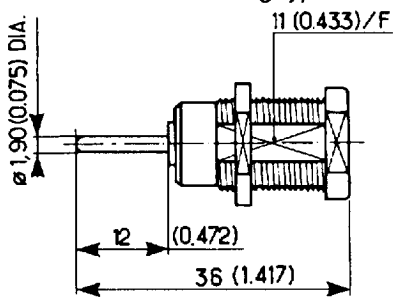
ENVIRONMENT

– Operating temperature	: $-40^{\circ}\text{C} + 100^{\circ}\text{C}$
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MATERIALS

– Insulation	: thermoplastic
– Contact	: nickel or tin-plated (solder connection) copper alloy

► Packaging : 100 pieces of the same part number.

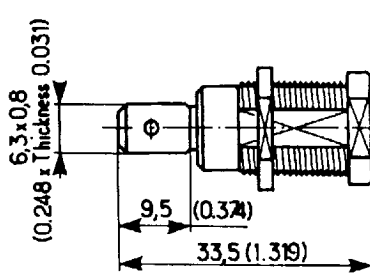
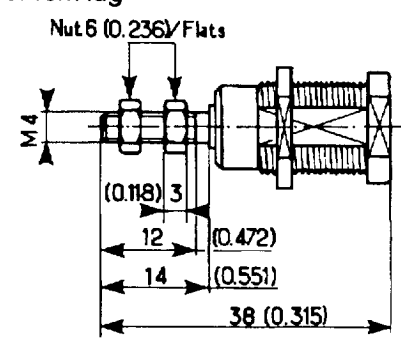
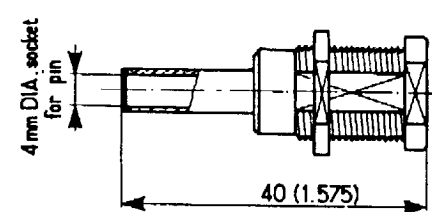
Part number	Standard	Dimensions
R 941 920 600 / Black R 941 921 600 / Red R 941 922 600 / Green R 941 923 600 / Blue R 941 924 600 / Yellow	NFC 93440 – KT21F	<i>Termination : solder pot</i>  DPIS
R 941 920 601* / Black R 941 921 601* / Red R 941 922 601* / Green R 941 923 601* / Blue R 941 924 601* / Yellow	NFC 93440 – KT21L	<i>Termination : for round 1.9 mm dia. lug type</i>  DPIS

* Made to order product, please consult Radiall for price and delivery.

4 mm dia. SAFETY SERIES

PANEL SOCKETS

• INSULATED PANEL SOCKETS - DPIS – NFC 93440 standard (continued)

Part number	Standard	Dimensions
R 941 920 602 / Black R 941 921 602 / Red R 941 922 602 / Green R 941 923 602 / Blue R 941 924 602 / Yellow	NFC 93440 – KT21L	Termination : flat for FASTON[™] lug type  DPIS Panel piercing : 12.1 dia. $\begin{smallmatrix} +0.1 \\ 0 \\ +0.004 \end{smallmatrix}$ (.476 Dia. $\begin{smallmatrix} +0.1 \\ 0 \\ +0.004 \end{smallmatrix}$)
R 941 920 603 / Black R 941 921 603 / Red R 941 922 603 / Green R 941 923 603 / Blue R 941 924 603 / Yellow	NFC 93440 – KT21V	Termination : for fork lug  DPIS Panel piercing : 12.1 dia. $\begin{smallmatrix} +0.1 \\ 0 \\ +0.004 \end{smallmatrix}$ (.476 Dia. $\begin{smallmatrix} +0.1 \\ 0 \\ +0.004 \end{smallmatrix}$)
R 941 920 604* / Black R 941 921 604* / Red R 941 922 604* / Green R 941 923 604* / Blue R 941 924 604* / Yellow	NFC 93440 – KT21R	Termination : for 4 mm dia.pin  DPIS Panel piercing : 12.1 dia. $\begin{smallmatrix} +0.1 \\ 0 \\ +0.004 \end{smallmatrix}$ (.476 Dia. $\begin{smallmatrix} +0.1 \\ 0 \\ +0.004 \end{smallmatrix}$)

* Made to order product, please consult Radiall for price and delivery.

4 mm dia. SAFETY SERIES

PATCH CORDS

This serie comprises **patch cords** :

- | | |
|---|---|
| ■ BMS/BMS | Safety extension patch cords (fixed sheath) |
| ■ BDSR/BDSR and BDPR/BDPR | Stackable patch cords partial safety (retractable sheath) |
| ■ BDSA/BDSA | Stackable patch cords, total safety (fixed sheath) |
| ■ PTS and PTSE | Test probe patch cords (p 14). |

CHARACTERISTICS

– Current rating max	<i>patch cords 1 mm²</i>	: 15 A (at 20°C)
	<i>patch cords 2 and 2.5 mm²</i>	: 30 A (at 20°C)
– Dielectric withstanding voltage		: 2 500 V rms
– Operating voltage		: 750 V rms 50 Hz
– Insulation resistance		: $\geq 5\,000\text{ M}\Omega$
– Average insertion force		: 25 N
– Operating temperature	<i>BMS and BDSR patch cords</i>	: – 40°C + 85°C
	<i>BDSA patch cords</i>	: – 25°C + 70°C
– Cable section		: PVC 1 mm ²
		: PVC 2 mm ² (30 A)
		: Silicone 1 mm ²
		: Silicone 2.5 mm ² (30 A)

NOTE : *Silicone cables are highly flexible and withsand contact with a hot soldering iron without damage.*

► **Packaging :** 10 Identical patch cords.

• BMS/BMS EXTENSION PATCH CORDS NFC 93440-KT 15 standard

Model compatible with DPIS KT 21 sockets (p10 and 11) and BDSA / BDSA KT 17 patch cords (p13)

Cord length	Colour	Type of cable
2 : 25 cm	0 : Black	00 : PVC 1 mm ² 3.5 dia.
4 : 50 cm	1 : Red	02 : PVC 2 mm ² 3.5 dia.
5 : 100 cm	2 : Green	19 : Silicone 1 mm ² 2.9 dia.
6 : 150 cm	3 : Blue	29 : Silicone 2.5 mm ² 4 dia.
7 : 200 cm	4 : Yellow	

R 948 0xx 6xx



4 mm dia. SAFETY SERIES

PATCH CORDS

● BDSR/BDSR STACKABLE PATCH CORDS

NFC 93440-KT 16 standard *Compatible with all 4 mm dia. sockets.*

Cord length	Colour	Type of cable
3 : 25 cm	0 : Black	00 : PVC 1 mm ² 3.5 dia.
4 : 50 cm	1 : Red	02 : PVC 2 mm ² 3.5 dia.
5 : 100 cm	2 : Green	19 : Silicone 1 mm ² 2.9 dia.
6 : 150 cm	3 : Blue	29 : Silicone 2.5 mm ² 4 dia.
7 : 200 cm	4 : Yellow	

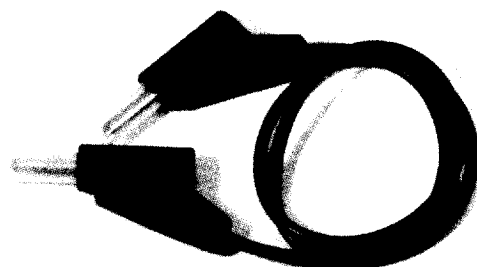
R 948 1xx 6xx

● BDPR/BDPR STACKABLE PATCH CORDS

NFC 93440-KT 16 standard

Compatible with all 4 mm dia. sockets.

These patch cords are fitted with a **NON THERMOFUSIBLE** retractable sheath in PTFE (*withstand a 350° C ± 10° C temperature during 10 seconds without deformation*).



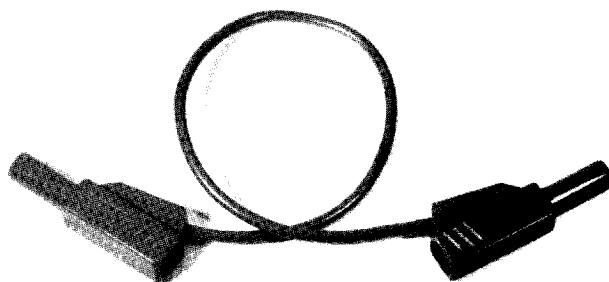
Cord length	Colour	Type of cable
0 : 25 cm	0 : Black	00 : PVC 1 mm ² 3.5 dia.
1 : 50 cm	1 : Red	02 : PVC 2 mm ² 3.5 dia.
2 : 100 cm	2 : Green	19 : Silicone 1 mm ² 2.9 dia.
3 : 150 cm	3 : Blue	29 : Silicone 2.5 mm ² 4 dia.
4 : 200 cm	4 : Yellow	

R 948 4xx 6xx

● BDSA/BDSA STACKABLE PATCH CORDS **NFC 93440-KT 17 standard** *Compatibles with DPIS KT 21 sockets (p10 and 11) and BMS/BMS KT 15 patch cords (p12), BDSR/BDSR and BDPR/BDPR KT 16 (p13).*

Cord length	Colour	Type of cable
0 : 25 cm	0 : Black	00 : PVC 1 mm ² 3.5 dia.
1 : 50 cm	1 : Red	02 : PVC 2 mm ² 3.5 dia.
2 : 100 cm	2 : Green	19 : Silicone 1 mm ² 2.9 dia.
3 : 150 cm	3 : Blue	29 : Silicone 2.5 mm ² 4 dia.
4 : 200 cm	4 : Yellow	

R 948 3xx 6xx



Note : Silicone cable are highly flexible and withstand contact with a hot soldering iron without damage.

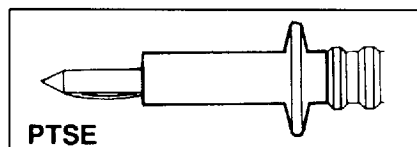
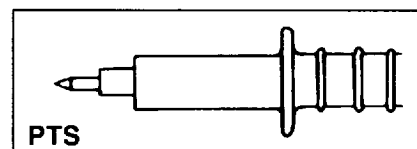
4 mm dia. SAFETY SERIES

PATCH CORDS

• PTS - PTSE TEST PROBE PATCH CORDS

These products are designed to conduct laboratory and equipment tests safety.

- **PTS patch cords** Test probe patch cords with **safety flange**.
- **PTSE patch cords** Test probe patch cords with **with safety flange and spring blade**.



CHARACTERISTICS

- Nominal capacity : 15 A (at 20°C)
- Dielectric withstanding voltage : 2 500 V rms
- Operating voltage : 750 V rms 50 Hz

► **Packaging : 10 pieces of the same part number (10 pairs).**

Pairs P/N	Type of cable Colour/length	Type of Extremity	
R 948 959 600	PVC 1 mm ² (3.5 dia.)/ Black + Red / 100cm	PTS/BMS	
R 948 959 619	Silicone 1 mm ² (2.9 dia.)/ Black + Red / 100cm		
R 948 953 600	PVC 1 mm ² (3.5 dia.)/ Black + Red / 100cm	PTS/BDSR	
R 948 953 619	Silicone 1 mm ² (2.9 dia.)/ Black + Red / 100cm		
R 948 958 600	PVC 1 mm ² (3.5 dia.)/ Black + Red / 100cm	PTSE/BMS	
R 948 958 619	silicone 1 mm ² (2.9 dia.)/ Black + Red / 100cm		
R 948 950 600	PVC 1 mm ² (3.5 dia.)/ Black + Red / 100cm	PTSE/BDSR	
R 948 950 619	Silicone 1 mm ² (2.9 dia.)/ Black + Red / 100cm		

Note : Silicone cable are highly flexible and withstand contact with a hot soldering iron without damage.

4 mm dia. SAFETY SERIES

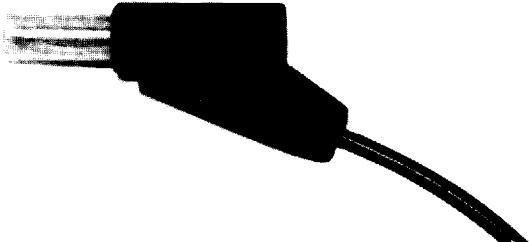
PATCH CORDS MADE TO ORDER

These patch cords can be made using any combination of elements from the following categories: connectors / type of cable / length / colour

► Packaging : 10 identical patch cords.

EXTREMITY CONNECTOR CODE

These codes allow to determined the patch cord setting. *Please see "How to order" p 16.*

Code	Type of Extremity	
R 949 000 600 / Black R 949 001 600 / Red R 949 002 600 / Green R 949 003 600 / Blue R 949 004 600 / Yellow	BMS	
R 949 100 600 / Black R 949 101 600 / Red R 949 102 600 / Green R 949 103 600 / Blue R 949 104 600 / Yellow	BDSR	
R 949 100 601 / Black R 949 101 601 / Red R 949 102 601 / Green R 949 103 601 / Blue R 949 104 601 / Yellow	BDSA	
R 999 010 190 / Black R 999 011 190 / Red <i>(available for PVC 1 & 2 mm² and silicone 1 mm² cables)</i>	PTS	

4 mm dia. SAFETY SERIES

PATCH CORDS MADE TO ORDER

EXTREMITY CONNECTOR CODE

These codes allow to determined the patch cord setting. *Please see "How to order"*

Code	Type of Extremity	
R 999 010 600 / Black R 999 011 600 / Red (available for PVC 1 & 2 mm ² and silicone 1 mm ² cables)	PTSE	

CABLE CODE

These codes allow to determinate the cable type. *Please see "How to order"*.

P.V.C. 1 mm ² cross section	P.V.C. 2 mm ² cross section	Silicone 1 mm ² cross section	Silicone 2.5 mm ² cross section
C 290 110 / Black C 290 111 / Red C 290 112 / Green C 290 113 / Blue C 290 114 / Yellow	C 290 100 / Black C 290 101 / Red C 290 102 / Green C 290 103 / Blue C 290 104 / Yellow	C 290 010 / Black C 290 011 / Red C 290 012 / Green C 290 013 / Blue C 290 014 / Yellow	C 290 116 010 / Black C 290 116 011 / Red C 290 116 012 / Green C 290 116 013 / Blue C 290 116 014 / Yellow

HOW TO ORDER

To order for example : 1 Black **BMS** extremity / Black **silicone** 1 mm² cable length 125 cm / 1 Black **BDSR** connector

Part number : **R 949 000 600 / C 290 010 – 125 cm / R 949 100 600**

(Patch cords with one free end can be ordered by writing the word "free" in place of the extremity connector code).

4 mm dia. SAFETY SERIES

ACCESSORIES

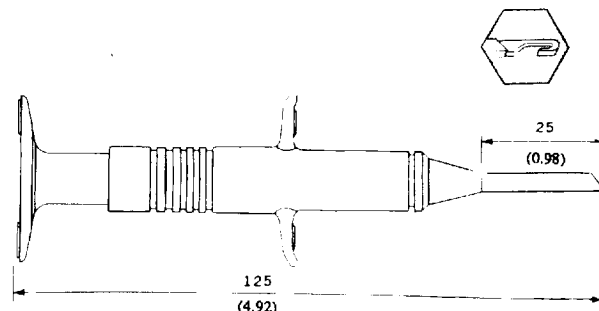
● WIRE GRIPS *Compatibles with all 4 mm dia patch cords and banana plugs.*

☞ WITH SLIDING HOOK

The contact hook guarantees a good grip on wires, components and PCB pins up to 1.5 mm² thick.

CHARACTERISTICS

- Operating voltage max : 1 000 V rms
- Current rating max : 4 A (at 20°C)
- Max hooking capacity : 1.5 mm
- Materials *contact hook* : stainless steel
- body* : thermoplastic



► Packaging : 10 pieces of the same part number.

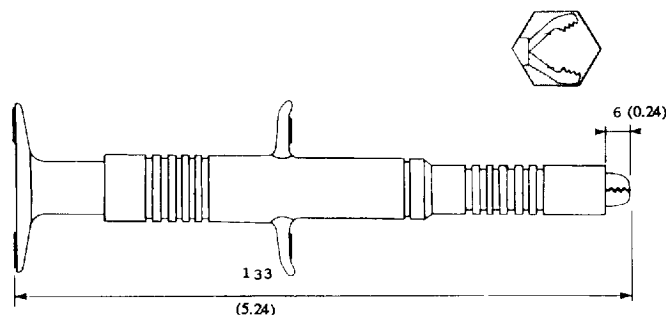
Part number	
R 999 700 600 / Black R 999 701 600 / Red	

☞ WITH ALLIGATOR CLIP

The large opening and clipping efficiency of alligator clips enable their use on motors, fuse holders, terminals, etc....

CHARACTERISTICS

- Operating voltage max : 1 000 V rms
- Current rating max : 16 A (at 20°C)
- Clip opening : max 20 mm
- Materials *body* : thermoplastic
- alligator clip* : stainless steel



► Packaging : 10 pieces of the same part number.

Part number	
R 999 710 600 / Black R 999 711 600 / Red	

4 mm dia. SAFETY SERIES

ACCESSORIES

• **WIRE GRIPS** *Compatibles with all 4 mm dia. patch cords and banana plugs .*

WITH FLEXIBLE ROD

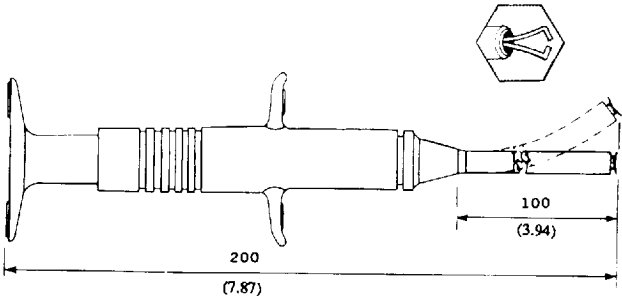
The flexible and thin rod allows testing of difficult to access contact points in dense circuitry.

CHARACTERISTICS

- Operating voltage
 - Current rating max
 - Material

: 1 000 V rms
 : 2.5 A (at 20°C)
 contact hook : spring wire in stainless steel
 body : thermoplastic

► Packaging : 10 pieces of the same part number.



Part number	
R 999 720 600 / Black R 999 721 600 / Red	

• SAFETY TEST PROBE

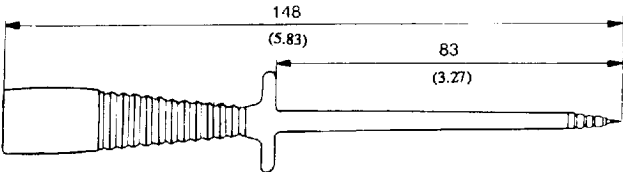
The extra thin probe can make contact through coatings and some types of insulation as well as enabling PCB measurements.

Fitted with a rear-mounted 4 mm dia. socket, it can be used with **BM** (p 26 to p 29) and **BMS** (p 12 to p 16) patch cords
 With the safety male/male adaptor (p 19), this probe can be connected to a measurement instrument.

CHARACTERISTICS

- Operating voltage max
 - Material

: 1 500 V rms
 tip : steel
 body : thermoplastic



► Packaging : 10 pieces of the same part number.

Part number	
R 941 850 600 / Black R 941 851 600 / Red	

● ADAPTORS

► Packaging : 10 pieces of the same part number.

☞ SAFETY FEMALE/FEMALE

These adaptors allows connection between two safety patch cords with extremities **BMS** (p 12, 15) or two standard patch cords with extremities **BM** (p 26, 28).

Part number

R 941 960 600 / Black

R 941 961 600 / Red

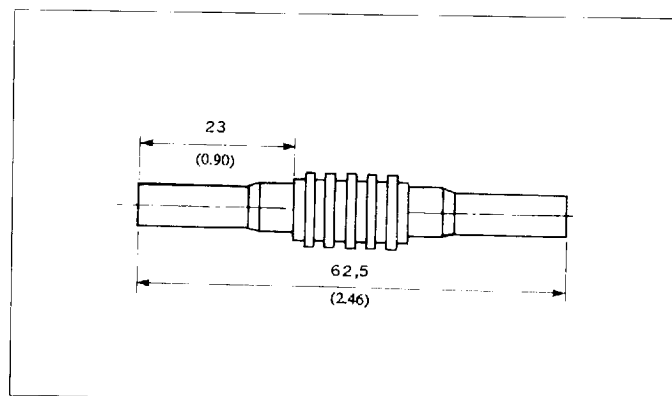
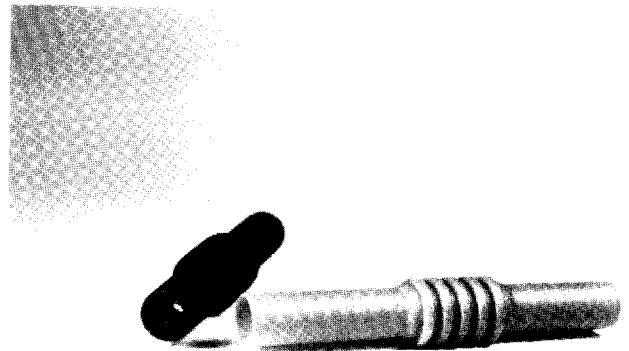
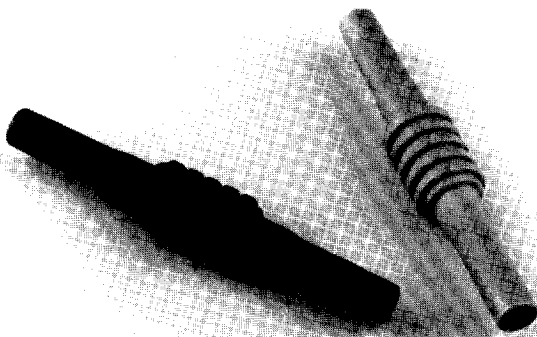
☞ SAFETY MALE/MALE

These adaptors allows direct connection between a test probe (p 18) and a measurement instrument. This allows to hold the measurement instrument with one hand to touch directly a test point. The other hand will be free with the test leads for the second test point.

Part number

R 941 199 600 / Black

R 941 199 601 / Red

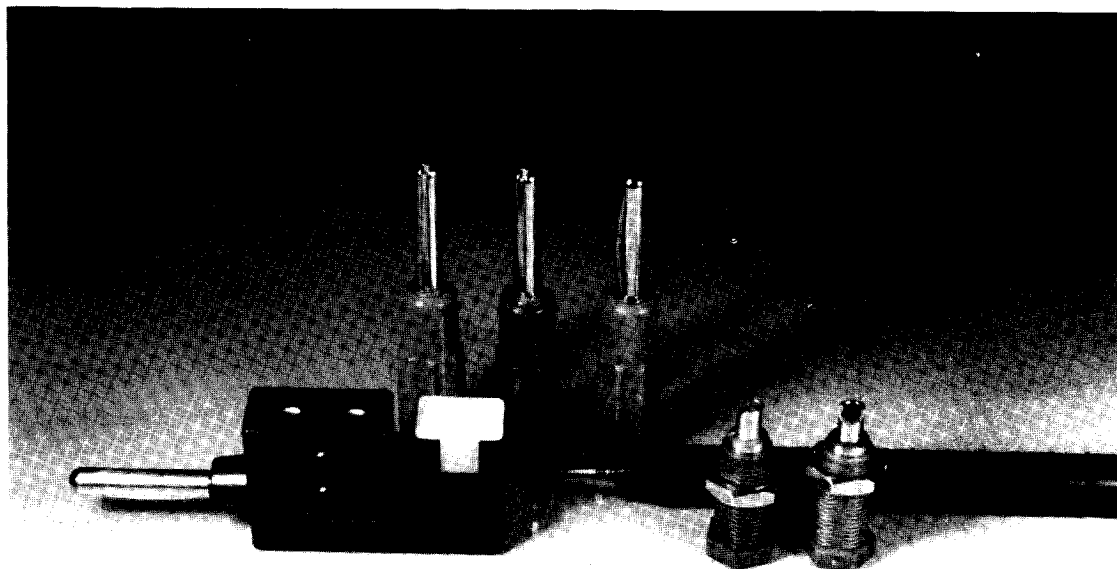


4 mm dia. STANDARD SERIES

PRESENTATION

This series of products consists of :

- Plugs
- Sockets
- Extension patch cords
- Stackable patch cords
- Test probe patch cords
- Patch cords made to order
- Test probe



Applications :

- ☐ *Instrumentation and test*
- ☐ *Low voltage*
- ☐ *Electronics.*

4 mm dia. STANDARD SERIES

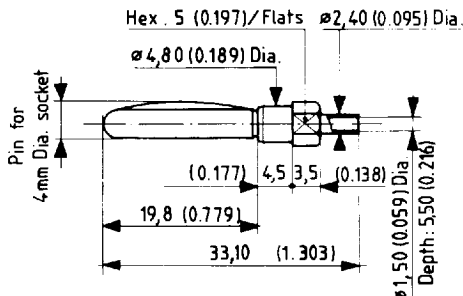
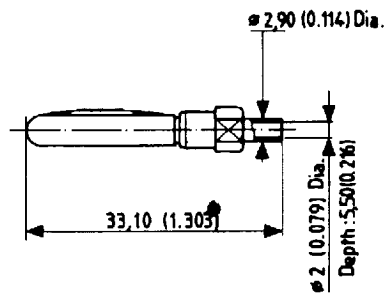
BANANA PLUGS

CHARACTERISTICS

– Current rating max		: 30 A (at 20°C)
– Dielectric withstanding voltage		: 2 500 V rms 50 Hz
– Operating voltage		: 750 V rms 50 Hz
– Insulation resistance		: $\geq 5\,000\text{ M}\Omega$
– Contact resistance		: $\leq 0,5\text{ m}\Omega$ under 15 A
– Mechanical endurance		: $\geq 10\,000$ matings
– Average insertion force		: 25 N
– Operating temperature	<i>uninsulated</i>	: – 65°C + 155°C
	<i>insulated models</i>	: – 60°C + 100°C
– Material		: Nickel or tin plated (solder connection) copper alloy

• UNINSULATED BANANA PLUGS

► Packaging : 100 pieces of the same part number.

Part number	Description	Dimensions
R 941 019	Banana plug - solder or crimp with 1.5 mm dia. solder post - Cable stripping dimension 5 mm - crimp tool BUCHANAN 612 548 - positioner RADIAL R 282 561 - Crimp setting : 1.20 dia. (Cable AWG 18) 1.08 dia. (Cable AWG 22) maxi 15 A	 B4
R 941 029	Banana plug - solder or crimp with 2 mm dia. solder post - Cable stripping dimension 5 mm - crimp tool BUCHANAN 612 548 - positioner RADIAL R 282 561 - Crimp setting : 1.50 dia. (Cable AWG 14) 1.25 dia. (Cable AWG 18)	 B4

4 mm dia. STANDARD SERIES

BANANA PLUGS

• UNINSULATED BANANA PLUGS *(continued)*

Part number	Description	Dimensions
R 941 049	Banana plug with threaded panel connection Rear length 8 mm	B4 – 8 ISO
R 941 069	Banana plug with threaded panel connection Rear length 18 mm	B4 – 18 ISO
R 941 149	Panel banana plug with rear socket for 4 mm dia. banana plug.	

4 mm dia. STANDARD SERIES

BANANA PLUGS

• INSULATED BANANA PLUGS *Compatibles with all 4 mm dia. sockets.*

► Packaging : 100 pieces of the same part number (except BDR4).

Part number	Description	Dimensions
R 941 330 / Black R 941 331 / Red R 941 332 / Green R 941 333 / Blue R 941 334 / Yellow R 941 336 / White	Insulated banana plug - solder (tin plated) or - rear socket for 2 mm dia. banana plug (Cable AWG 14)	 B1
R 941 340 / Black R 941 341 / Red R 941 342 / Green R 941 343 / Blue R 941 344 / Yellow R 941 346 / White	Insulated banana plug - solder (tin plated) or - screws tightening or - rear socket for 2 mm dia. banana plug (Cable AWG 14)	 B2
R 941 460 / Black R 941 461 / Red	Stackable banana plug - with quick grip clamp for cable stripped - 2 & 4 mm dia. banana sockets for banana plugs Packaging 10 pieces	 BDR4

4 mm dia. STANDARD SERIES

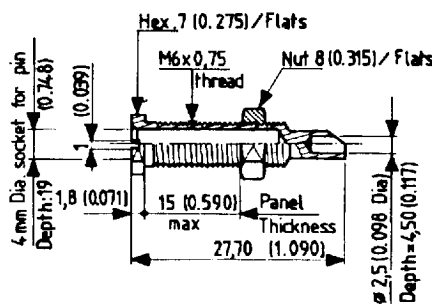
PANEL SOCKETS

CHARACTERISTICS

- Current rating max	: 30 A (at 20°C)
- Dielectric withstanding voltage	: 2 500 V rms 50 Hz
- Operating voltage	: 750 V rms 50 Hz
- Insulation resistance <i>insulated models</i>	: $\geq 5\,000\text{ M}\Omega$
- Average insertion force	: 25 N
- Operating temperature <i>uninsulated models</i>	: - 65°C + 155°C
<i>insulated models</i>	: - 60°C + 100°C

► Packaging : 100 pieces of the same part number.

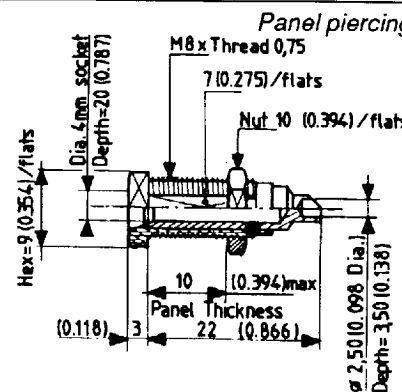
• UNINSULATED PANEL SOCKETS - DP

Part number	Description	Dimensions
R 941 619	Uninsulated panel socket – solder connection	 DP
R 941 629* nickel plated version	- Cable stripping dimension 4 mm (AWG 14 cable)	

• INSULATED PANEL SOCKETS - DPI

ADVANTAGES :

- Monobloc*
- Reduced bulk*
- Panel thickness up to 10 mm*
- Forward handling safety*

Part number	Description	Dimensions
R 941 920 001 / Black R 941 921 001 / Red R 941 922 001 / Green R 941 923 001 / Blue R 941 924 001 / Yellow R 941 926 001 / White	Insulated panel socket – solder connection (tin plated) - Cable stripping dimension 4 mm (AWG 14 cable) Insulation : thermoplastic self-extinguishable UL94 VO Tightening torque maxi : 12 cm daN	 DPI

* Made to order product, please consult Radiall for price and delivery

4 mm dia. STANDARD SERIES

PATCH CORDS

This series comprises :

- **BM/BM patch cords** moulded extension patch cords
- **BDM/BDM patch cords** moulded, stackable patch cords
- **PTM/BM patch cords** moulded, test probe patch cords
- **PTS/BM patch cords** moulded, test probe patch cords with security flange

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

The unit is then moulded in pliable thermoplastic to form a very sturdy connector.

NOTE : *Silicone cables are highly flexible and withstand contact with a hot soldering iron without damage.*

CHARACTERISTICS

– Current rating max	1 mm ² cable	: 15 A (at 20°C)
	2 and 2.5 mm ² cable	: 30 A (at 20°C)
– Dielectric withstanding voltage		: 2 500 V
– Operating voltage		: 750 V rms 50 Hz
– Insulation resistance		: > 5 000 MΩ
– Contact resistance		: ≤ 0,5 mΩ
– Mechanical endurance		: > 10 000 matings
– Average insertion force		: 25 N
– Operating temperature		: – 40°C + 70°C

► **Packaging : 10 identical patch cords.**

• BM/BM EXTENSION PATCH CORDS

Cord length	Colour	Type of cable
1 : 10 cm	0 : Black	00 : PVC 1 mm ² 3.5 dia.
2 : 20 cm	1 : Red	02 : PVC 2 mm ² 3.5 dia.
4 : 50 cm	2 : Green	19 : Silicone 1 mm ² 2.9 dia.
5 : 100 cm	3 : Blue	29 : Silicone 2.5 mm ² 4 dia.
6 : 150 cm	4 : Yellow	
7 : 200 cm		

R 948 0xx 0xx

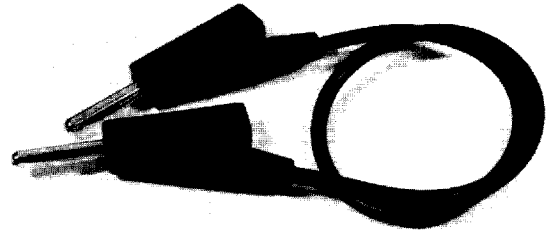


• BDM/BDM STACKABLE PATCH CORDS

► Packaging : 10 identical patch cords.

Cord length	Colour	Type of cable :
1 : 10 cm	0 : Black	00 : PVC 1 mm ² 3.5 dia.
3 : 25 cm	1 : Red	02 : PVC 2 mm ² 3.5 dia.
4 : 50 cm	2 : Green	19 : Silicone 1 mm ² 2.9 dia.
5 : 100 cm	3 : Blue	29 : Silicone 2.5 mm ² 4 dia.
6 : 150 cm	4 : Yellow	
7 : 200 cm		

R 948 1xx 0xx



• PTM/BM TEST PROBE PATCH CORDS

PVC cable 1 mm² (3.5 dia.) Cord length 100 cm

Patch cords sold in pairs (Black + Red)

► Packaging : 10 pieces of the same part number (10 pairs).

Part number

R 948 952 / Black + Red

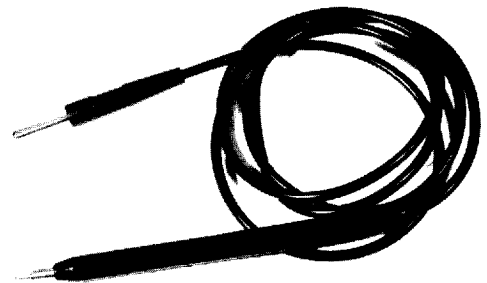
Patch cords sold by colour (Black or Red)

► Packaging : 10 identical patch cords.

Part number

R 948 250 / Black

R 948 251 / Red



• PTS/BM TEST PROBE PATCH CORDS

PVC cable 1 mm² (3.5 dia.) Cord length 100 cm

Patch cords sold in pairs (Black + Red)

► Packaging : 10 pieces of the same part number (10 pairs).

Part number

R 948 959 / Black + Red

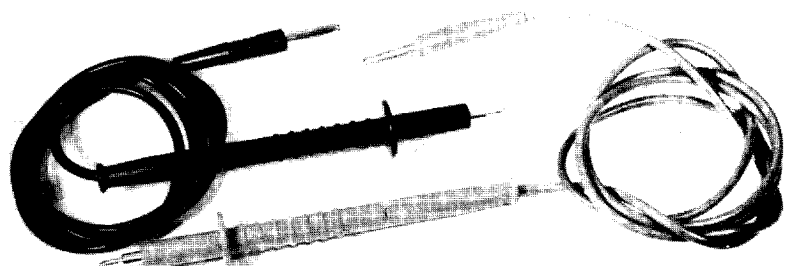
Patch cords sold by colour (Black or Red)

► Packaging : 10 identical patch cords.

Part number

R 948 250 190 / Black

R 948 251 190 / Red



4 mm dia. STANDARD SERIES

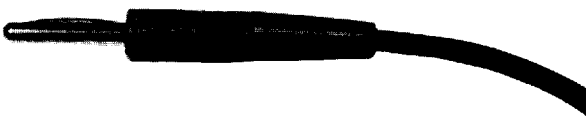
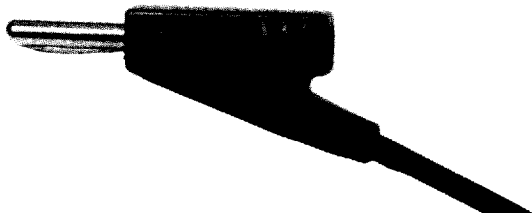
PATCH CORDS MADE TO ORDER

This series comprises the following connectors: **BM / BDM / DM / PTM**. The patch cords can be assembled from the complete range of options: connectors / type of cable / length / colour.

► **Packaging : 10 Identical patch cords.**

EXTREMITY CONNECTOR CODE

These codes allow to determined the patch cord setting. *Please see "How to order" p 29*

Code	Type of Extremity	
R 949 000 / Black R 949 001 / Red R 949 002 / Green R 949 003 / Blue R 949 004 / Yellow	BM	
R 949 100 / Black R 949 101 / Red R 949 102 / Green R 949 103 / Blue R 949 104 / Yellow	BDM	
R 949 500 / Black R 949 501 / Red R 949 502 / Green R 949 503 / Blue R 949 504 / Yellow	DM	
R 999 010 / Black R 999 011 / Red <i>(available for PVC 1 and 2 mm² and silicone 1 mm² cable)</i>	PTM	

4 mm dia. STANDARD SERIES

PATCH CORDS MADE TO ORDER

EXTREMITY CONNECTOR CODE *(continued)*

These codes allow to determined the patch cord setting. *Please see "How to order".*

Code	Type of Extremity	
R 999 010 190 / Black R 999 011 190 / Red <i>(available for PVC 1 & 2 mm² and silicone 1 mm² cables)</i>	PTS	
R 999 010 600 / Black R 999 011 600 / Red <i>(available for PVC 1 & 2 mm² and silicone 1 mm² cables)</i>	PTSE	

CABLE CODE

These codes allow to determined the cable type. *Please see "How to order".*

P.V.C. 1 mm ² cross section	P.V.C. 2 mm ² cross section	Silicone 1 mm ² cross section	Silicone 2.5 mm ² cross section
C 290 110 / Black	C 290 100 / Black	C 290 010 / Black	C 290 116 010 / Black
C 290 111 / Red	C 290 101 / Red	C 290 011 / Red	C 290 116 011 / Red
C 290 112 / Green	C 290 102 / Green	C 290 012 / Green	C 290 116 012 / Green
C 290 113 / Blue	C 290 103 / Blue	C 290 013 / Blue	C 290 116 013 / Blue
C 290 114 / Yellow	C 290 104 / Yellow	C 290 014 / Yellow	C 290 116 014 / Yellow

HOW TO ORDER

To order for example : 1 Yellow **BM** extremity / Green **PVC** 1 mm² cable length 80 cm / 1 Green **BDM** connector

Part number : **R 949 004** / **C 290 112 – 80 cm** / **R 949 102**

(Patch cords with one free end can be ordered by writing the word "free" in place of the extremity connector code).

4 mm dia. STANDARD SERIES

ACCESSORIES

● TEST PROBE

The extra thin prod can make contact through coatings and some types of insulation as well as carrying out PCB measurements.

Fitted with a rear-mounted 4 mm dia. socket, it can be used with **BM** patch cords (*p 26 to 29*).

CHARACTERISTICS

- Dielectric withstanding voltage

– Operating voltage

– Insulation resistance

– Operating temperature

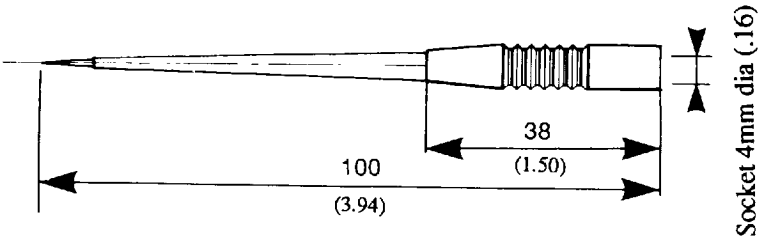
: 1 000 V rms 50 Hz

: 250 V rms 50 Hz

: ≥ 5 000 MΩ

: – 25°C + 70°C

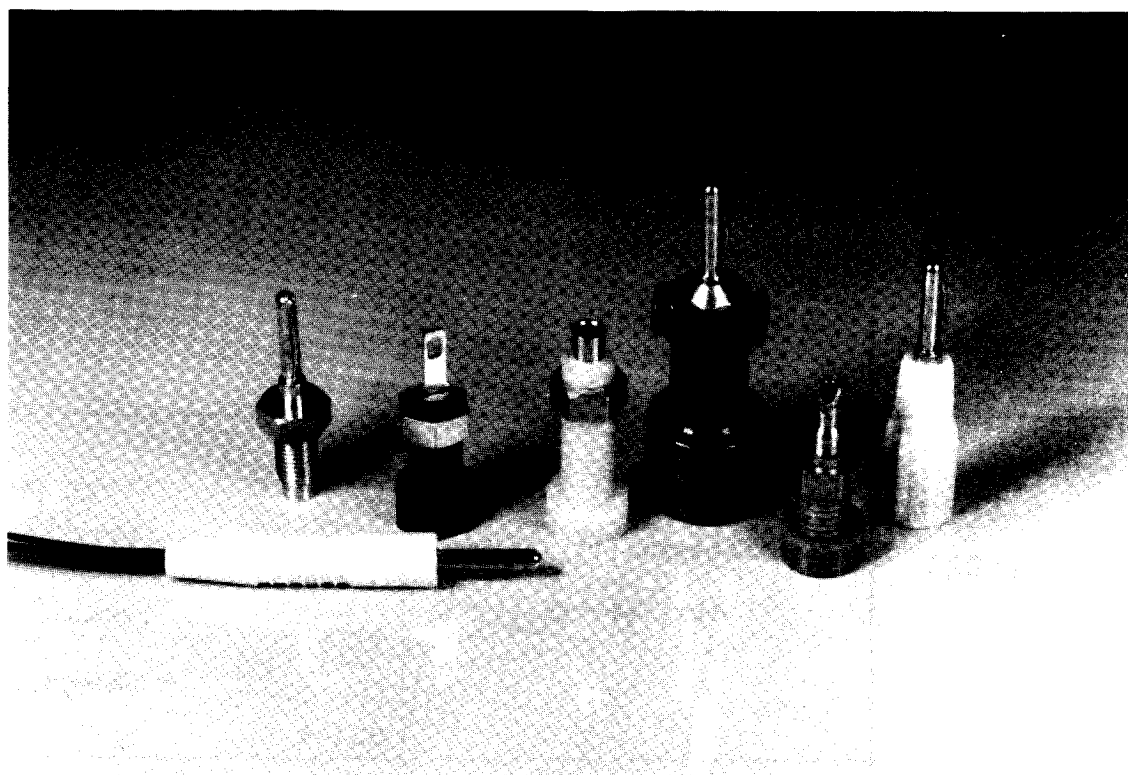
► Packaging : 10 pieces of the same part number.



Part number	
R 941 850 / Black	
R 941 851 / Red	
R 941 853 / Blue	
R 941 854 / Yellow	
R 941 859 / Green	

This series of products consists of :

- Plugs
- Sockets
- Extension patch cords
- Stackable patch cords
- Patch cords made to order
- PCB test sockets
- Test probe
- 20 way fixed connector
- Short circuit u links



Applications :

- ☐ *Research institutes and laboratories*
- ☐ *Medicine*
- ☐ *Test and professional electronics maintenance*

2 mm dia. SERIES

BANANA PLUGS

CHARACTERISTICS

– Current rating max		: 10 A (at 20°C)
– Dielectric withstanding voltage		: 1 500 V rms 50 Hz
– Operating voltage		: 250 V rms 50 Hz
– Insulation resistance	<i>insulated models</i>	: $\geq 5\,000\text{ M}\Omega$
– Contact resistance		: $\leq 1\text{ m}\Omega$
– Mechanical endurance		: > 10 000 matings
– Average insertion force		: 14 N
– Operating temperature	<i>uninsulated models</i>	: – 65°C + 155°C
	<i>insulated models</i>	: – 60°C + 100°C
– Material		: Nickel or tin plated (solder connection) copper alloy

► Packaging : 100 pieces of the same part number.

• UNINSULATED BANANA PLUGS

Part number	Description	Dimensions
R 921 019	Miniature banana plug solder or crimp - Cable stripping dimension 4 mm - Crimp tool BUCHANAN 612 548 - Positioner RADIALL R 282 982 - Crimp setting : 1.30 dia. (Cable AWG 20) 1.20 dia. (Cable AWG 22) 1.15 dia. (Cable AWG 24)	BL
R 921 029	Miniature banana plug – threaded Rear length 4 mm	BL 2-4
R 921 030	Miniature banana plug – threaded Rear length 8 mm	BL 2-8

• UNINSULATED BANANA PLUGS *(continued)*

Part number	Description	Dimensions
R 921 119	Miniature banana panel plug with nut – solder connection <i>(tin plated)</i> - Cable stripping dimension 4 mm <i>(AWG 20 cable)</i>	BLP-4
R 921 149	Male-Female adaptor with nut	BLP D-2

2 mm dia. SERIES

BANANA PLUGS

• INSULATED BANANA PLUGS

► Packaging : 100 pieces of the same part number (except BDR 2) .

Part number	Description	Dimensions
R 921 330 / Black R 921 331 / Red R 921 332 / Green R 921 333 / Blue R 921 334 /Yellow R 921 336 / White	Insulated miniature banana plug solder connection (tin plated) <i>(AWG 20 cable)</i>	BL I
R 921 420 / Black R 921 421 / Red R 921 422* / Green R 921 423* / Blue R 921 424* / Yellow R 921 426* / White	Insulated miniature banana panel plug - solder connection (tin plated) <i>(AWG 20 cable)</i>	BL-PI
R 921 460 / Black R 921 461 / Red	Stackable banana plug with quick grip clamp and rear socket for 2 mm dia. banana plug Packaging : 10 pieces	BDR-2

* Made to order product, please consult Radiall for price and delivery

CHARACTERISTICS

– Current rating max	: 10 A (at 20°C)
– Dielectric withstanding voltage	: 1 500 V rms 50 Hz
– Operating voltage	: 250 V rms 50 Hz
– Insulation resistance	: $\geq 5\,000\text{ M}\Omega$
– Contact resistance	: $\leq 1\text{ m}\Omega$
– Average insertion force	: 14 N
– Operating temperature	<i>uninsulated models</i> : $-65^{\circ}\text{C} + 155^{\circ}\text{C}$
	<i>insulated models</i> : $-60^{\circ}\text{C} + 100^{\circ}\text{C}$
– Material	: Nickel or tin plated (solder connection) copper alloy

► Packaging : 100 pieces of the same part number.

• UNINSULATED PANEL SOCKETS

Part number	Description	Dimensions
R 921 609	Miniature panel socket – solder connection (tin plated) M 3.5 x 0.35 thread - Cable stripping dimension 4 mm (AWG 20 cable)	DLP 3.5
R 921 629	Miniature panel socket – solder connection (tin plated) M 4 x 0.5 thread - Cable stripping dimension 4 mm (AWG 20 cable)	DLP 4
R 921 699*	F-F adaptor with 2 nuts	PL-FF

* Made to order product, please consult Radiall for price and delivery

2 mm dia. SERIES

PANEL SOCKETS

• INSULATED PANEL SOCKETS *Max tightening torque : 1 cm daN.*

► Packaging : 100 pieces of the same part number.

Part number	Description	Dimensions
R 921 920 / Black R 921 921 / Red R 921 922 / Green R 921 923 / Blue R 921 924 / Yellow R 921 926 / White	Insulated miniature panel socket – solder connection (tin plated) machined - Cable stripping dimension 4 mm (AWG 20 cable)	DL-PI
R 921 930 / Black R 921 931 / Red R 921 932 / Green R 921 933 / Blue R 921 934 / Yellow R 921 936 / White	Insulated miniature panel socket – solder connection (tin plated) stamped - Cable stripping dimension 4 mm (AWG 20 cable)	DL-PI
R 921 970 / Black R 921 971 / Red R 921 972 / Green R 921 973 / Blue R 921 974 / Yellow R 921 976 / White	Insulated miniature panel socket wire wrap connection	DL-PI-W
R 921 990* / Black R 921 991* / Red	Insulated F-F panel adaptor	PL-FF-I

* Made to order product, please consult Radiall for price and delivery

This series comprises :

- **BLM patch cords** Moulded miniature extension patch cords
- **BLDM patch cords** Moulded miniature stackable patch cords

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

CHARACTERISTICS

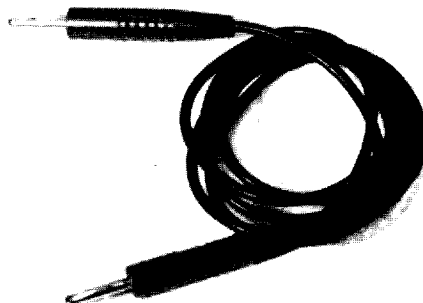
- Current rating max <i>PVC cable 0.3 mm² section</i>	: 5 A (at 20°C)
- Dielectric withstanding voltage	: 1 500 V rms 50 Hz
- Operating voltage	: 750 V rms 50 Hz
- Insulation resistance	: $\geq 5\,000\text{ M}\Omega$
- Mechanical endurance	: $\geq 10\,000$ matings
- Average insertion loss	: 14 N
- Operating temperature	: - 40°C + 70°C

► **Packaging : 10 identical patch cords.**

• BLM EXTENSION PATCH CORDS

Cord length	Colour
1 : 10 cm	0 : Black
2 : 20 cm	1 : Red
4 : 50 cm	2 : Green
5 : 100 cm	3 : Blue
	4 : Yellow

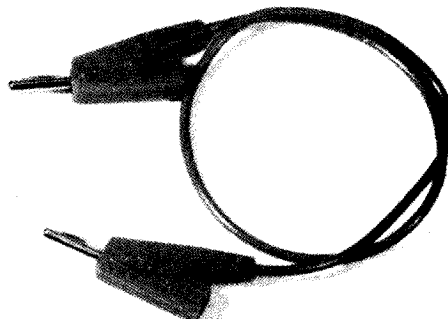
R 928 0xx



• BLDM STACKABLE PATCH CORDS

Cord length	Colour
1 : 10 cm	0 : Black
2 : 20 cm	1 : Red
4 : 50 cm	2 : Green
5 : 100 cm	3 : Blue
	4 : Yellow

R 928 1xx



2 mm dia. SERIES

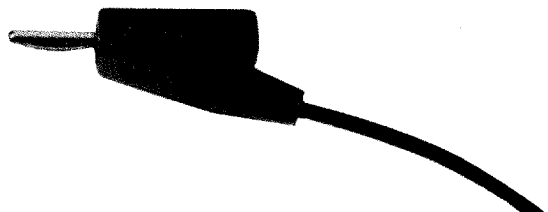
PATCH CORDS MADE TO ORDER

This series comprises the following connectors: **BLM** / **BLDM** / **DLM**. The patch cords can be assembled from the complete range of options: connectors / type of cable / length / colour.

► **Packaging : 10 identical patch cords.**

EXTREMITY CONNECTOR CODE

These codes allow to determined the patch cord setting. *Please see "How to order"*

Part number	Type of Extremity	
R 929 000 / Black R 929 001 / Red R 929 002 / Green R 929 003 / Blue R 929 004 / Yellow	BLM	
R 929 100 / Black R 929 101 / Red R 929 102 / Green R 929 103 / Blue R 929 104 / Yellow	BLDM	
R 929 500 / Black R 929 501 / Red R 929 502 / Green R 929 503 / Blue R 929 504 / Yellow	DLM	

CABLE CODE (PVC section 0.3 mm²)

These codes allow to determined the cable type. *Please see "How to order"*.

C 290 000 / Black	C 290 001 / Red	C 290 002 / Green	C 290 003 / Blue	C 290 004 / Yellow
--------------------------	------------------------	--------------------------	-------------------------	---------------------------

HOW TO ORDER

To order for example : 1 Black **BLM** extremity / Red cable length 40 cm / 1 Green **DLM** extremity

Part number : **R 929 000** / **C 290 001** – 40 cm / **R 929 502**

(Patch cords with one free end can be ordered by writing the word "free" in place of the extremity connector code).

● PCB TEST SOCKETS

The test sockets allow easy test and maintenance operations directly on the equipment to avoid direct contact with components.

CHARACTERISTICS

- Dielectric withstanding voltage *entrax 10.16 model* : $\geq 1\,500$ V rms 50 Hz
others models : $\geq 1\,000$ V
- Operating voltage : 250 V rms 50 Hz
- Insulation resistance : $> 10\,000$ M Ω
- Operating temperature : $-40^{\circ}\text{C} + 100^{\circ}\text{C}$

► Packaging 100 pieces of the same part number.

Part number	Description	Dimensions
R 921 910 / Black R 921 911 / Red R 921 912 / Green R 921 913 / Blue R 921 914 /Yellow R 921 916 /White	Test socket entrax 10.16mm <i>(tin plated stamped contact)</i> This model, with the particular disposition of the pins allows his unmobilization on circuit board. This version is particular adapted for wave soldering operation.	Top view dimensions: (0.472) 12, (0.157) 4, 2 mm dia. socket, (0.130) 3.3, 4, (0.157) 1.6, 2.4, 3.2 (thickness). Side view dimensions: 10.16 (0.400), $\phi 1.30$ (0.051 Dia.), P C B, 1,6 (0.063) - 2,4 (0.094) - 3,2 (0.126) : thickness.
R 921 820 070 / Black R 921 820 071 / Red R 921 820 072 / Green R 921 820 073 / Blue R 921 820 074 / Yellow R 921 820 076 / White	Test socket entrax 5.08mm This test socket is made up of a joined spiral spring with a nickel over plated protection	Top view dimensions: 6.7 (0.264), 5.8 (0.228), 4.3 (0.169), 5.25 (0.207), 3.8 (0.150), 3.3 (0.130), 3.1 (0.122), 7.83 (0.308), 4.68 (0.184). Side view dimensions: 6.7 (0.264), 5.8 (0.228), 4.3 (0.169), 5.25 (0.207), 3.8 (0.150), 3.3 (0.130), 3.1 (0.122), 7.83 (0.308), 4.68 (0.184).
R 921 815 070* / Black R 921 815 071* / Red R 921 815 072* / Green R 921 815 073* / Blue R 921 815 074* / Yellow R 921 815 076* / White	Test socket This test socket is composed of a machined contact tin lead plated	Top view dimensions: 6.7 (0.264), 5.8 (0.228), 4.3 (0.169), 5.25 (0.207), 3.8 (0.150), 3.3 (0.130), 3.1 (0.122), 7.83 (0.308), 4.68 (0.184). Side view dimensions: 6.7 (0.264), 5.8 (0.228), 4.3 (0.169), 5.25 (0.207), 3.8 (0.150), 3.3 (0.130), 3.1 (0.122), 7.83 (0.308), 4.68 (0.184).

* Made to order product, please consult Radiall for price and delivery

2 mm dia. SERIES

ACCESSORIES

● TEST PROBE

The extra thin steel prod can make contact through coatings and some types of insulation as well as carrying out PCB measurements. Fitted with a rear-mounted 2 mm dia. socket, it can be used with **BLM** and **BLDM** patch cords.

CHARACTERISTICS

- | | |
|-----------------------------------|--------------------------------|
| - Dielectric withstanding voltage | : 1 000 V rms 50 Hz |
| - Operating voltage | : 250 V rms 50 Hz |
| - Insulation resistance | : $\geq 5\,000\text{ M}\Omega$ |
| - Operating temperature | : - 25°C + 70°C |

► Packaging : 10 pieces of the same part number.

Part number	
R 921 850 / Black R 921 851 / Red	

● 20-WAY FIXED CONNECTORS

4 Versions:	12 mm between axes	Solder outlet
		Pin outlet
	6 mm between axes	Solder outlet
		Pin outlet

These connectors contain twenty 2 mm dia. sockets moulded into an insulated monobloc of low bulk. The low pitch between sockets makes them particularly suitable for use in circuit breakers and test batteries.

ADVANTAGES : QUICKER ASSEMBLY TIME

Sockets are no longer mounted individually (connected to block with 5 screws)

Simplified panel piercing

Orientation of solder shafts

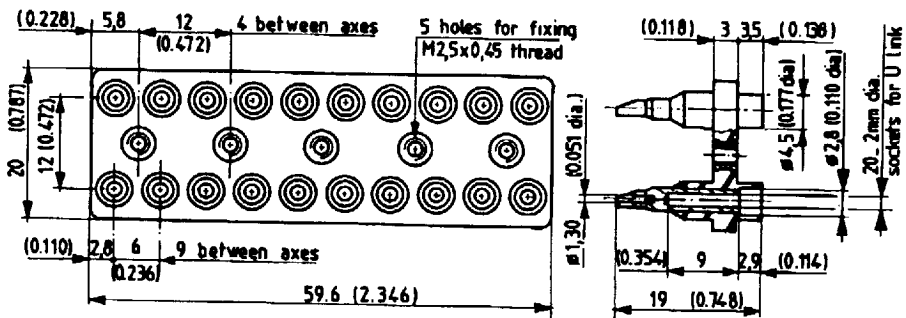
Possibility of removing the cable harness without disconnecting each socket.

CHARACTERISTICS

– Insulation resistance	:	$\geq 5\ 000\ M\Omega$
– Current rating max	:	7 A (at 20°C)
– Operating voltage	:	500 V rms 50 Hz
– Operating temperature	:	– 40°C + 125°C
– Material		
<i>metallic parts</i>	:	brass
<i>plating</i>	:	gold
<i>Insulation</i>	:	self-extinguishable PBT UL 94 Vo.

► Packaging Individually.

✎ SOLDER OUTLET

Part number	Dimensions (12 mm between axes)
R 929 991 000 / Blue R 929 991 001 / Red R 929 991 002 / Green R 929 991 003 / Black R 929 991 004 / Yellow	 Drilling jig : R 282 906 * Panel piercing dimension: (thickness: 2 mm maximum) 20 holes 5 dia. (contacts) – 5 holes 3 dia. (fixing)

* Made to order product, please consult Radiall for price and delivery

2 mm dia. SERIES

ACCESSORIES

PIN OUTLET

Part number	Dimensions (12 mm between axes)
R 929 992 000* / Blue R 929 992 001* / Red R 929 992 002* / Green R 929 992 003* / Black R 929 992 004* / Yellow	Drilling jig : R 282 906 * Panel piercing dimension: (thickness: 2 mm maximum) 20 holes 5 dia. (contacts) – 5 holes 3 dia. (fixing)

SOLDER OUTLET

Part number	Dimensions (6 mm between axes)
R 929 993 000* / Blue R 929 993 001* / Red R 929 993 002* / Green R 929 993 003* / Black R 929 993 004* / Yellow	Drilling jig : R 282 690 * Panel piercing dimension: (thickness: 2 mm maximum) 20 holes 5 dia. (contacts) – 5 holes 3 dia. (fixing)

PIN OUTLET

Part number	Dimensions (6 mm between axes)
R 929 994 000* / Blue R 929 994 001* / Red R 929 994 002* / Green R 929 994 003* / Black R 929 994 004* / Yellow	Drilling jig : R 282 690 * Panel piercing dimension: (thickness: 2 mm maximum) 20 holes 5 dia. (contacts) – 5 holes 3 dia. (fixing)

NOTA : The size of the contact blocks makes it possible to assemble them side by side while maintaining a distance of 6 mm between axes in all directions.

● 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 2 mm dia. socket.

CHARACTERISTICS

– Current rating max	: 7 A (at 20°C)
– Dielectric withstanding voltage	: 2 000 V rms 50 Hz
– Operating voltage	: 500 V rms 50 Hz
– Insulation resistance	: $\geq 5\,000\text{ M}\Omega$
– Mechanical endurance	: > 10 000 matings
– Operating temperature	: - 40°C + 70°C

► Packaging : 100 pieces of the same part number.

Part number	Dimensions (12 mm between axes)
R 644 543 000 / Blue R 644 543 001 / Red R 644 543 002 / Green R 644 543 003 / Black R 644 543 004 / Yellow	

Part number	Dimensions (6 mm between axes)
R 644 543 020* / Blue R 644 543 021* / Red R 644 543 022* / Green R 644 543 023* / Black R 644 543 024* / Yellow	

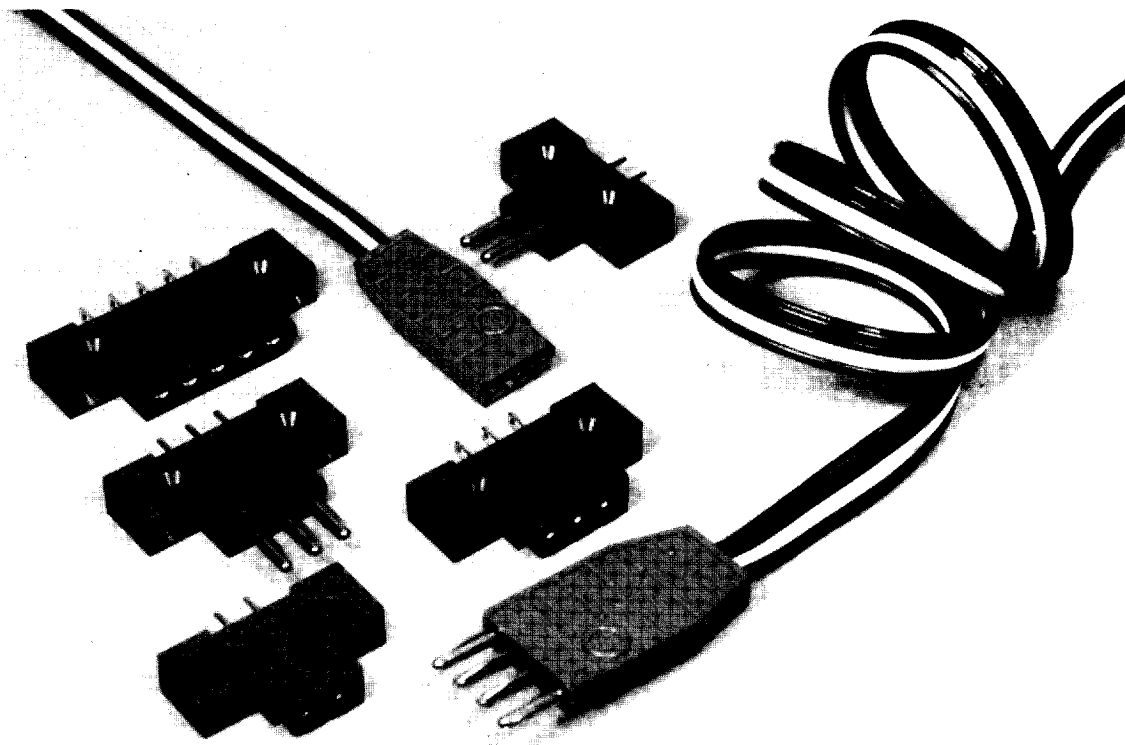
* Made to order product, please consult Radiall for price and delivery

2 mm dia. CONTACT BLOCKS & PATCH LEADS

PRESENTATION

This series of products consists of :

- **contact blocks**
- **polarized contact blocks**
- **patch leads**
- **polarized patch leads**



Applications :

- ☐ *Electronics*
- ☐ *Laboratories and Education*
- ☐ *Telecommunications.*

2 mm dia. CONTACT BLOCKS & PATCH LEADS

PRESENTATION

This series comprises link contact blocks and patch leads with :

Excellent contact

Sturdy construction

Contact polarization options

Low bulk

High retention.

FL contact blocks and ML patch leads are fitted with 2 mm dia. male pins or female sockets.

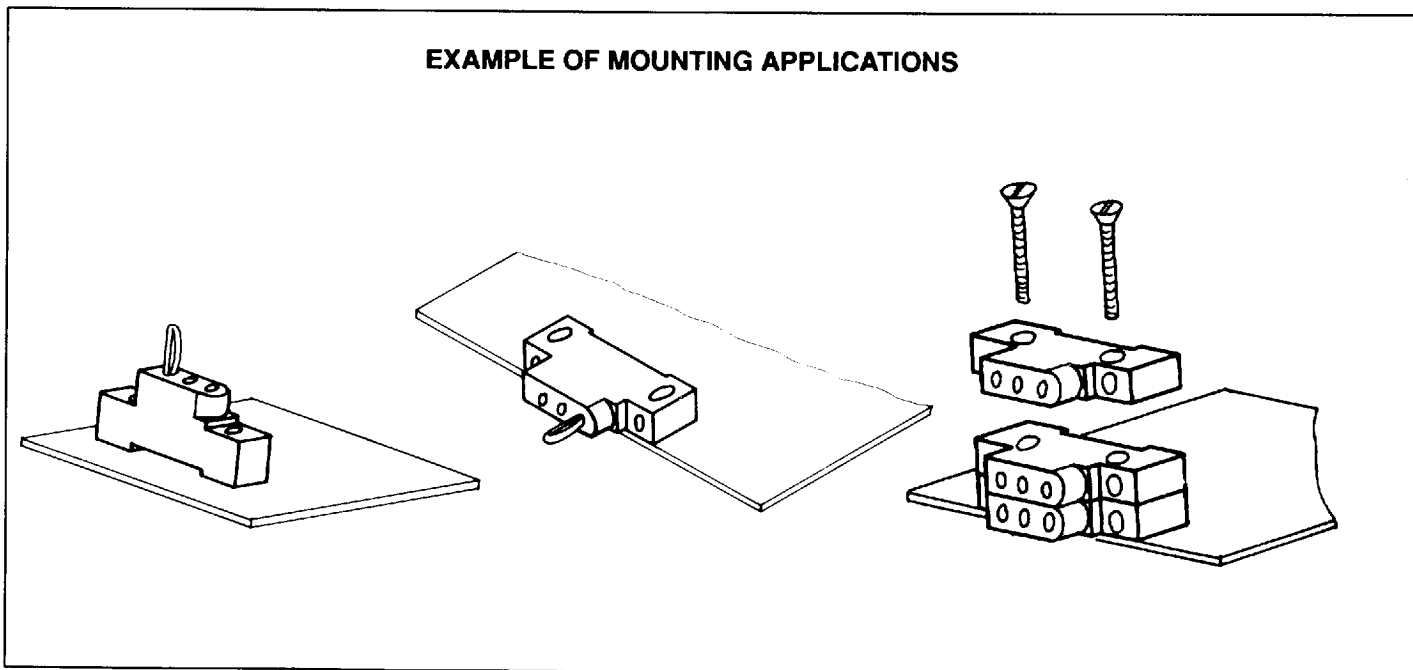
CHARACTERISTICS

- Current rating max	<i>contact blocks</i>	: 7 A (at 20°C)
	<i>patch leads</i>	: 5 A (at 20°C)
- Dielectric withstanding voltage		: 1 500 V rms 50 Hz
- Operating voltage		: 250 V rms 50 Hz
- Insulation resistance		: $\geq 5\,000\text{ M}\Omega$
- Contact resistance		: $\leq 1\text{ m}\Omega$
- Endurance		: > 10 000 matings
- Operating temperature	<i>contact blocks</i>	: - 60°C + 120°C
	<i>patch leads</i>	: - 40°C + 85°C

Contact blocks are available in different types of connections :

- wire solder
- straight pins for PCB
- elbow pins for PCB (*contact your RADIAL agent*)
- wrapping pins (*contact your RADIAL agent*)

EXAMPLE OF MOUNTING APPLICATIONS

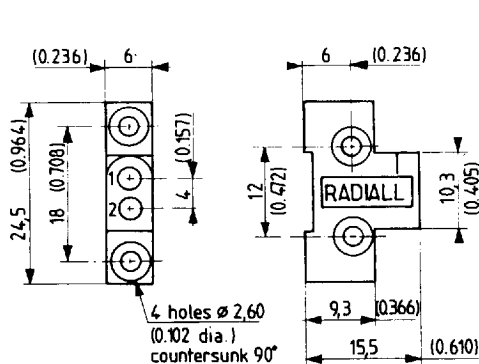


2 mm dia. CONTACT BLOCKS & PATCH LEADS

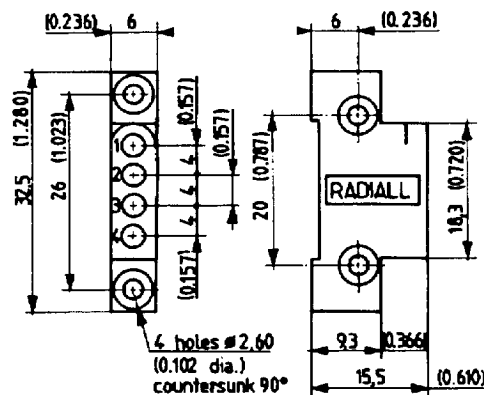
CONTACT BLOCKS

• DIMENSIONS

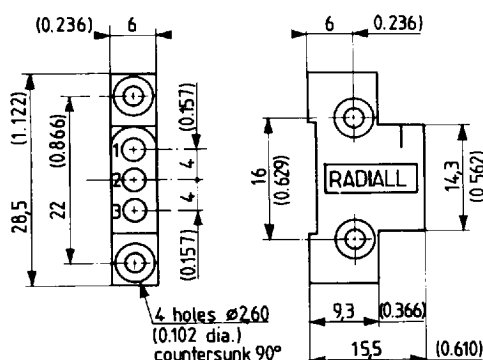
MALES and FEMALES contact blocks



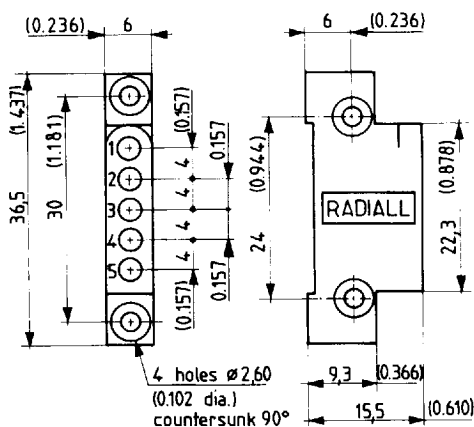
2 contacts



4 contacts

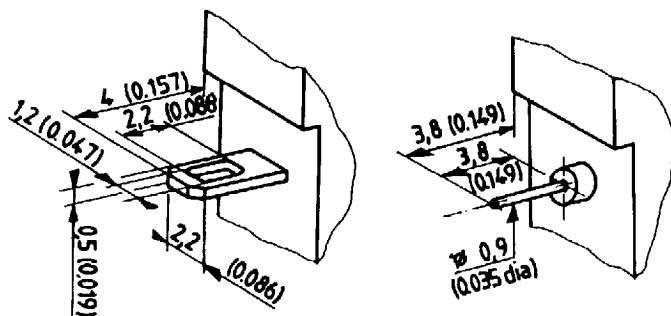


3 contacts



5 contacts

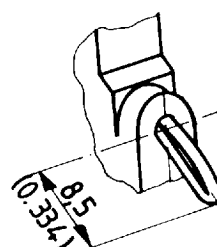
DIMENSIONS OF CONTACT OUTLETS



Solder outlets

Pin outlets

CONTACT PROJECTIONS



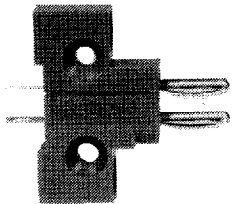
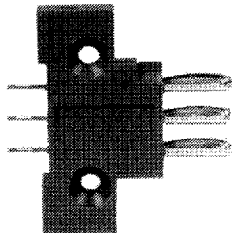
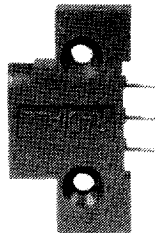
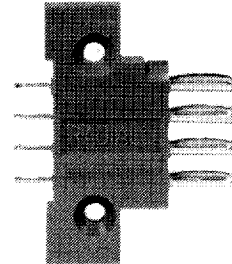
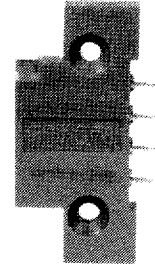
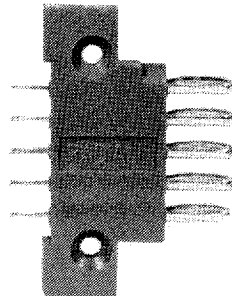
2 mm dia. CONTACT BLOCKS & PATCH LEADS

CONTACT BLOCKS

WIRE SOLDER CONNECTION OUTLETS (*tin plated*)

These contact blocks are fitted with non-removable barbed contacts. The contacts are numbered.

► Packaging : 50 pieces of the same part number.

Part number	Male contact blocks	Part number	Female contact blocks
R 644 020	 FL 2M	R 644 120	 FL 2F
R 644 030	 FL 3M	R 644 130	 FL 3F
R 644 040	 FL 4M	R 644 140	 FL 4F
R 644 050	 FL 5M	R 644 150	 FL 5F

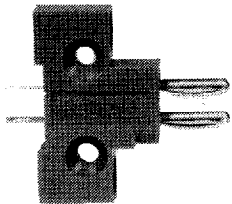
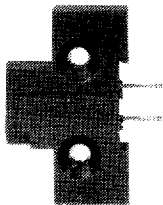
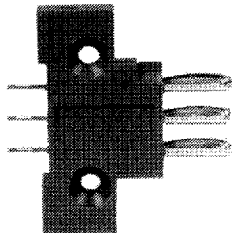
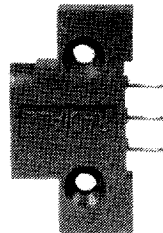
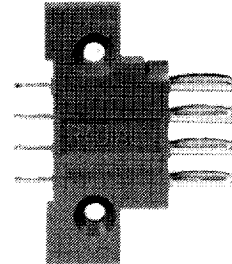
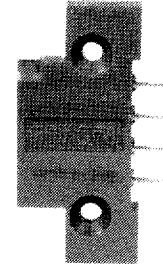
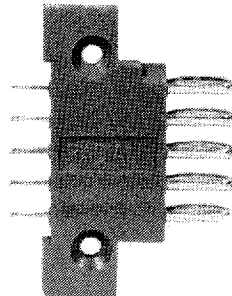
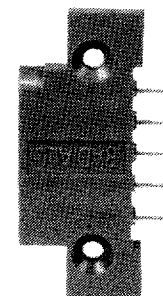
2 mm dia. CONTACT BLOCKS & PATCH LEADS

CONTACT BLOCKS

WIRE SOLDER CONNECTION OUTLETS (*tin plated*)

These contact blocks are fitted with non-removable barbed contacts. The contacts are numbered.

► Packaging : 50 pieces of the same part number.

Part number	Male contact blocks	Part number	Female contact blocks
R 644 020	 FL 2M	R 644 120	 FL 2F
R 644 030	 FL 3M	R 644 130	 FL 3F
R 644 040	 FL 4M	R 644 140	 FL 4F
R 644 050	 FL 5M	R 644 150	 FL 5F

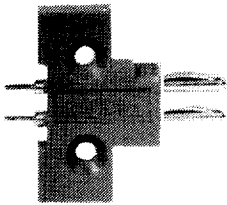
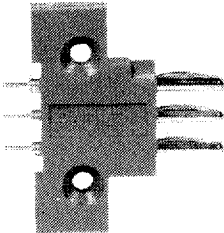
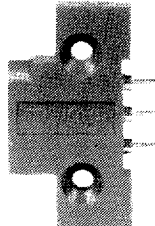
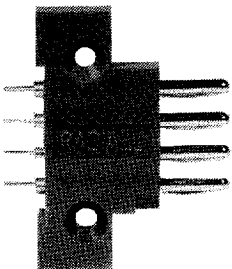
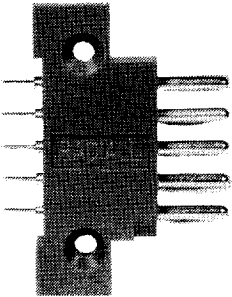
2 mm dia. CONTACT BLOCKS & PATCH LEADS

CONTACT BLOCKS MADE TO ORDER

PCB PIN OUTLETS

These contact blocks are fitted with non-removable barbed contacts. The contacts are numbered.

► Packaging : 50 pieces of the same part number.

Part number	Male contact blocks	Part number	Female contact blocks
R 644 021*	 FL 2M-CI	R 644 121*	 FL 2F-CI
R 644 031*	 FL 3M-CI	R 644 131*	 FL 3F-CI
R 644 041*	 FL 4M-CI	R 644 141*	 FL 4F-CI
R 644 051*	 FL 5M-CI	R 644 151*	 FL 5F-CI

* Made to order product, please consult Radiall for price and delivery

2 mm dia. CONTACT BLOCKS & PATCH LEADS

POLARIZED CONTACT BLOCKS

Polarized contact blocks are fitted with male and female contacts in the same insulation. Polarization of the contact block is based on an indicator at contact n° 1.

All polarized contact blocks are made to order (*For prices and deliveries : contact RADIALl*).

► **Packaging : 50 pieces of the same part number.**

The below code are used to define the configuration of the polarized contact blocks (*see "How to order"*)

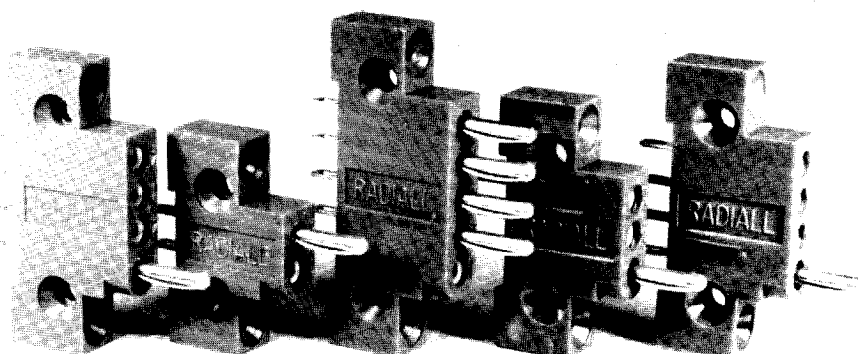
	2 contacts	3 contacts	4 contacts	5 contacts
OUTLET wire solder	R 644 220 (...)* FL 2 Type	R 644 230 (...)* FL 3 Type	R 644 240 (...)* FL 4 Type	R 644 250 (...)* FL 5 Type
OUTLET PCB straight pins	R 644 221 (...)* FL 2 - CI Type	R 644 231 (...)* FL 3 - CI Type	R 644 241 (...)* FL 4 - CI Type	R 644 251 (...)* FL 5 - CI Type

HOW TO ORDER

To order : 1 contact block with 4 contacts

- 1 male contact (in position 1)
- 2 female contacts (in position 2 and 3)
- 1 male contact (in position 4), wire solder connection.

Reference part number is : **R 644 240 (1M + 2F + 1M)**.



* Made to order product, please consult Radiall for price and delivery

2 mm dia. CONTACT BLOCKS & PATCH LEADS

PATCH LEADS

Patch leads are fitted with crimped and non-removable contacts. The connector ends are moulded onto a ribbon cable composed of several cables connected by thermoplastic sealing.

The polarization is visual and the contacts have been numbered.

The patch leads can be coupled with FL contact blocks.

► **Packaging : 10 pieces of the same part number.**

● MALE-MALE PATCH LEADS

Designation	N° of contact	Length (cm)	
		50	100
ML 2 MM	2	R 644 822	R 644 823
ML 3 MM	3	R 644 832	R 644 833
ML 4 MM	4	R 644 842	R 644 843
ML 5 MM	5	R 644 852	R 644 853



● FEMALE-FEMALE PATCH LEADS

Designation	N° of contact	Length (cm)	
		50	100
ML 2 FF	2	R 644 827	R 644 828
ML 3 FF	3	R 644 837	R 644 838
ML 4 FF	4	R 644 847	R 644 848
ML 5 FF	5	R 644 857	R 644 858



● MALE-FEMALE PATCH LEADS

Designation	N° of contact	Length (cm)	
		50	100
ML 2 MF	2	R 644 922	R 644 923
ML 3 MF	3	R 644 932	R 644 933
ML 4 MF	4	R 644 942	R 644 943
ML 5 MF	5	R 644 952	R 644 953



2 mm dia. CONTACT BLOCKS & PATCH LEADS

POLARIZED PATCH LEADS

Included in this category are products composed of either :
– polarized connectors
– or non-standard cable lengths.

The polarization principle is the same as for contact blocks (see page 49).

A reliable mechanical polarization between contact blocks and patch leads has been obtained through the layout of male and female contacts within the mould.

These patch leads are made to order. (*For prices and deliveries : contact RADIALl*).

► **Packaging : 10 pieces of the same part number.**

The below code are used to define the configuration of the polarized contact blocks (*see "How to order"*)

	2 contacts or conductors	3 contacts or conductors	4 contacts or conductors	5 contacts or conductors
Male connector extremity	R 644 520 (...)*	R 644 530 (...)*	R 644 540 (...)*	R 644 550 (...)*
Female connector extremity	R 644 620 (...)*	R 644 630 (...)*	R 644 640 (...)*	R 644 650 (...)*
Polarized connector extremity	R 644 596 (...)*	R 644 597 (...)*	R 644 598 (...)*	R 644 599 (...)*
Cable	C 290 400	C 290 410	C 290 420	C 290 430

HOW TO ORDER

EXAMPLE N°1 : To order

1 patch lead with 3 male contacts on one connector and 3 female contacts on the other connector + a cable length of 80 cm.

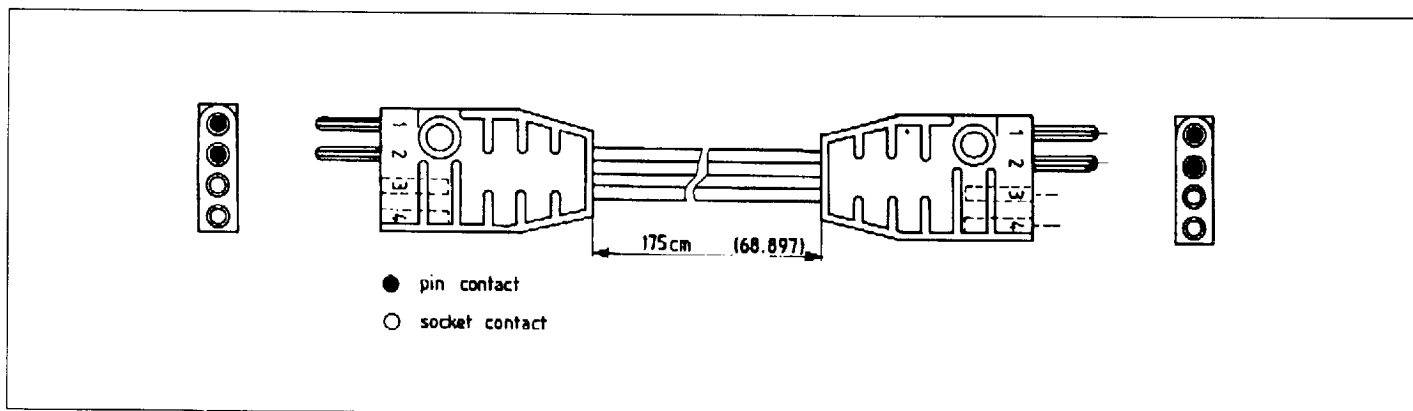
Enter our reference code : **R 644 530 (3M) / C 290 410 - 80 cm / R 644 630 (3F)**

EXAMPLE N°2 : To order

1 patch lead with 4 contacts, each with the same polarity: 2 male contacts and 2 female contacts + a cable length of 175 cm.

Part number : **R 644 598 (2M + 2F) / C 290 420 - 175 cm / R 644 598 (2M + 2F)**

(Patch cords with one free end can be ordered by writing the word "free" in place of the extremity connector code).



EXEMPLE N°2 Ribbon cable – 0.3 mm² cross section

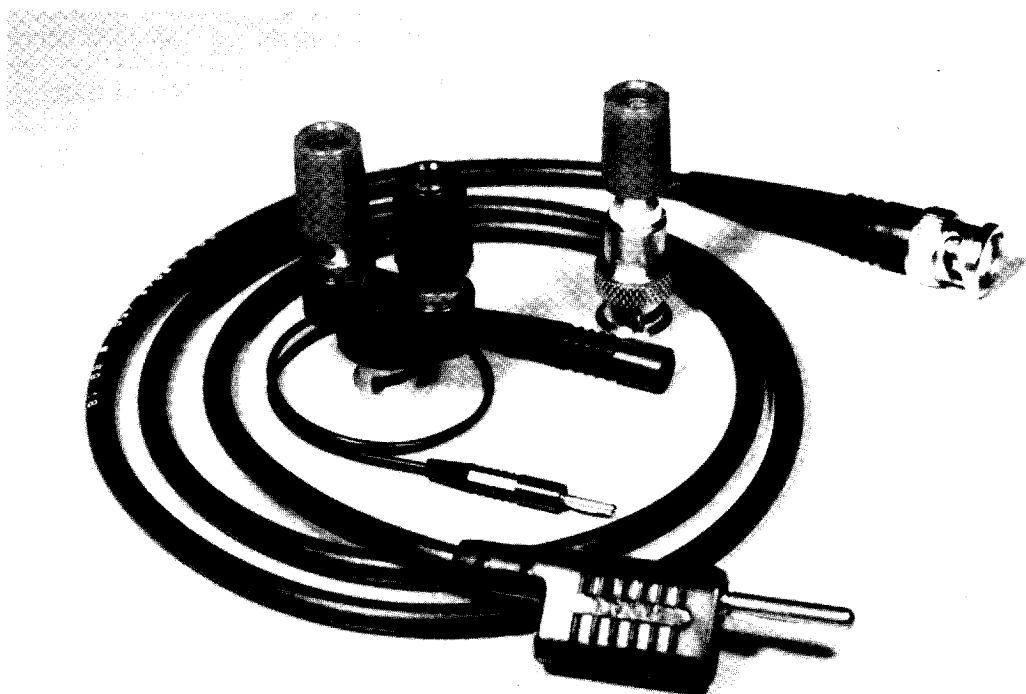
* Made to order product, please consult Radiall for price and delivery

MISCELLANEOUS

PRESENTATION

This series of products consists of :

- 2 mm/4mm dia. Banana Adaptors
- BNC / Banana Adaptors
- 2 mm/4mm dia. Banana cords adaptors
- BNC / Banana adaptors cords



• 2 mm/4 mm dia. BANANA ADAPTORS

CHARACTERISTICS

- Current rating max : 10 A (to 20°C) rms
- Dielectric withstanding voltage : 1 500 V rms 50 Hz
- Operating voltage : 250 V rms 50 Hz
- Insulation resistance : $\geq 5\,000\text{ M}\Omega$

► Packaging : 50 pieces of the same part number.

Part number	Description	Dimensions
R 921 390 / Black R 921 391 / Red R 921 392* / Green R 921 393* / Blue R 921 394* / Yellow	2 mm dia. male – 4 mm dia. female adaptor	

• BNC/2 mm dia. BANANA ADAPTOR

CHARACTERISTICS

- Operating voltage : 250 V rms 50 Hz
- Insulation resistance : $\geq 5\,000\text{ M}\Omega$

Electrical connection centre contact : red terminal
 ground terminal : black terminal

Part number	Description	Dimensions
R 191 450	BNC male / 2 – 2 mm dia. sockets adaptor Packaging individually	

* Made to order product, please consult Radiall for price and delivery

MISCELLANEOUS

ADAPTORS

• BNC / 4 mm dia.BANANA ADAPTORS

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

CHARACTERISTICS

- Dielectric withstanding voltage

– Insulation resistance

: 2 500 V rms – 50 Hz

: 10⁵ MΩ

Electrical termination

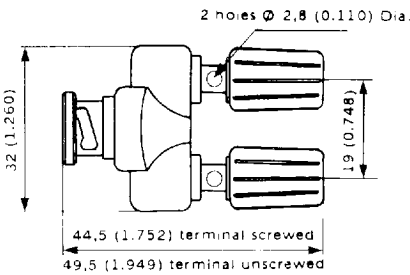
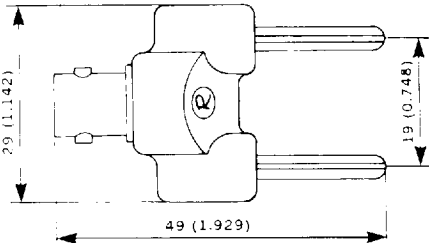
centre contact

ground terminal

: red terminal

: black terminal

► Packaging individually.

Part number	Description	Dimensions
R 191 453	BNC male / 2 – 4 mm dia. sockets adaptor	
R 191 455	BNC female / 2 – 4 mm dia. plugs adaptor	

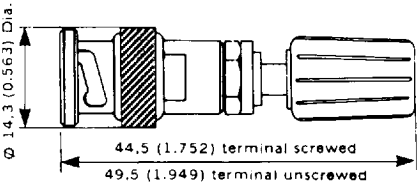
CHARACTERISTICS

- Dielectric withstanding voltage

– Insulation resistance

: 750 V rms – 50 Hz

: ≥ 5 000 MΩ

Part number	Description	Dimensions
R 191 454	BNC male / 1 – 4 mm dia. socket adaptor	

• 2 mm / 4 mm dia. BANANA ADAPTORS CORDS

The **BLM / BM / BLDM / BDM / BLM / DM** adaptors cords are designed to provide a continuity between two units of equipment or patch cords with differing 2 mm dia. and 4 mm dia. interfaces.

CHARACTERISTICS

– Current rating max	: 5 A (at 20°C)
– Dielectric withstanding voltage	: 1 500 V rms 50 Hz
– Operating voltage	: 250 V rms 50 Hz
– Insulation resistance	: $\geq 5\,000\text{ M}\Omega$
– Mechanical endurance	: > 10 000 matings
– Operating temperature	: $-40^{\circ}\text{C} + 70^{\circ}\text{C}$

► Packaging : 10 pieces of the same part number.

Part number	Description	Dimensions
R 999 250 / Black R 999 251 / Red R 999 252 / Green R 999 253 / Blue R 999 254 / Yellow	BLM / BM PVC cable section 0.3 mm ² Cord length 100 cm	
R 999 350 / Black R 999 351 / Red R 999 352 / Green R 999 353 / Blue R 999 354 / Yellow	BLDM / BDM PVC cable section 0.3 mm ² Cord length 100 cm	
R 999 520 / Black R 999 521 / Red	BLM / DM PVC cable section 0.3 mm ² Cord length 20 cm	

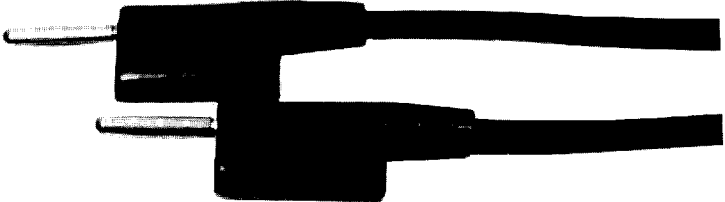
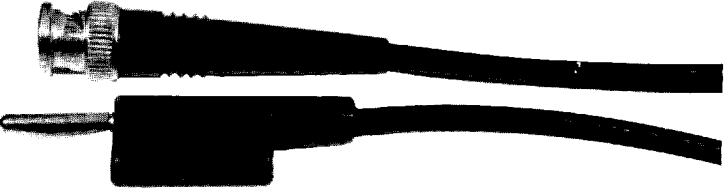
MISCELLANEOUS

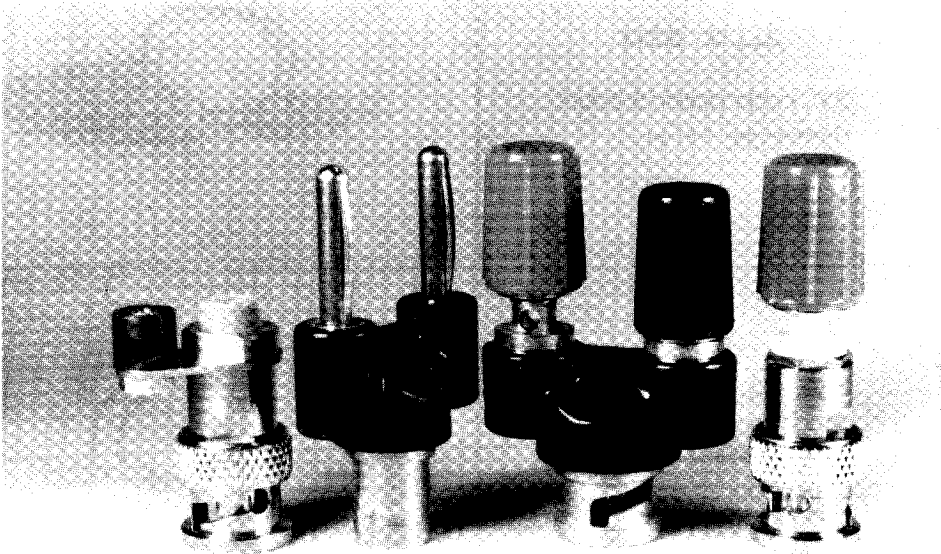
COAXIAL CORDS / BANANA 4 mm dia.

• PATCH CORDS BCX

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 central male contact and the braid is soldered to the socket.

► Packaging individually.

Part number	Cable	
R 948 350/ Black	KX 15 5 dia./50Ω (.197 dia.) Cord length 100 cm (length with extremity)	 BCX / BCX
R 948 450/ Black	KX 15 5 dia./50Ω (.197 dia.) Cord length 100 cm (length with extremity)	 BNC / BCX



MISCELLANEOUS

COAXIAL CORDS / 4 mm dia. BANANA

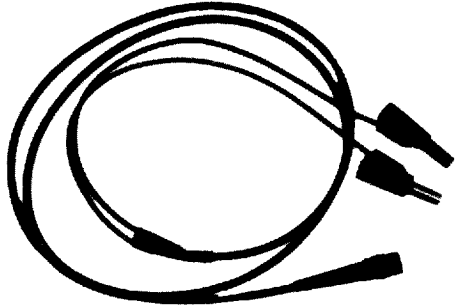
• SAFETY BNC / 4 mm dia. SAFETY BANANA CORDS

These patch cords are fitted at one end with a **safety BNC** male connector and at the other end, the inner conductor of the coaxial cable is connected to a safety **BDSA** 4mm dia. banana plug (red cable) and the braid to another **BDSA** banana plug (black cable)

CHARACTERISTICS

- Operating voltage : 500 V (inner conductor)
- Insulation resistance : $\geq 5\,000\text{ M}\Omega$
- Operating temperature : $-10^{\circ}\text{C} + 70^{\circ}\text{C}$

► Packaging Individually.

Part number	Cable	
R 995 303 601	KX 15 5 dia./50 Ω (.197 dia.) Cord length 160 cm	 Safety BNC / BDSA adaptor

BNC / BDSA patch cords are also available with **BDSR** termination (retractable sheath) and in various lengths.
 Please consult **RADIAL**.

BANANA PLUGS

CROSS REFERENCE LIST RADIAL / NATO PART NUMBER

RADIALL		NATO		RADIALL		NATO		RADIALL		NATO		RADIALL		NATO	
R 644 020		142225091		R 921 923		142104684		R 928 154		142859054		R 948 061		142447302	
R 644 030		142852506		R 921 924		142104680		R 941 019		142285811		R 948 062		142779244	
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