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Note: Users should independently evaluate the suitability of the product for their application. Before ordering, check with Tyco Electronics for most current data.

Catalog 1654025
Revised 12-03

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USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

Introduction

Tyco Electronics' dependable, economical wire and cable termination products provide solutions for hundreds of wire and cable interconnect requirements. All Raychem wire termination products are housed inside transparent heat-shrinkable insulation sleeves, which provide inspectability and can provide various levels of environmental protection. Most Raychem termination products incorporate a fluxed solder preform, which is essential for a highly controlled soldering process. Other products incorporate controlled crimping or a unique process of combining a twist-on coil with controlled soldering to provide high-reliability joints on the widest variety of conductor types and platings.

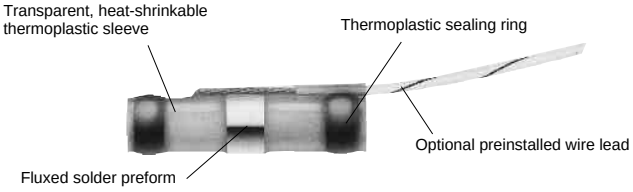
SolderSleeve technology ensures high-quality electrical and mechanical performance time after time. Pemeasured solder and flux create repeatable, eliable terminations, reducing rejects and field failures. When the SolderSleeve device is heated, the tubing shrinks and the solder preform melts to make a fully insulated, strain-relieved, protected solder connection. Heat-shrinkable tubing provides the benefits of insulation, strain relief, and protection for our controlled crimp products. Many Raychem interconnect products have earned UL recognition or MIL-Spec approval.

Raychem interconnect devices combine high-strength materials with innovative design for consistent, long-life performance. And because the insulation sleeve is transparent, operators can easily inspect the connection.

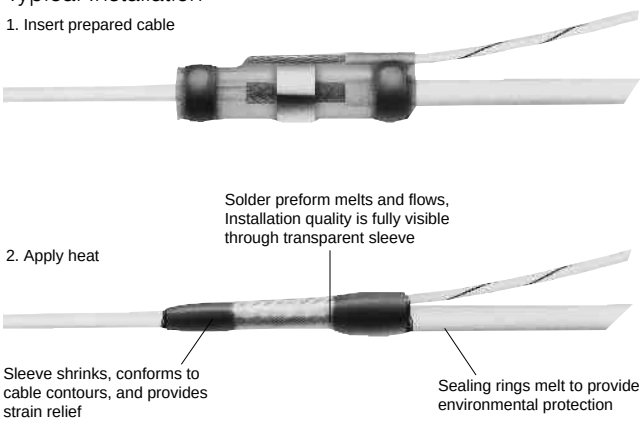
Raychem shrink-to-fit technology even helps reduce inventory, because one device size will fit a wide range of wire gauges, cable diameters, and component shapes.

Raychem interconnect products are designed for many applications, from simple splices to terminators for sophisticated electronic systems, either sealed or unsealed, and for high- or low-temperature environments.

Typical SolderSleeve Device (illustration of shield terminator concept)



Typical Installation



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Product Selection

Application Type	Max. Operating Temp.	Connection Type	Product Description	Series	Page Number
Wire-to-wire splicing	125°C [257°F]	Solder	SolderSleeve wire splices	CWT-900X	8-6
	150°C [302°F]	Solder	SolderSleeve wire splices	D-110, D-1744	8-6
	125°C [257°F]	Coil and solder	SolderGrip closed end connector splices (stub)	SGRP, SGRS	8-12
	125°C [257°F]	Crimp	DuraSeal crimp splices	D-406	8-18
	150°C [302°F]	Crimp	MiniSeal crimp splices	D-436 (M81824)	8-20
Terminals and disconnects	125°C [257°F]	Crimp	DuraSeal crimp terminals and disconnects	B-106	8-25
	150°C [302°F]	Coil and solder	SolderGrip terminals	SGRT	8-31
Wire termination to pin/post/tab	125°C [257°F]	Solder	SolderSleeve wire terminators	CWT-15XX	8-37
	150°C [302°F]	Solder	SolderSleeve wire terminators	D-129, D-141, D-71X	8-37
Shield termination	125°C [257°F]	Solder	SolderSleeve shield terminators	CWT-X	8-42
	150°C [302°F]	Solder	SolderSleeve shield terminators	S01, S02, M83519, SO63	8-42
	175°C [347°F]	Solder	SolderSleeve shield terminators	SO96	8-42
Coaxial cable termination	125°C [257°F]	Solder	SolderSleeve coaxial cable terminators	CWT-4XXX	8-49
	150°C [302°F]	Solder	SolderSleeve coaxial cable terminators	B-02X, B-04X	8-49
	150°C [302°F]	Solder	SolderSleeve PCB/coaxial cable terminators	D-607, B-046	8-51
	135°C [275°F]	Solder	RF one-step BNC/TNC connectors	RBD, RTD	8-53
Cable-to-cable splicing	150°C [302°F]	Solder/Crimp	SolderShield cable splices	D-150	8-60
Shielded contacts	150°C [302°F]	Solder	SolderTacts shielded contacts	D-602	8-65
Triax connectors	150°C [302°F]	Solder	Triax discrete connectors	D-621, DK-621	8-85
MIL-STD-1553	150°C [302°F]	Solder	Triax discrete connectors	D-621, DK-621	8-85
Data bus connectors	150°C [302°F]	Solder	Triax discrete connectors	D-621, DK-621	8-85
MIL-STD-1553 In-line couplers	150°C [302°F]	Solder or connectorized	In-line data bus microcoupler	D-500-04	8-77
MIL-STD-1533	150°C [302°F]	Connectorized	Data bus box couplers	D-500-025	8-83
Triaxial size 8 contacts	150°C [302°F]	Solder	Size 8, triaxial MIL-C-38999 contacts	D-602, DK-602	8-92
Data bus cables	150°C [302°F]	Crimp or solder	MIL-STD-1553 B shielded cable	1061X	8-75
Data bus terminators	150°C [302°F]	Solder or connectorized	MIL-STD-1553 78° and 3000° terminators	D-621, D-500	8-87
Data bus accessories	150°C [302°F]	Solder or mechanical	Dust caps, braid terminators, splices	D-600,D-150	8-87

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Product Selection (Continued)

Application Type	Connection Type	Max. Operating Temp.	Product Description	Series	Page Number
Wire to wire splicing	Solder	125°C	SolderSleeve wire splices	CWT-900X	8-6
		150°C	SolderSleeve wire splices	D-110, D-1744	8-6
	Crimp	125°C	DuraSeal crimp splices	D-406	8-18
		150°C	MiniSeal crimp splices	D-436 (M81824)	8-20
	Coil and Solder	125°C	SolderGrip closed end connector splices (stub)	SGRP, SGRS	8-12
Terminals and disconnects	Crimp	125°C	DuraSeal crimp terminals and disconnects	B-106	8-25
	Coil and Solder	150°C	SolderGrip terminals	SGRT	8-31
Wire termination to pin/post/tab	Solder	125°C	SolderSleeve wire terminators	CWT-15XX	8-37
		150°C	SolderSleeve wire terminators	D-129, D-141, D-71X	8-37
Shield termination	Solder	125°C	SolderSleeve shield terminators	CWT-X	8-42
		150°C	SolderSleeve shield terminators	S01, S02, M83519, SO63	8-42
		175°C	SolderSleeve shield terminators	SO96	8-42
Coax cable termination	Solder	125°C	SolderSleeve coaxial cable terminators	CWT-4XXX	8-49
		135°C	RF one-step BNC/TNC connector	RBD, RTD	8-53
		150°C	SolderSleeve coaxial cable terminators	B-02X/04X	8-49
			SolderSleeve PCB/coaxial cable terminators	D-607, B-046	8-51
Cable to cable splicing	Solder/Crimp	150°C	SolderShield cable splices	D-150, B-202	8-60
Shielded contacts	Solder	150°C	SolderTacts shielded contacts	D-602	8-65
MIL-STD-1553B data bus components	Solder	150°C	Data bus couplers, connectors, terminators, accessories	D-500, D-600, D(K)-621	8-74

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Introduction

Tyco Electronics offers many products for wire-to-wire splicing: Raychem SolderSleeve splicing devices; SolderGrip splices; and DuraSeal and MiniSeal crimp splices. Like all Raychem interconnect products, the wire-to-wire splicing devices are rugged and reliable, yet easy to install.

Designed for applications with temperatures up to 150°C [302°F], products in this section include:

- SolderSleeve splicing devices, which can be used to make sealed or unsealed splices. In a single step, they solder, insulate, encapsulate, and strain-relieve a wide range of wire sizes.
- DuraSeal heat-shrinkable nylon crimp splices are easy to use in factory or repair applications. DuraSeal crimp splices provide watertight sealing and superior protection against corrosion, abrasion, and vibration.
- Small, lightweight, and low-profile MiniSeal high-performance crimp splices, which substantially reduce wire bundle size and weight, are QPL-listed to the MIL-S-81824 specification, and are required by the MIL-W-5088 specification.
- SolderGrip splices, which are closed-end connectors utilizing a spiral copper coil that grips and compresses the conductors and allows a prefluxed solder ring to flow to the center of the splicing area, resulting in a high-reliability, repeatable solder joint.

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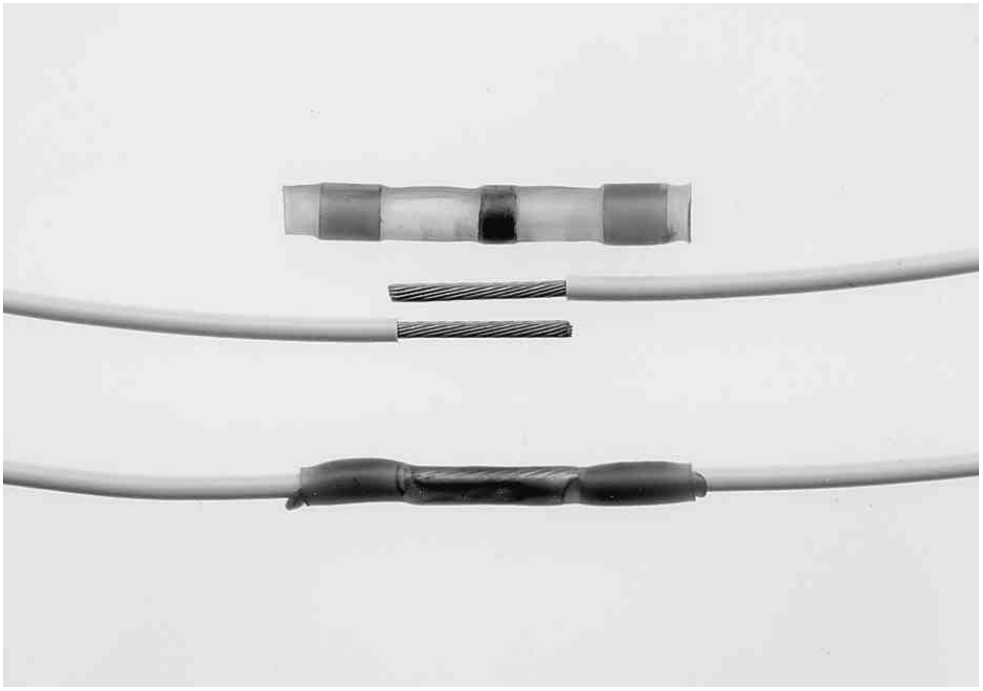
SolderSleeve Wire Splices

Product Facts

- Transparent polyvinylidene fluoride or polyolefin sleeve provides encapsulation, inspectability, strain relief, and insulation
- Prefluxed solder preform provides a controlled soldering process
- One-piece design makes installation easy and lowers the installed cost
- With one or two wires per end, the NAS 1744 splices meet 75,000 ft [22,000 m] altitude immersion requirement
- Thermochromic temperature indicator in the NAS splices facilitates termination and inspection
- UL and CUL recognized



Applications

In-line wire splices.

Product Options

Product Series	Minimum Wire Temperature Rating	Maximum Operating Temperature	Intended Application Environment
CWT	85°C [185°F]	125°C [257°F]	Splashproof
D-110	125°C [257°F]	150°C [302°F]	Splashproof
D-1744 (NAS 1744)	125°C [257°F]	150°C [302°F]	Immersion sealed

Note: Cadmium-free option (B-152 series) is available for operating temperature of 125˚C [257˚F]. Consult Tyco Electronics for details.

Product Selection Process

From the Product Options table above, select the product series appropriate for your application based on the temperature rating and sealing performance required.

If the application has only one size of wire per side and no more than two wires on either side:

1. Determine wire gauge sizes for both sides of splice.
2. Determine number of wires (one or two wires) for each side of splice.
3. Select part numbers from the appropriate table:
   - For CWT series (low temperature): Use Table A on page 8-7.
   - For D-110 series (splashproof): Use Table B on page 8-8.
   - For D-1744 series (immersion sealed): Use Table C on page 8-9.

If the application has more than one size of wire per side or more than two wires on either side (or if you prefer to work with CMA or mm^2 sizes):

1. Turn to "CMA/mm^2 Calculation" on page 8-10 and use the workspace there to calculate the total cross section to be spliced.
2. Use Table E on page 8-11 to select the sleeve recommended for that cross section.

Notes:

While all combinations listed will provide satisfactory solder joints, the degree of strain relief obtained depends on the outer diameter of the wires being joined. Refer to Table E for the recommended size ranges for the sleeves.

Wires 16 AWG (1.21 mm^2) and larger, and wires having more than 19 strands, should be pretinned prior to splicing, to obtain the optimum solder joint quality.

Part selection for wires 26 AWG (0.15 mm^2) and smaller is covered on page 8-8.

Available in:

Americas	■
Europe	■
Asia Pacific	■

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Table A: CWT Series Selection

Side A: Size and Number of Conductors		Side B: Size and Number of Conductors							
		26 AWG		24 AWG		22 AWG		20 AWG	
		1	2	1	2	1	2	1	2
26 AWG	1	CWT-9001	CWT-9001	CWT-9001	CWT-9001	CWT-9001	CWT-9002	CWT-9002	CWT-9002
	2	CWT-9001	CWT-9001	CWT-9001	CWT-9002	CWT-9001	CWT-9002	CWT-9002	CWT-9002
24 AWG	1	CWT-9001	CWT-9001	CWT-9001	CWT-9001	CWT-9001	CWT-9002	CWT-9002	CWT-9002
	2	CWT-9001	CWT-9002	CWT-9001	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002
22 AWG	1	CWT-9001	CWT-9001	CWT-9001	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002
	2	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9003
20 AWG	1	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9003
	2	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9003	CWT-9003	CWT-9003
18 AWG	1	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9003
	2	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003
16 AWG	1	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9002	CWT-9003	CWT-9003	CWT-9003
	2	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003
14 AWG	1	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003
	2	CWT-9004	CWT-9004	CWT-9004	CWT-9004	CWT-9004	CWT-9004	CWT-9004	CWT-9004
12 AWG	1	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9004
	2	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005
10 AWG	1	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005

Side A: Size and Number of Conductors		Side B: Size and Number of Conductors								
		18 AWG		16 AWG		14 AWG		12 AWG		10 AWG
		1	2	1	2	1	2	1	2	1
26 AWG	1	CWT-9002	CWT-9003	CWT-9002	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9005	CWT-9005
	2	CWT-9002	CWT-9003	CWT-9002	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9005	CWT-9005
24 AWG	1	CWT-9002	CWT-9003	CWT-9002	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9005	CWT-9005
	2	CWT-9002	CWT-9003	CWT-9002	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9005	CWT-9005
22 AWG	1	CWT-9002	CWT-9003	CWT-9002	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9005	CWT-9005
	2	CWT-9002	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9005	CWT-9005
20 AWG	1	CWT-9002	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9005	CWT-9005
	2	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9004	CWT-9004	CWT-9005	CWT-9005
18 AWG	1	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9004	CWT-9004	CWT-9005	CWT-9005
	2	CWT-9003	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9004	CWT-9004	CWT-9005	CWT-9005
16 AWG	1	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9003	CWT-9004	CWT-9004	CWT-9005	CWT-9005
	2	CWT-9003	CWT-9004	CWT-9003	CWT-9004	CWT-9004	CWT-9005	CWT-9004	CWT-9005	CWT-9005
14 AWG	1	CWT-9003	CWT-9003	CWT-9003	CWT-9004	CWT-9003	CWT-9004	CWT-9004	CWT-9005	CWT-9005
	2	CWT-9004	CWT-9004	CWT-9004	CWT-9005	CWT-9004	CWT-9005	CWT-9005	CWT-9005	CWT-9005
12 AWG	1	CWT-9004	CWT-9004	CWT-9004	CWT-9004	CWT-9004	CWT-9005	CWT-9004	CWT-9005	CWT-9005
	2	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005
10 AWG	1	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005

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Table B: D-110 Series Selection

Side A: Size and Number of Conductors		Side B: Size and Number of Conductors							
		26 AWG		24 AWG		22 AWG		20 AWG	
		1	2	1	2	1	2	1	2
26 AWG	1	D-110-35	D-110-35	D-110-35	D-110-35	D-110-35	D-110-41	D-110-41	D-110-41
	2	D-110-35	D-110-35	D-110-35	D-110-41	D-110-35	D-110-41	D-110-41	D-110-41
24 AWG	1	D-110-35	D-110-35	D-110-35	D-110-35	D-110-35	D-110-41	D-110-41	D-110-41
	2	D-110-35	D-110-41	D-110-35	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41
22 AWG	1	D-110-35	D-110-35	D-110-35	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41
	2	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-0181
20 AWG	1	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-0181
	2	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-0181	D-110-0181	D-110-0181
18 AWG	1	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-0181
	2	D-110-0181	D-110-0181	D-110-0181	D-110-0181	D-110-0181	D-110-0101	D-110-0101	D-110-0101
16 AWG	1	D-110-41	D-110-41	D-110-41	D-110-41	D-110-41	D-110-0181	D-110-0181	D-110-0181
	2	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0101
14 AWG	1	D-110-0181	D-110-0181	D-110-0181	D-110-0181	D-110-0181	D-110-0101	D-110-0101	D-110-0101
	2	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0090	D-110-0101	D-110-0090
12 AWG	1	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0101
	2	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090
10 AWG	1	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0083	D-110-0083	D-110-0083

Side A: Size and Number of Conductors		Side B: Size and Number of Conductors								
		18 AWG		16 AWG		14 AWG		12 AWG		10 AWG
		1	2	1	2	1	2	1	2	1
26 AWG	1	D-110-41	D-110-0181	D-110-41	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0090
	2	D-110-41	D-110-0181	D-110-41	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0090
24 AWG	1	D-110-41	D-110-0181	D-110-41	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0090
	2	D-110-41	D-110-0181	D-110-41	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0090
22 AWG	1	D-110-41	D-110-0181	D-110-41	D-110-0181	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0090
	2	D-110-41	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0101	D-110-0090	D-110-0090
20 AWG	1	D-110-41	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0090	D-110-0090
	2	D-110-0181	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0101	D-110-0090	D-110-0090
18 AWG	1	D-110-0181	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0101	D-110-0090	D-110-0090
	2	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0090	D-110-0090	D-110-0090	D-110-0083
16 AWG	1	D-110-0181	D-110-0101	D-110-0181	D-110-0101	D-110-0101	D-110-0090	D-110-0101	D-110-0090	D-110-0090
	2	D-110-0101	D-110-0101	D-110-0101	D-110-0090	D-110-0101	D-110-0090	D-110-0090	D-110-0083	D-110-0083
14 AWG	1	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0101	D-110-0090	D-110-0090	D-110-0090	D-110-0083
	2	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0083	D-110-0083
12 AWG	1	D-110-0101	D-110-0090	D-110-0101	D-110-0090	D-110-0090	D-110-0090	D-110-0090	D-110-0083	D-110-0083
	2	D-110-0090	D-110-0090	D-110-0090	D-110-0083	D-110-0090	D-110-0083	D-110-0083	D-110-0083	D-110-0083
10 AWG	1	D-110-0083	D-110-0083	D-110-0083	D-110-0083	D-110-0083	D-110-0083	D-110-0083	D-110-0083	D-110-0083

Fine Wire Splices 26 AWG (0.15 mm²) and Smaller

Part No.	Inside Diameter		
	As Supplied*	Fully Recovered**	Length***
D-110-0071	0.9 [0.035]	0.6 [0.025]	4.7 [0.185]
D-110-0213	0.9 [0.035]	0.6 [0.025]	4.2 [0.165]
D-110-0214	0.6 [0.025]	0.3 [0.013]	6.3 [0.250]
D-110-0217	1.0 [0.040]	0.6 [0.025)	9.1 [0.360]
D-110-40	0.6 [0.025]	0.5 [0.021]	5.1 [0.200]

Note: Micro SolderSleeve terminations are used for splicing wires smaller than 26 AWG [0.15 mm²].
*Minimum. Wire insulation must be smaller than this.
**Maximum. Wire insulation and combined conductor diameters must be greater than this.
***Nominal. Wire strip length must be approximately one-half of this.

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Table C: D-1744 Series Selection

Side A: Size and Number of Conductors		Side B: Size and Number of Conductors							
		26 AWG		24 AWG		22 AWG		20 AWG	
		1	2	1	2	1	2	1	2
26 AWG	1	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-02
	2	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-02	D-1744-01	D-1744-02
24 AWG	1	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-02
	2	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-02	D-1744-02	D-1744-02
22 AWG	1	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-01	D-1744-02	D-1744-01	D-1744-02
	2	D-1744-01	D-1744-02	D-1744-01	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02
20 AWG	1	D-1744-01	D-1744-01	D-1744-01	D-1744-02	D-1744-01	D-1744-02	D-1744-02	D-1744-02
	2	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-03
18 AWG	1	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-03
	2	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03
16 AWG	1	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-02	D-1744-03
	2	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03
14 AWG	1	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03
	2	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04
12 AWG	1	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04	D-1744-04
	2	D-1744-04	D-1744-04	D-1744-04	—	D-1744-04	—	—	—

Side A: Size and Number of Conductors		Side B: Size and Number of Conductors							
		18 AWG		16 AWG		14 AWG		12 AWG	
		1	2	1	2	1	2	1	2
26 AWG	1	D-1744-02	D-1744-03	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04
	2	D-1744-02	D-1744-03	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04
24 AWG	1	D-1744-02	D-1744-03	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04
	2	D-1744-02	D-1744-03	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-03	—
22 AWG	1	D-1744-02	D-1744-03	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04
	2	D-1744-02	D-1744-03	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-03	—
20 AWG	1	D-1744-02	D-1744-03	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-04	—
	2	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04	D-1744-04	—
18 AWG	1	D-1744-02	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	—
	2	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04	D-1744-03	—
16 AWG	1	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04	D-1744-03	—
	2	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04	D-1744-04	—
14 AWG	1	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-03	D-1744-04	D-1744-03	—
	2	D-1744-03	D-1744-04	D-1744-04	D-1744-04	D-1744-04	—	—	—
12 AWG	1	D-1744-03	D-1744-03	D-1744-03	D-1744-04	D-1744-03	—	D-1744-04	—

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SolderSleeve Wire Splices (Continued)

CMA/mm² Calculation

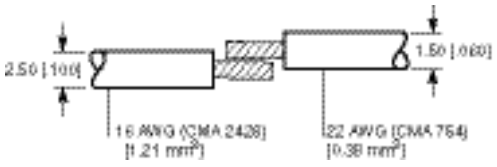
To calculate the total circular mil or mm² area of the conductors to be terminated in a single splice, follow these steps:

1. Choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria.
2. In the workspace below, list the CMA or mm² for each conductor that will go into the same splice. (To assist you, Table D on this page provides the CMA of typical conductors.)
3. Add together the values listed in the workspace below to obtain the total area.
4. From Table E on the next page, select the part number recommended for the total CMA or mm² you have calculated.
5. Refer to the examples on this page for further clarification.

Wire Number	CMA	mm²	
1			
2			
3			
4			
5			Part Number:
Total			

CMA/mm² Examples

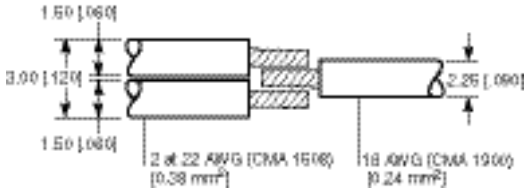
One-to-One Wire Splice



Total CMA = 3180
Total mm² = 1.59

Correct part number selection from Table E (based on CMA/mm² and nominal jacket wire OD) = CWT-9002 or D-110-41 or D-1744-02.

Multiwire Splice



Total CMA = 3408
Total mm² = 1.71

Correct part number selection from Table E (based on CMA/mm² and nominal jacket wire OD) = CWT-9003 or D-110-0181 or D-1744-03.

Table D.

CMA of Typical AWG Conductors

AWG	28	26	24	22	20	18	16	14	12
CMA	177	304	475	754	1216	1900	2426	3831	5874
mm²	0.09	0.15	0.24	0.38	0.61	0.95	1.21	1.92	2.94

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SolderSleeve Wire Splices (Continued)

Installation Requirements

For proper installation of these devices the correct heating tool and reflector attachment must be used. Any one of the following Raychem heating tools is recommended:

- HL1802E
- IR-1759 MiniRay
- AA-400 Super Heater
- CV-1981

Refer to Raychem installation procedure RPIP 850-00 for D-1744 Series and RPIP 824-00 for CWT Series.

You will find ordering information for these tools in Section 10.

Table E: Multiwire Splice Selection

Product Series	Wire Jacket OD		CMA Combined Total		mm² Combined Total	
	Min.	Max.	Min.	Max.	Min.	Max.
CWT-9001	0.4 [0.015]	1.7 [0.066]	450	1500	0.3	1.8
CWT-9002	1.3 [0.05]	2.7 [0.106]	1250	3500	0.8	2.0
CWT-9003	1.8 [0.07]	4.5 [0.18]	2500	7200	2.0	4.0
CWT-9004	2.8 [0.11]	6.0 [0.236]	6100	19000	4.0	6.0
CWT-9005	3.2 [0.125]	7.0 [0.275]	12000	25000	6.0	10.0
D-1744-01	0.50 [0.020]	1.90 [0.075]	350	2000	–	–
D-1744-02	0.80 [0.031]	2.80 [0.110]	2000	4000	–	–
D-1744-03	1.30 [0.050]	4.57 [0.180]	4000	10000	–	–
D-1744-04	2.00 [0.080]	7.11 [0.280]	10000	13000	–	–
D-110-35	0.51 [0.020]	1.78 [0.070]	500	1500	–	–
D-110-41	1.27 [0.050]	2.54 [1.00]	1200	3500	–	–
D-110-0181	1.9 [0.075]	4.5 [0.177]	3600	6000	–	–
D-110-0101	2.41 [0.095]	4.32 [0.17]	4800	9000	–	–
D-110-0090	3.56 [0.140]	7.11 [0.28]	8500	16200	–	–
D-110-0083	4.0 [0.160]	8.76 [0.345]	16200	25000	–	–

Product Characteristics

Material		
Insulation (D-110, D-1744)	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride	
Insulation (CWT)	Radiation-crosslinked, heat-shrinkable polyolefin	
Solder and flux (D-110, D-1744)	Solder: Sn63 Pb37	Flux: ROL1 per ANSI-J-004 (RMAflux)
Solder and flux (CWT)	Solder: Sn50 Pb32 Cd18	Flux: ROM1 per ASNS-J-004 (RAflux)
Meltable inserts (CWT, D-1744)	Meltable thermoplastic	
Typical Performance		
Voltage drop	2.0 mV	
Tensile strength	Exceeds strength of conductor	
Dielectric strength	2.0 kV	
Temperature rating (CWT)	-55°C to +125°C [-67°F to +257°F]	
Temperature rating (D-110, D-1744)	-55°C to +150°C [-67°F to +302°F]	
Insulation resistance	1000 megohms	

Specifications/Approvals

Series	Agency	Raychem
CWT	ULE87681	D-5023
D-110	ULE87681	RT-1404
D-1744	NAS-1744	RT-1404

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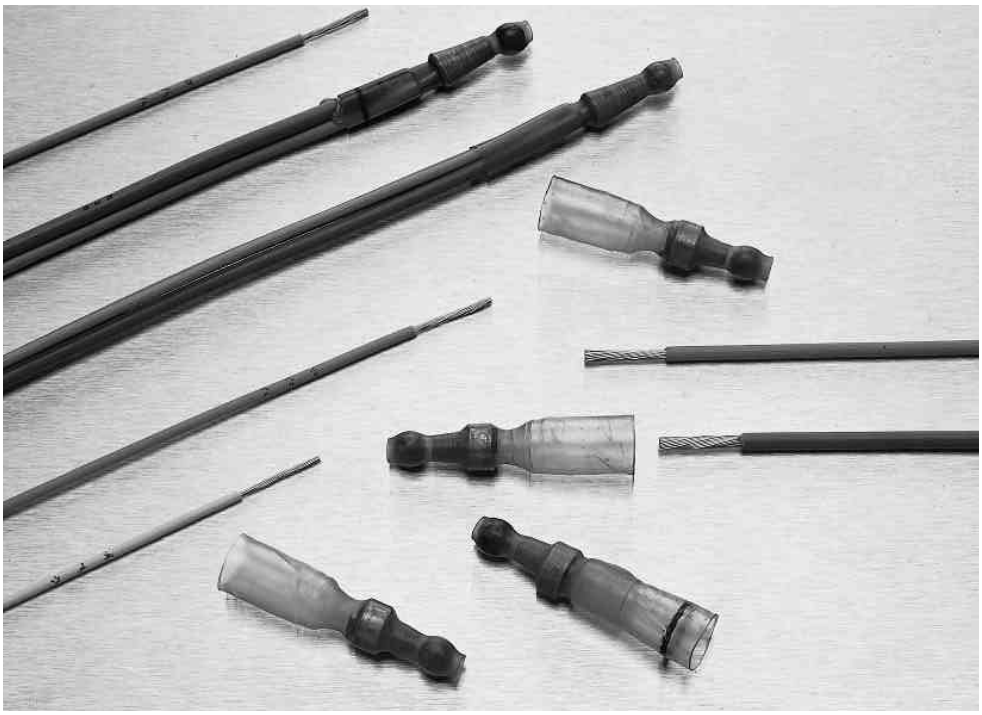
SolderGrip Closed End Connector Splices

Product Facts

- Soldered connection
- Electrical insulation
- Sealed for immersion (SGRS)
- Excellent strain relief
- Simple installation



Applications

SolderGrip heat-shrinkable solder-type closed-end connectors are designed for electrical termination of multiple-wire combinations. They provide a reliable alternative to crimping, welding, or conventional twist-on-style closed-end connectors.

Their unique combination of wire fixturing and controlled-soldering technology provides dependable electrical termination of multiple wire combinations.

SolderGrip terminators consist of a heat-shrinkablethermoplastic sleeve containing a spiral-wound copper insert. The insert is fitted with a prefluxed solder band.

This innovation design allows SolderGrip products to reliably terminate as many as 10 wires of different sizes and types in a single device.

The capability of SolderGrip terminators encompasses single or multistranded, bare or tinned copper wires with low- or high-temperature insulation.

The termination is environmentally protected and strain relieved.

SolderGrip splice terminators are color-coded for easy identification.

Product Options

Product Series	Environmental Protection	Max. Operating Temp.
SGRP	Splashproof	125°C [257°F]
SGRS	Sealed	125°C [257°F]

Available in:

Americas	■
Europe	■
Asia Pacific	■

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SolderGrip Closed End Connector Splices (Continued)

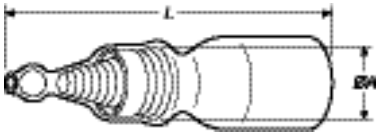
Product Selection Process

1. From the Product Options table on the previous page, select the product series appropriate for your application.
2. Determine the wire combination (number of wires and size) of the wire bundle you wish to splice.
3. Use Table C (page 8-15) to select the correct connector for AWG wire combinations.*
   For mm^2 wire combinations use Table A to select a SolderGrip part number.

   Example: For connecting a bundle with one 12 AWG wire (1 #12) and two 14 AWG wires (+2 #14), you need an SGRP-3 connector. For sealed parts, select the SGRS series.

   *If the wire combination is not listed in Table C, use the CMA (mm^2) method of determining wire bundle size (see "CMA/mm^2 Calculation" on page 8-14). Using Table B (page 8-14, select the smallest size connector that will fit your total wire CMA(mm^2) value.
4. Verify that the wire bundle (with wire insulation) does not exceed the maximum diameter allowed for the connector you selected. Simply check the bundle's diameter against the maximum diameter that Table A (below) lists for that part.
5. Verify that the total amperage to be applied does not exceed the maximum amp rating for the part as specified in Table A.

Insulated Closed-End Connectors (SGRP series)



Insulated and Sealed Closed-End Connectors (SGRS series)

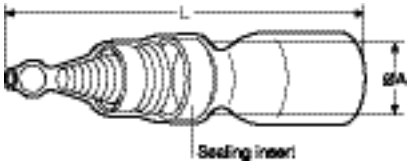


Table A - Product Dimensions and Part Number Descriptions

Part No.	Color Code	Product Dimensions (Min.) L	ØA	Wire Range (Min.-Max.) CMA/mm^2
SGRP-1	Green	1.370 [34.8]	.120 [2.9]	1400 - 4800 [0.7 - 2.4]
SGRP-2	Red	1.350 [34.2]	.150 [3.7]	4000 - 8000 [2.0 - 4.0]
SGRP-3	Blue	1.610 [41.0]	.200 [5.1]	7000 - 18000 [3.5 - 8.0]
SGRP-4	Yellow	1.650 [42.0]	.270 [6.8]	15000 - 30000 [7.5 - 12.0]

Part No.	Color Code	Product Dimensions (Min.) L	ØA	Wire Range (Min.-Max.) CMA/mm^2
SGRS-1	Green	1.370 [34.8]	0.130 [3.4]	1400 - 4800 [0.7 - 2.4]
SGRS-2	Red	1.350 [34.2]	0.190 [4.8]	4000 - 8000 [2.0 - 4.0]
SGRS-3	Blue	1.650 [42.0]	0.290 [7.3]	7000 - 16000 [3.5 - 8.0]
SGRS-4	Yellow	1.630 [41.5]	0.360 [9.1]	15000 - 24000 [7.5 - 12.0]

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SolderGrip Closed End Connector Splices (Continued)

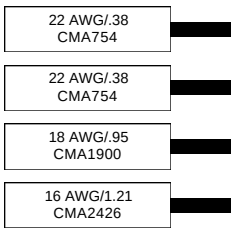
CMA/mm² Calculation

To calculate the total circular mil or mm² area of the wire bundle to be terminated, follow these steps:

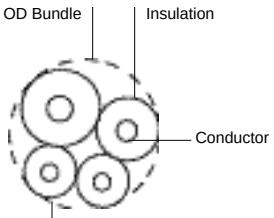
1. Choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria. (Both measures provide the same results.)
2. In the workspace below, list the CMA or mm² for each conductor in the bundle. (Table B provides the CMA of typical conductors.)
3. Add together the values listed in the workspace below to obtain the total area.
4. Use Table A to select the smallest terminator that will fit the total CMA (mm²).

Wire Number	CMA	mm²	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			Solder Grip Part No.
Total			

CMA/mm² Example



Total CMA= 5834
Total mm2 = 2.92
Correct part number (based on CMAof 5834 or mm² of 2.92): SGRP-2or SGRS-2



Bundle diameter must not exceed 6.0 mm (0.24 in) for SGRP-2 or 4.5 in (0.18 mm) for SGRS-2.

Table B. CMA of Typical Copper Conductors

AWG	30	28	26	24	22	20	18	16	14	12	10	8
CMA	112	177	304	475	754	1216	1900	2426	3831	5874	9354	16983
mm²	0.05	0.09	0.15	0.24	0.38	0.61	0.95	1.21	1.92	2.94	4.74	8.61

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SolderGrip Closed End Connector Splices (Continued)

Table C. SolderGrip Wire Combinations

Wire Combinations	Splash-proof	Sealed
1 # 8 + 1 # 12	SGRP-4	SGRS-4
1 # 8 + 1 # 16	SGRP-4	SGRS-4
2 # 8 + 2 # 16	SGRP-4	SGRS-4
1 # 8 + 1 # 14	SGRP-4	SGRS-4
1 # 8 + 1 # 14 + 1 # 16	SGRP-4	SGRS-4
1 # 10 + 1 # 18	SGRP-3	SGRS-3
1 # 10 + 2 # 18	SGRP-3	SGRS-3
1 # 10 + 3 # 18	SGRP-3	SGRS-3
1 # 10 + 1 # 16	SGRP-3	SGRS-3
1 # 10 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3
1 # 10 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3
1 # 10 + 2 # 16	SGRP-3	SGRS-3
1 # 10 + 3 # 16	SGRP-4	SGRS-4
1 # 10 + 4 # 16	SGRP-4	SGRS-4
1 # 10 + 5 # 16	SGRP-4	SGRS-4
1 # 10 + 1 # 14	SGRP-3	SGRS-3
1 # 10 + 1 # 14 + 1 # 18	SGRP-3	SGRS-3
1 # 10 + 1 # 14 + 1 # 16	SGRP-3	SGRS-3
1 # 10 + 1 # 14 + 2 # 16	SGRP-3	SGRS-3
1 # 10 + 1 # 14 + 3 # 16	SGRP-4	SGRS-4
1 # 10 + 2 # 14	SGRP-4	SGRS-4
1 # 10 + 3 # 14	SGRP-4	SGRS-4
1 # 10 + 1 # 12	SGRP-3	SGRS-3
1 # 10 + 1 # 12 + 1 # 14	SGRP-4	SGRS-4
1 # 10 + 2 # 12	SGRP-4	SGRS-4
2 # 10	SGRP-4	SGRS-4
2 # 10 + 1 # 16	SGRP-4	SGRS-4
1 # 12 + 1 # 18	SGRP-2	SGRS-2
1 # 12 + 2 # 18	SGRP-3	SGRS-3
1 # 12 + 3 # 18	SGRP-3	SGRS-3
1 # 12 + 4 # 18	SGRP-3	SGRS-3
1 # 12 + 5 # 18	SGRP-3	SGRS-3
1 # 12 + 1 # 16	SGRP-3	SGRS-3
1 # 12 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3
1 # 12 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3
1 # 12 + 1 # 16 + 3 # 18	SGRP-3	SGRS-3
1 # 12 + 1 # 16 + 4 # 18	SGRP-4	SGRS-4
1 # 12 + 2 # 16	SGRP-3	SGRS-3
1 # 14 + 3 # 20	SGRP-2	SGRS-2
1 # 14 + 4 # 20	SGRP-3	SGRS-3
1 # 14 + 1 # 18	SGRP-2	SGRS-2
1 # 14 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 14 + 2 # 18	SGRP-2	SGRS-2
1 # 14 + 3 # 18	SGRP-3	SGRS-3
1 # 14 + 4 # 18	SGRP-3	SGRS-3
1 # 14 + 5 # 18	SGRP-3	SGRS-3
1 # 14 + 1 # 16	SGRP-2	SGRS-3
1 # 14 + 1 # 16 + 1 # 20	SGRP-2	SGRS-2
1 # 14 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3
1 # 14 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3
1 # 14 + 1 # 16 + 3 # 18	SGRP-3	SGRS-3
1 # 14 + 1 # 16 + 4 # 18	SGRP-3	SGRS-3
1 # 14 + 2 # 16	SGRP-3	SGRS-3
1 # 14 + 2 # 16 + 1 # 18	SGRP-3	SGRS-3
1 # 14 + 2 # 16 + 2 # 18	SGRP-3	SGRS-3
1 # 14 + 2 # 16 + 3 # 18	SGRP-3	SGRS-3
1 # 14 + 3 # 16	SGRP-3	SGRS-3
1 # 14 + 3 # 16 + 1 # 18	SGRP-3	SGRS-3
1 # 14 + 3 # 16 + 2 # 18	SGRP-3	SGRS-3
1 # 14 + 4 # 16	SGRP-3	SGRS-3
1 # 14 + 4 # 16 + 1 # 18	SGRP-3	SGRS-3
1 # 14 + 5 # 16	SGRP-3	SGRS-3
2 # 14	SGRP-2	SGRS-2
2 # 14 + 1 # 16	SGRP-3	SGRS-3
2 # 14 + 1 # 16	SGRP-3	SGRS-3
2 # 14 + 1 # 16	SGRP-3	SGRS-3
2 # 14 + 1 # 16	SGRP-3	SGRS-3
2 # 14 + 2 # 16	SGRP-3	SGRS-3
2 # 14 + 2 # 16	SGRP-3	SGRS-3
2 # 14 + 3 # 16	SGRP-3	SGRS-3
2 # 14 + 4 # 16	SGRP-4	SGRS-4
3 # 14	SGRP-3	SGRS-3
3 # 14 + 1 # 16	SGRP-3	SGRS-3
3 # 14 + 2 # 16	SGRP-4	SGRS-4
3 # 14 + 3 # 16	SGRP-4	SGRS-4
4 # 14	SGRP-3	SGRS-3
2 # 16 + 1 # 18 + 3 # 20	SGRP-3	SGRS-3
2 # 16 + 1 # 18 + 2 # 20	SGRP-3	SGRS-3
2 # 16 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2
2 # 16 + 1 # 18	SGRP-2	SGRS-2
2 # 16 + 4 # 20	SGRP-3	SGRS-3
2 # 16 + 3 # 20	SGRP-3	SGRS-3
2 # 16 + 2 # 20	SGRP-2	SGRS-2
2 # 16 + 1 # 20	SGRP-2	SGRS-2
2 # 16	SGRP-2	SGRS-2
1 # 16 + 5 # 18	SGRP-3	SGRS-3
1 # 16 + 4 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 16 + 4 # 18	SGRP-3	SGRS-3
1 # 16 + 3 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 16 + 3 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 16 + 2 # 18 + 3 # 20	SGRP-3	SGRS-3
1 # 16 + 2 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 16 + 2 # 18	SGRP-2	SGRS-2
1 # 16 + 1 # 18 + 4 # 20	SGRP-3	SGRS-3
1 # 16 + 1 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 16 + 1 # 18 + 2 # 20	SGRP-2	SGRS-2
1 # 16 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 16 + 1 # 18	SGRP-1	SGRS-1
1 # 16 + 4 # 20	SGRP-2	SGRS-2
1 # 16 + 3 # 20	SGRP-2	SGRS-2
1 # 16 + 1 # 20 + 1 # 22	SGRP-1	SGRS-1
1 # 16 + 1 # 20	SGRP-1	SGRS-1
1 # 16 + 3 # 22	SGRP-1	SGRS-1
1 # 16 + 2 # 22	SGRP-1	SGRS-1
1 # 16 + 1 # 22	SGRP-1	SGRS-1
1 # 18 + 1 # 22	SGRP-1	SGRS-1
1 # 18 + 2 # 22	SGRP-1	SGRS-1
1 # 18 + 3 # 22	SGRP-1	SGRS-1
1 # 18 + 1 # 20	SGRP-1	SGRS-1
1 # 18 + 1 # 20 + 1 # 22	SGRP-1	SGRS-1
1 # 18 + 1 # 20 + 2 # 22	SGRP-1	SGRS-1
1 # 18 + 2 # 20	SGRP-1	SGRS-1
1 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 18 + 4 # 20	SGRP-2	SGRS-2

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Table C. SolderGrip Wire Combinations (Continued)

Wire Combinations	Splash-proof	Sealed
1 # 12 + 2 # 16 + 1 # 18	SGRP-3	SGRS-3
1 # 12 + 2 # 16 + 2 # 18	SGRP-3	SGRS-3
1 # 12 + 3 # 16	SGRP-3	SGRS-3
1 # 12 + 4 # 16	SGRP-3	SGRS-3
1 # 12 + 5 # 16	SGRP-4	SGRS-4
1 # 12 + 1 # 14 + 1 # 18	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 2 # 18	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 3 # 18	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 1 # 16	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 2 # 16	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 3 # 16	SGRP-4	SGRS-4
1 # 12 + 1 # 14 + 4 # 16	SGRP-4	SGRS-4
1 # 12 + 2 # 14	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 1 # 18	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 1 # 16	SGRP-4	SGRS-4
1 # 12 + 2 # 14 + 2 # 16	SGRP-4	SGRS-4
1 # 12 + 2 # 14 + 3 # 16	SGRP-4	SGRS-4
1 # 12 + 3 # 14	SGRP-4	SGRS-4
1 # 12 + 3 # 14 + 1 # 16	SGRP-4	SGRS-4
1 # 12 + 4 # 14	SGRP-4	SGRS-4
2 # 12	SGRP-4	SGRS-4
2 # 12 + 1 # 18	SGRP-3	SGRS-3
2 # 12 + 1 # 18	SGRP-3	SGRS-3
2 # 12 + 1 # 16	SGRP-3	SGRS-3
2 # 12 + 2 # 16 + 1 # 18	SGRP-4	SGRS-4
2 # 12 + 3 # 16	SGRP-4	SGRS-4
2 # 12 + 1 # 14 + 1 # 18	SGRP-4	SGRS-4
2 # 12 + 1 # 14 + 1 # 16	SGRP-4	SGRS-4
3 # 12 + 1 # 14	SGRP-4	SGRS-4
2 # 12 + 2 # 14	SGRP-4	SGRS-4
3 # 12 + 1 # 18	SGRP-4	SGRS-4
3 # 12 + 1 # 16	SGRP-4	SGRS-4
1 # 14 + 1 # 22	SGRP-1	SGRS-1
1 # 14 + 1 # 20	SGRP-2	SGRS-2
1 # 14 + 2 # 20	SGRP-2	SGRS-2
4 # 14 + 1 # 16	SGRP-4	SGRS-4
4 # 14 + 2 # 16	SGRP-4	SGRS-4
5 # 14	SGRP-4	SGRS-4
5 # 14 + 1 # 16	SGRP-4	SGRS-4
1 # 16 + 3 # 18	SGRP-3	SGRS-3
1 # 16 + 2 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 16 + 5 # 20	SGRP-3	SGRS-3
1 # 16 + 2 # 20	SGRP-2	SGRS-2
6 # 16	SGRP-3	SGRS-3
5 # 16 + 1 # 18	SGRP-3	SGRS-3
5 # 16 + 1 # 20	SGRP-3	SGRS-3
5 # 16	SGRP-3	SGRS-3
4 # 16 + 2 # 18	SGRP-3	SGRS-3
4 # 16 + 1 # 18 + 1 # 20	SGRP-3	SGRS-3
4 # 16 + 1 # 18	SGRP-3	SGRS-3
4 # 16 + 2 # 20	SGRP-3	SGRS-3
4 # 16 + 1 # 20	SGRP-3	SGRS-3
4 # 16	SGRP-3	SGRS-3
3 # 16 + 3 # 18	SGRP-3	SGRS-3
3 # 16 + 2 # 18 + 1 # 20	SGRP-3	SGRS-3
3 # 16 + 2 # 18	SGRP-3	SGRS-3
3 # 16 + 1 # 18 + 2 # 20	SGRP-3	SGRS-3
3 # 16 + 1 # 18 + 1 # 20	SGRP-3	SGRS-3
3 # 16 + 1 # 18	SGRP-3	SGRS-3
3 # 16 + 3 # 20	SGRP-3	SGRS-3
3 # 16 + 2 # 20	SGRP-3	SGRS-3
3 # 16 + 1 # 20	SGRP-3	SGRS-3
3 # 16	SGRP-2	SGRS-2
2 # 16 + 4 # 18	SGRP-3	SGRS-3
2 # 16 + 3 # 18 + 1 # 20	SGRP-3	SGRS-3
2 # 16 + 3 # 18	SGRP-3	SGRS-3
2 # 16 + 2 # 18 + 2 # 20	SGRP-3	SGRS-3
2 # 16 + 2 # 18 + 1 # 20	SGRP-3	SGRS-3
2 # 16 + 2 # 18	SGRP-3	SGRS-3
—	—	—
1 # 18 + 5 # 20	SGRP-2	SGRS-2
2 # 18	SGRP-1	SGRS-1
2 # 18 + 1 # 22	SGRP-1	SGRS-1
2 # 18 + 1 # 20	SGRP-2	SGRS-2
2 # 18 + 2 # 20	SGRP-2	SGRS-2
2 # 18 + 3 # 20	SGRP-2	SGRS-2
2 # 18 + 4 # 20	SGRP-3	SGRS-3
3 # 18	SGRP-2	SGRS-2
3 # 18 + 1 # 20	SGRP-2	SGRS-2
3 # 18 + 2 # 20	SGRP-3	SGRS-3
3 # 18 + 3 # 20	SGRP-3	SGRS-3
4 # 18	SGRP-2	SGRS-2
4 # 18 + 1 # 20	SGRP-3	SGRS-3
4 # 18 + 2 # 20	SGRP-3	SGRS-3
5 # 18	SGRP-3	SGRS-3
5 # 18 + 1 # 20	SGRP-3	SGRS-3
6 # 18	SGRP-3	SGRS-3
1 # 20 + 1 # 22	SGRP-1	SGRS-1
1 # 20 + 2 # 22	SGRP-1	SGRS-1
1 # 20 + 3 # 22	SGRP-1	SGRS-1
1 # 20 + 4 # 22	SGRP-1	SGRS-1
2 # 20	SGRP-1	SGRS-1
2 # 20 + 1 # 22	SGRP-1	SGRS-1
2 # 20 + 2 # 22	SGRP-1	SGRS-1
2 # 20 + 3 # 22	SGRP-1	SGRS-1
3 # 20	SGRP-1	SGRS-1
3 # 20 + 1 # 22	SGRP-1	SGRS-1
4 # 20	SGRP-2	SGRS-2
5 # 20	SGRP-2	SGRS-2
6 # 20	SGRP-2	SGRS-2
3 # 22	SGRP-1	SGRS-1
4 # 22	SGRP-1	SGRS-1
5 # 22	SGRP-1	SGRS-1
6 # 22	SGRP-1	SGRS-1
—	—	—

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SolderGrip Closed End Connector Splices (Continued)

Product Characteristics

Material			
Insulation	Radiation-crosslinked, transparent heat-shrinkable polyvinylidene fluoride		
Solder preform with flux	Sn 60, Pb 40, ROM1 flux per ANSI-J-STD-004 (RAflux).		
Sealing insert (SGRS)	Hot melt adhesive		
Spiral wound insert	Copper alloy		
Physical	**Unit**	**Method of test**	**Requirement**
Dimensions	inches	RB-109	See product dimensions.
Electromechanical	**Unit**	**Method of test**	**Typical values**
Dielectric withstand voltage	kilovolts	RB-109	2.0
Static heating	degrees	RB-109	Less than 50°C rise
Environmental*	**Unit**	**Method of test**	**Requirement**
Insulation resistance after water immersion (SGRS only)	megohms	RB-109	100
Contact resistance after exposure	milliohms	RB-109	Less than 6 milliohms
Operating condition	**Unit**	**Method of test**	**Value**
Temperature rating	—	—	-55°C to 125°C [-67°F to 257°F]
Voltage rating	volts	—	600

*Immersion resistance sealing is dependent on the wire combinations used. The user should test specific wire combinations. Refer to RB-109 Raychem specification for procedures.

Approvals and Reference Documents

Agency Approvals	UL, CUL E87681
Reference documents	Raychem Specification RB-109 for splices Specification Control Drawings Splices—Non Sealed (SGRP-X), Splices—Sealed (SGRS-X)

Installation

The SolderGrip product is pushed onto the conductors with a twisting motion. With the product in place, installation can be completed with the proper selection and use of heating tools and reflectors. Either of the following Raychem heating tools is recommended:

- HL1802E
- CV-1981

Refer to Raychem installation procedure RPIP 820-00 for detailed instructions and recommended reflector attachments.

You will find ordering information for these tools in Section 10.

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DuraSeal Heat-Shrinkable, Environmentally Sealed, Nylon-Insulated Crimp Splices

Product Facts

- Protects splices from water, condensation, salt, and corrosion
- Provides strain relief
- Protects against vibration in rugged environments
- Completely insulates and protects electrical connections
- Has adhesive lining for protection that is more reliable than conventional splices
- UL, CUL, and Lloyd's listed

Applications

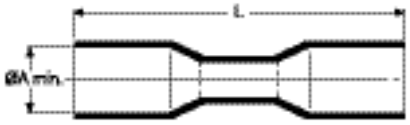
- Automotive/truck wiring repair and maintenance.
- Automotive accessory installations.
- OEM automotive/truck/RV wire harness fabrication.
- Marine electronics.
- Fleet maintenance.
- Commercial wiring (pumps/pools/spas).

Specifications/Approvals

Series	Agency	Raychem
D-406	ULand CULlisted 91J4, File E87681	RB-107
—	Lloyd's listed, File 65 247 HH 02-93	—

Product Dimensions

Butt Splices



Part No.	Butt Splice Dimensions A Min.	Butt Splice Dimensions L Nom.	Color	Conductor	Wire Dimensions Insulation O.D. (Max.)	Wire Dimensions Insulation O.D. (Min.)
D-406-0001	3.68 [.145]	31.75 [1.25]	Red	22–18	3.56 [.140]	1.40 [.055]
D-406-0002	4.57 [.180]	31.75 [1.25]	Blue	16–14	4.45 [.175]	2.03 [.080]
D-406-0003	6.35 [.250]	38.10 [1.50]	Yellow	12–10	6.22 [.245]	2.79 [.110]

Available in:

Americas	■
Europe	■
Asia Pacific	■

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DuraSeal Heat-Shrinkable, Environmentally Sealed, Nylon-Insulated Crimp Splices (Continued)

Product Selection Process

1. Determine wire size.
2. Select part number.

Wire Size AWG	mm²	Part No.	Color
22–18	0.38–0.95	D-406-0001	Red
16–14	1.2–2.5	D-406-0002	Blue
12–10	3–6	D-406-0003	Yellow

Product Characteristics (Typical)

Operating temperature	-55°C to 125°C [-67°F to 257°F]
Shrink ratio	Approximately 2:1
Physical properties	Cut-through resistance: 31 kg [70 lb] Wire pullout after crimping and recovery: red: 11.3 kg [25 lb]; blue: 22.7 kg [50 lb]; yellow: 27.2 kg [60 lb] Not flame-retardant No cracking after heat aging for 168 h at 160°C [320°F]
Chemical properties	Solvent resistance: isopropyl alcohol, trichloroethylene, gasoline, battery acid, diesel fuel, motor oil, antifreeze, brake fluid, 5% salt water
Electrical properties	Dielectric strength: 2500 Vac Insulation resistance: 1000 megohms at 100 Vdc

Installation Requirements

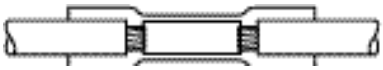
For proper installation of these devices, the correct crimp tool and a heating tool with a reflector attachment must be used. The Raychem AD-1522 crimp tool and HL1802E heating tool are recommended.

You will find ordering information for these tools in Section 10.

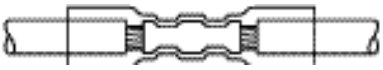
Refer to Raychem installation procedure RPIP 821-00 for detailed instructions.

Installation

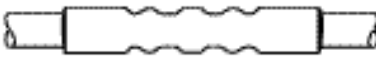
1. Select splice of appropriate size. Strip wire 7.5 mm (5/16 in). Insert into crimp barrel.



2. Crimp using Raychem AD-1522 crimp tool for preinsulated crimps.



3. Heat crimped splice with heat gun until tubing recovers and adhesive flows.



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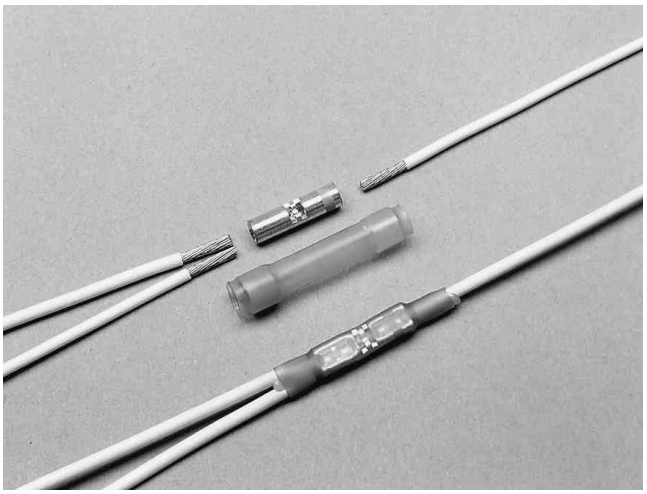
MiniSeal High-Performance, Immersion-Resistant Crimp Splices

Product Facts

- **Immersion-resistant crimp splices are on QPL for MIL-S-81824**
- **MIL-Spec approval**
- **Small size**
- **Light weight**
- **Insulation and strain relief**
- **Easy installation**



Applications

MiniSeal wire-to-wire splicing products offer solutions for hundreds of aerospace and defense applications. These environment-resistant splices provide excellent reliability, long term performance, MIL-S-81824/1 qualification, and a low installed cost.

MiniSeal crimp splices consist of a plated copper crimp barrel and a separate, heat-shrinkable, transparent sealing sleeve. They can be used on a combination of wires, from 1:1 to 10:10. MiniSeal splices are one of the smallest, lightest, and most environment-resistant splices available. They preserve the electrical integrity of the splice by preventing the penetration of liquids and the resulting chemical and galvanic corrosion.

Available in:	
Americas	■
Europe	■
Asia Pacific	■

Product Selection Process

1. Determine the type of splice required.
   - Stub (parallel) splice:

     
   - Butt (in-line) splice:

     
2. Determine which crimp barrel plating is required:
   - Tin plating, recommended for tin or silverplated wire
   - Nickel plating, recommended for nickel-plated wire, or silver-plated wire in applications above 150°C [302°F].
3. Calculate the size of crimp barrel required.

   Using the CMA/mm² worksheet on the next page, calculate the total cross section to be spliced by adding the circular mil area (CMA) or square millimeters (mm²) of each wire.

   Stub splice: Add the CMA or mm² of all wires together.

   Butt splice: Calculate each side separately (see example on the worksheet).

   Table A provides the CMA of typical conductors. (Both CMA and mm² give the same results, so choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria.)
4. Select the color code for the size crimp barrel required. Using Table B (page 8-21), select the crimp barrel—color-coded red, blue, or yellow—for the CMA or mm² you calculated.

   Stub splice: Select the barrel that will accommodate the total cross section.

   Butt splice: Select the smallest barrel that will accommodate the largest CMA/mm² required. (Refer to the example in the worksheet for a more specific description.) If the CMA/mm² of the smaller side of a butt splice is too small for the size barrel required to fit the larger side, increase the CMA/mm² —either by doubling back one wire (stripping the conductor twice the length you would ordinarily strip it and then folding it back) or by adding a filler wire.
5. Determine the type of sealing sleeve required. Some wire insulations will not fit in the holes of the sealing sleeve inserts, so be sure to compare the internal diameter of each hole with the outer diameter of the wire(s) you intend to insert in that hole. To create a reliable seal, place a maximum of two wires in any hole of the sealing sleeve.
6. Select the part number. Turn to the MiniSeal part number selection tables (Tables C and D, page 8-21 and 8-22) and find the table for the type of splice (stub or butt) required.

   Using the appropriate table, find the crimp barrel size range and the size and number of wires for your application. Then select the part number for the type of plating required. The color code accompanying that part number should match the color code you arrived at in Table B, confirming that the part number you have selected is correct.

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MiniSeal High-Performance, Immersion-Resistant Crimp Splices (Continued)

Table A. CMA of Typical Conductors

Strands	7	19	19	19	19	19	19	19	37
AWG	28	26	24	22	20	18	16	14	12
CMA	177	304	475	754	1216	1900	2426	3831	5874
mm^2	0.09	0.15	0.24	0.38	0.61	0.95	1.21	1.92	2.94

Table B. Crimp Barrel Color Code Selection

CMA Range	mm^2 Range	1:1 Splice (AWG Size)	Color Code
304–1510	0.15–0.75	26–20	Red
779–2680	0.39–1.34	20–16	Blue
1900–6755	0.95–3.37	18–12	Yellow

CMA/mm^2 Worksheet

Example:

Application: A butt splice with three AWG 22 wires in one side and one AWG 18 wire in the other side:

The CMA for AWG 22 wire in Table A is 754 (0.38 mm^2).

Side one is therefore calculated as follows:

CMA = 3 x 754 = 2262
(mm^2 = 3 x 0.38 = 1.14)

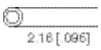
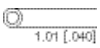
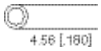
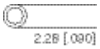
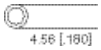
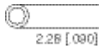
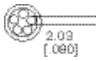
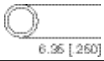
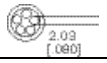
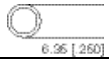
The other side, where the CMA for AWG 18 is 1900, is calculated as:

CMA = 1 x 1900 = 1900
(mm^2 = 1 x 0.95 = 0.95)

Using Table B to select the smallest crimp barrel that will easily fit 2262 CMA (0.95 mm^2), the blue barrel is the correct choice.

Wire Number	CMA	mm^2	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			Part Number:
Total			

Table C. Stub (Parallel) Splices

Illustration	Part No.		Crimp Barrel Size Range CMA [mm^2] Min.–Max.	I.D.dimensions			
				Side 1		Side 2	
	Tin Plated	Nickel Plated		Sealing Insert	Max. No. of Wires	Sealing Insert	Max. No. of Wires
	D-436-0128 Red	D-436-0119 Red	304–1510 [0.15–0.75]	 2.16 [.096]	2	 1.01 [.040]	2
	D-436-58 Blue	D-436-75 Blue	779–2680 [0.39–1.34]	 4.56 [.180]	2	 2.28 [.090]	2
	D-436-59 Yellow	D-436-76 Yellow	1900—6755 [0.95–3.37]	 4.56 [.180]	2	 2.28 [.090]	2
	D-436-60 Blue	D-436-77 Blue	779–2680 [0.39–1.34]	 2.03 [.080]	10 (2 per hole)	 6.35 [.250]	2
	D-436-61 Yellow	D-436-78 Yellow	1900–6755 [0.95–3.37]	 2.03 [.080]	10 (2 per hole)	 6.35 [.250]	2

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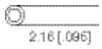
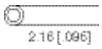
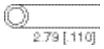
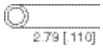
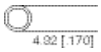
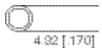
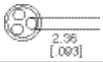
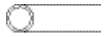
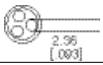
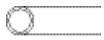
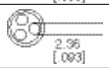
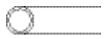
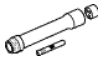
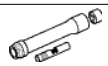
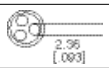
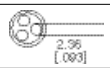
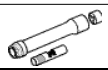
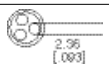
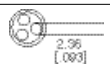
MiniSeal High-Performance, Immersion-Resistant Crimp Splices (Continued)

Table D. Butt (in-line) splices

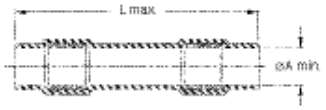
Illustration	Part No.		Crimp Barrel Size Range CMA [mm²] Min.–Max.	I.D.dimensions			
				Side 1		Side 2	
	Tin Plated	Nickel Plated		Sealing Insert	Max. No. of Wires	Sealing Insert	Max. No. of Wires
	D-436-36* Red	D-436-82 Red	304–1510 [0.15–0.75]	 2.16 [.096]	2	 2.16 [.096]	2
	D-436-37* Blue	D-436-83 Blue	779–2680 [0.39–1.34]	 2.79 [.110]	2	 2.79 [.110]	2
	D-436-38* Yellow	D-436-84 Yellow	1900–6755 [0.95–3.37]	 4.32 [.170]	2	 4.32 [.170]	2
	D-436-0110 Red	D-436-85 Red	304–1510 [0.15–0.75]	 2.36 [.093]	6	 4.06 [.160]	2
	D-436-52 Blue	D-436-86 Blue	779–2680 [0.39–1.34]	 2.36 [.093]	6 (2 per hole)	 4.06 [.160]	2
	D-436-53 Yellow	D-436-87 Yellow	1900–6755 [0.95–3.37]	 2.36 [.093]	6 (2 per hole)	 4.06 [.160]	2
	D-436-0115 Red	D-436-88 Red	304–1510 [0.15–0.75]	 2.36 [.093]	6 (2 per hole)	 2.36 [.093]	6 (2 per hole)
	D-436-42 Blue	D-436-89 Blue	779–2680 [0.39–1.34]	 2.36 [.093]	6 (2 per hole)	 2.36 [.093]	6 (2 per hole)
	D-436-43 Yellow	D-436-90 Yellow	1900–6755 [0.95–3.37]	 2.36 [.093]	6 (2 per hole)	 2.36 [.093]	6 (2 per hole)

*Qualified to MIL-S-81824/1.

Table E. Crimp Barrel Only

Type	Color Code	Tin-Plated	Nickel Plated	Crimp Barrel Size Range CMA[mm²] Min. - Max.
Butt (in-line)	Red	D-609-06	D-609-09	304-1510 [0.15-0.75]
Butt (in-line)	Blue	D-609-07	D-609-10	779-2680 [0.39-1.34]
Butt (in-line)	Yellow	D-609-08	D-609-11	1900-6755 [0.95-3.37]
Stub (Parrel)	Red	D-609-03	D-609-12	304-1510 [0.15-0.75]
Stub (Parrel)	Blue	D-609-04	D-609-13	779-2680 [0.39-1.34]
Stub (Parrel)	Yellow	D-609-05	D-609-14	1900-6755 [0.95-3.37]

Table F. Sealing Sleeve Only



Part No.	Color Code	LMax.	AMin.
D-436-0096	Red	29.2 [1.15]	2.16 [0.085]
D-436-0097	Blue	29.2 [1.15]	2.8 [0.110]
D-436-0098	Yellow	29.2 [1.15]	4.32 [0.170]

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UK: 44-1793-528171

MiniSeal High-Performance, Immersion-Resistant Crimp Splices (Continued)

Product Characteristics

Material	
Insulation	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride
Crimp barrel	Tin- or nickel-plated copper
Meltable inserts	Meltable thermoplastic
Typical Performance	
Voltage drop	6.9 mV at 4.5 Avs 8.1 mV for an equal length of wire
Tensile strength	Exceeds strength of conductor
Dielectric strength	2.5 kV
Temperature rating	-55°C to 150°C [-67°F to 302°F]
Insulation resistance	5000 megohms

Specifications/Approvals

Series	Military
D-436	MIL-S-81824/1 for D-436-36/37/38

Installation

For proper installation of these devices, the correct crimp tool (Raychem part number AD-1377) and a heating tool and reflector attachment must be used.

Any one of the following Raychem heating tools is recommended:

- HL1802E
- AA-400 Super Heater

Refer to Raychem installation procedure RCPS 200-20 for detailed instructions and recommended reflector attachments.

You will find ordering information for these tools in Section 10.

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Singapore: 65-4866-151
UK: 44-1793-528171

Introduction

Raychem insulated electrical terminal products provide reliable, repeatable, and rugged examples of terminals available. We start on the front end with terminal sizes and configurations that meet or exceed industry standards in terms of material selection, surface treatment, and electrical performance.

Here the comparison stops. What separates Raychem products from the rest of the industry are the materials and termination techniques used on the back end of the products, which provide unparalleled value.

Products include:

- *DuraSeal heat-shrinkable nylon crimp products,* which protect against water, condensation, salt, and corrosion. Their tough, heat-shrinkable nylon tubing resists abrasion and cut-through damage, provides strain relief, and protects against vibration damage. DuraSeal products are simple and quick to install using a crimp tool and a heat source. They accommodate a wide range of wire sizes and are color-coded for easy identification, yet are transparent for visual inspection of the finished splice.
- *SolderGrip heat-shrinkable twist-on products,* which utilize a spiral copper coil that grips and compresses the conductors and allows a prefluxed solder ring to flow to the center of the splicing area, resulting in a highly reliable, repeatable joint. SolderGrip terminals use a durable polyvinylidene fluoride heat-shrinkable tubing that protects the electrical joint and provides insulation and strain relief. The SolderGrip technology is a reliable means of terminating more than two conductors time after time. SolderGrip terminals can terminate a variety of conductor types (solid and stranded) and platings. Terminations on more than eight individual conductors in a single joint have been successfully demonstrated using this product.

DuraSeal product delivers protected electrical joints on industry standard terminals and is suitable for harsh environments.

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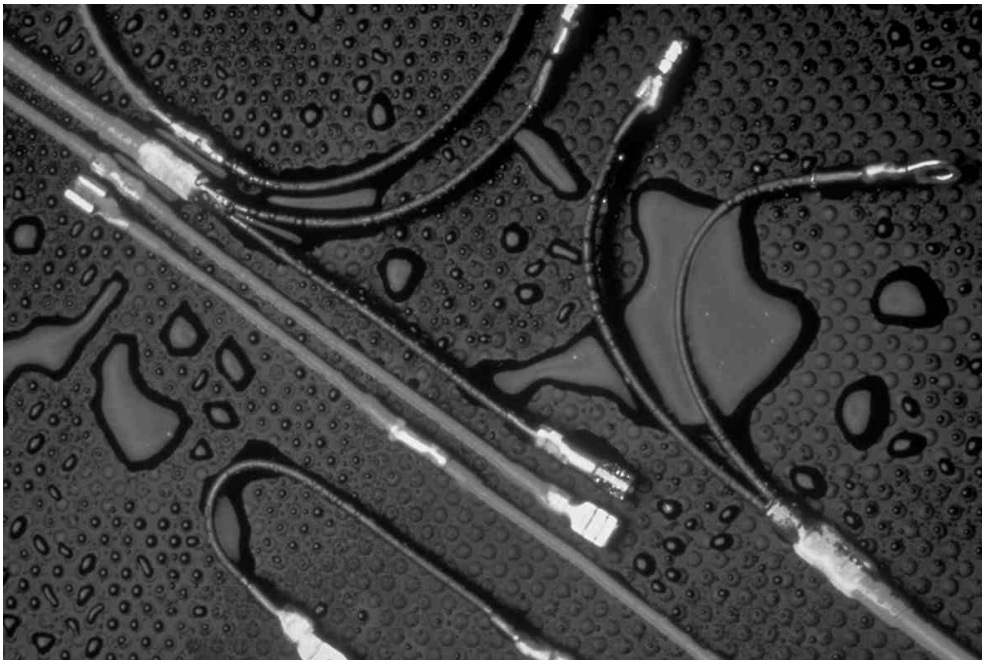
Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects

Product Facts

- Resistance to moisture and abrasion
- Strain relief
- Protection from wire pull-out
- Easy installation
- UL and CUL listed



Applications

DuraSeal products insulate and protect electrical connections from mechanical abuse, wire pull-out, and abrasion while resisting water, salt, and other contaminants.

DuraSeal devices provide a tough, environmentally sealed wire connection. Their crimp barrel or terminal, encased in rugged, heat-shrinkable nylon tubing lined with a special hot-melt adhesive, resists damage from abrasions and cuts.

DuraSeal devices retain flexibility and impact-resistance long after similar products have become brittle.

DuraSeal devices accomodate wire gauge sizes 22 to 10. They are color-coded for easy identification of gauge sizes, yet transparent for inspection of the finished splice.

Approvals and Reference Documents

Agency approvals	ULlisted component, file E87681, terminals except quick connect terminals; file E157833, quick connect terminals
Reference documents	Raychem specifications RB-108, Specification DuraSeal crimp terminals DuraSeal selection guide (H54153) DuraSeal installation guidelines (H54154)

Available in:

Americas	■
Europe	■
Asia Pacific	■

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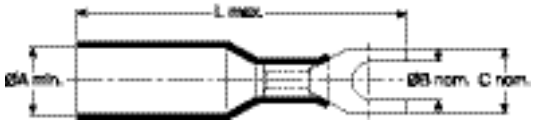
UK: 44-1793-528171

DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)

Product Characteristics

	Property	Unit	Requirement	Method of Test
Physical	Dimensions Tensile strength	Inches Pounds	None 8 to 40 lbs depending on AWG	See product dimensions UL486C, IEC512-8
	Property	**Unit**	**Typical value**	**Method of Test**
Electrical	Voltage drop Insulation resistance Dielectric withstand voltage	Millivolts Megohms Kilovolts	Less than equal length of wire 103 min. 2.5	MIL-S-81824, IEC512-2 MIL-STD-202 method 302 MIL-STD-202F method 301, IEC512-2
	Property	**Unit**	**Requirement**	**Method of Test**
Chemical	Diesel fuel Brake fluid Antifreeze 5% salt water Motor oil	—	Meet electrical test listed above after conditioning.	ASTM D 3032, ESA-603D
Environmental (Fluid)	Humidity Immersion Vibration Bending Thermal shock Heat aging (168° @ 85°C [185°F) Salt spray	—	Meet electrical test listed above after conditioning.	MIL-STD-202F method 106, IEC68-2-30 MIL-STD-202F condition C, IEC68-2-14 test NC MIL-STD-202F method 201, IEC68-2-6 UL486C, IEC512-8 MIL-STD-202F method 107, IEC68-2-14 test N MIL-STD-202F, IEC68-2-2 MIL-STD-202F method 101, IEC68-2-11
Operating conditions	Temperature rating Minimum shrink temperature Voltage rating	— — —	-55°C to +125°C [-67°F to -257°F] 180°C [356°F] 600 Volt max	None None None

Fork Terminals



Part No.	Fork Terminal Dimensions					Color	Insulation Conductor (AWG)	Wire Dimensions	
	A Min.	Stud Size		C Nom.	L Max.			Insulation O.D. (Max.)	O.D. (Min.)
		Metric	Imperial						
B-106-2401	3.81 [.15]	M4	8	7.87 [.31]	32.00 [1.26]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-2402	4.57 [.18]	M4	8	7.87 [.31]	35.05 [1.38]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-2403	6.35 [.25]	M4	8	7.87 [.31]	38.10 [1.50]	Yellow	12–10	6.35 [.250]	2.79 [.110]
B-106-2502	4.57 [.18]	M5	10	9.91 [.39]	35.05 [1.38]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-2503	6.35 [.25]	M5	10	9.91 [.39]	40.15 [1.58]	Yellow	12–10	6.35 [.250]	2.79 [.110]

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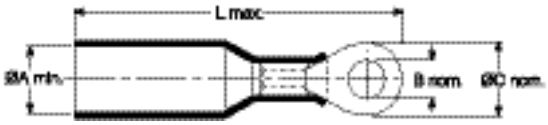
DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)

Ring Terminals



Part No.	Fork Terminal Dimensions					Color	Insulation Conductor (AWG)	Wire Dimensions	
	A Min.	Stud Size		C Nom.	L Max.			Insulation O.D. (Max.)	O.D. (Min.)
		Metric	Imperial						
B-106-1401	3.81 [.15]	M4	8	7.88 [.31]	32.00 [1.26]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-1501	3.81 [.15]	M5	10	9.91 [.39]	34.04 [1.34]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-1601	3.81 [.15]	M6	1/4	11.94 [.47]	36.07 [1.42]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-1801	3.81 [.15]	M8	5/16	13.97 [.55]	39.12 [1.54]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-1991	3.81 [.15]	M10	3/8	17.78 [.70]	43.18 [1.70]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-1402	4.57 [.18]	M4	8	7.88 [.31]	33.02 [1.30]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-1502	4.57 [.18]	M5	10	9.91 [.39]	35.05 [1.38]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-1602	4.57 [.18]	M6	1/4	11.94 [.47]	36.58 [1.44]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-1802	4.57 [.18]	M8	5/16	13.97 [.55]	40.13 [1.58]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-1992	4.57 [.18]	M10	3/8	17.78 [.70]	43.94 [1.73]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-1403	6.35 [.25]	M4	8	7.88 [.31]	38.10 [1.50]	Yellow	12–10	6.35 [.250]	2.79 [.110]
B-106-1503	6.35 [.25]	M5	10	9.91 [.39]	40.13 [1.58]	Yellow	12–10	6.35 [.250]	2.79 [.110]
B-106-1603	6.35 [.25]	M6	1/4	11.94 [.47]	41.66 [1.64]	Yellow	12–10	6.35 [.250]	2.79 [.110]
B-106-1803	6.35 [.25]	M8	5/16	13.97 [.55]	45.21 [1.78]	Yellow	12–10	6.35 [.250]	2.79 [.110]
B-106-1993	6.35 [.25]	M10	3/8	17.78 [.70]	46.99 [1.85]	Yellow	12–10	6.35 [.250]	2.79 [.110]

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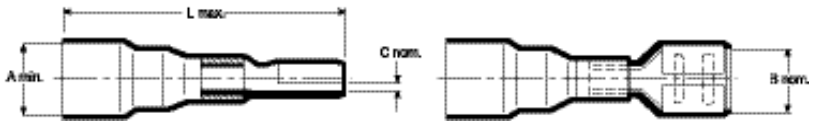
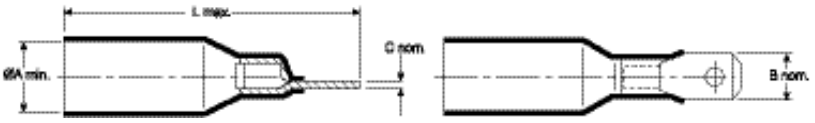
DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)

Push-on Terminals



Part No.	Tab Size (inches)	Push-on Terminal Dimensions				Color	Insulation Conductor (AWG)	Wire Dimensions	
		A Min.	B Nom.	C Nom.	L Max.			Insulation O.D. (Max.)	O.D. (Min.)
B-106-3631	.250 x .032	3.81 [.150]	6.35 [.250]	.81 [.032]	30.48 [1.200]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-3632	.250 x .032	4.57 [.180]	6.35 [.250]	.81 [.032]	32.00 [1.260]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-3633	.250 x .032	6.35 [.250]	6.35 [.250]	.81 [.032]	33.02 [1.300]	Yellow	12–10	6.35 [.250]	2.79 [.110]
B-106-3281	.110 x .020	3.81 [.150]	2.79 [.110]	.51 [.020]	22.86 [.900]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-3481	.187 x .020	3.81 [.150]	4.75 [.187]	.51 [.020]	30.48 [1.200]	Red	22–18	3.81 [.150]	1.40 [.055]

Tab Terminals



Part No.	Tab Size (inches)	Tab Terminal Dimensions				Color	Insulation Conductor (AWG)	Wire Dimensions	
		A Min.	B Nom.	C Nom.	L Max.			Insulation O.D. (Max.)	O.D. (Min.)
B-106-4631	.250 x .032	3.81 [.150]	6.35 [.250]	.81 [.032]	30.48 [1.20]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-4632	.250 x .032	4.57 [.180]	6.35 [.250]	.81 [.032]	32.00 [1.26]	Blue	16–14	4.45 [.175]	2.00 [.080]

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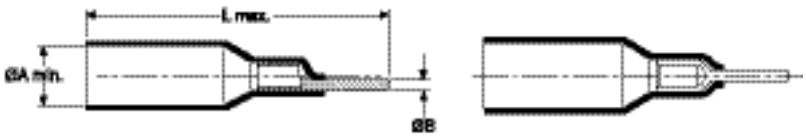
DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)

Pin Terminals



Part No.	Pin Terminal Dimensions			Color	Wire Dimensions		
	A Min.	B Nom.	L Max.		Conductor (AWG)	Insulation O.D. (Max.)	Insulation O.D. (Min.)
B-106-6201	3.81 [.150]	2.00 [.080]	30.99 [1.220]	Red	22–18	3.81 [.150]	1.40 [.055]

Bullet Terminals

Fig. 1

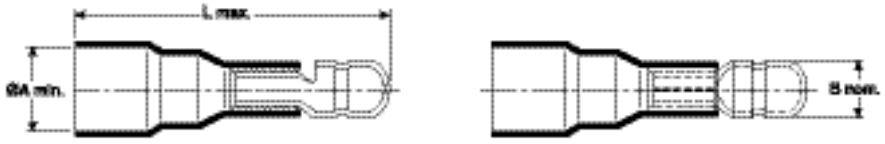
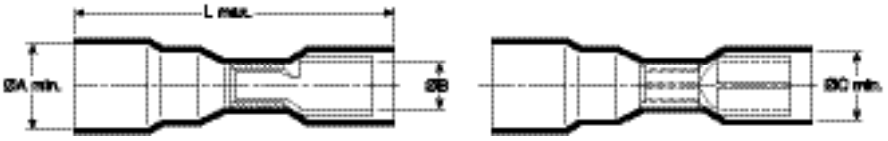


Fig. 2



Part No.	Fig.	Type	Bullet Terminal Dimensions				Color	Conductor (AWG)	Wire Dimensions	
			A Min.	B Nom.	C Min.	L Max.			Insulation O.D. (Max.)	Insulation O.D. (Min.)
B-106-7401	1	M	3.81 [.150]	3.81 [.150]	—	33.53 [1.32]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-7502	1	M	4.57 [.180]	5.08 [.200]	—	34.54 [1.36]	Blue	16–14	4.45 [.175]	2.00 [.080]
B-106-8401	2	F	3.81 [.150]	3.81 [.150]	5.59 [.220]	30.48 [1.20]	Red	22–18	3.81 [.150]	1.40 [.055]
B-106-8502	2	F	4.57 [.180]	5.08 [.200]	6.10 [.240]	32.51 [1.28]	Blue	16–14	4.45 [.175]	2.00 [.080]

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DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)

Product Characteristics (Typical)

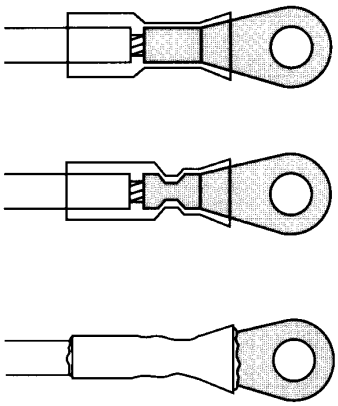
Operating temperature	-55°C to 125°C [-67°F to 257°F]
Shrink ratio	Approximately 2:1
Physical properties	Cut-through resistance: 31.7 kg [70 lb] Wire pullout after crimping and recovery: red: 11.3 kg [25 lb]; blue: 22.7 kg [50 lb]; yellow: 27.2 kg [60 lb] Not flame-retardant No cracking after heat aging for 168 hr at 160°C [320°F]
Chemical properties	Solvent resistance: isopropyl alcohol, trichloroethylene, gasoline, battery acid, diesel fuel, motor oil, antifreeze, brake fluid, 5% salt water
Electrical properties	Dielectric strength: 1000 V Insulation resistance: 10 megohms

Specifications/Approvals

Series	Agency	Raychem
B-106	ULand CUL91J4, File E87681 Lloyd's listed, File 65 247 HH 02-93 ULand CULE157833 (B-106-3XXX/B-106-4XXX)	RB-108

Installation

1. Select appropriate size. For terminal and disconnect terminations, strip wire 6.5 mm (1/4 inch).
2. Crimp using Raychem AD-1522 crimp tool for preinsulated crimps.
3. Heat terminal or disconnect with heat gun until tubing recovers and adhesive flows. Avoid heating ring or fork metallic parts.



For proper installation of these devices, the correct crimp tool and heating tool with reflector attachment must be used. The Raychem AD-1522 crimp tool and HL1802E heating tool are recommended. You will find ordering information for these tools in Section 10. Refer to Raychem installation procedure RPIP 684-00 for detailed instructions.

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SolderGrip Self-Fixturing Insulated Terminals

Product Facts

- **Transparent insulation sleeve provides encapsulation, inspectability, strain relief, and insulation**
- **Spiral copper coil grips and compresses the conductors for optimum solder connection**
- **Prefluxed solder preform provides a controlled soldering process.**
- **One-piece design for easy installation**
- **Accommodates a wide variety of conductor types, quantities, sizes, and plating types unmatched by any other termination technique**
- **Parts meet the performance requirements of MIL-T-7928G**

Product option

Product Series	Environmental Protection
SGRT	Splashproof

Applications

Used for terminating multiple wires to terminals.

Product Selection Process

1. Determine the wire combination (number of wires and size) of the wire bundle you wish to terminate.
2. Use Table C to select the correct terminal for AWG wire combination.* Example: For connecting a bundle with one 12 AWG wire (1 #12) and two 18 AWG wires (+ 2 #18) to a terminal, you need an SGRT-4-XX terminal.
3. Determine the correct stud size.
4. Select the correct part number from Table A for that stud size in the terminal series and size you selected in Step 2. Example: If the stud size is 1/4, select part number SGRT-4-06.
5. Verify that the wire bundle (with wire insulation) does not exceed the maximum diameter allowed for the part you selected. Simply check the bundle's diameter against the maximum diameter that Table A lists for that part.
6. Verify that the total amperage to be applied does not exceed the maximum amp rating for the part as specified in Table A.

*If the wire combination is not listed in Table B, use the CMA (mm^2) method of determining wire bundle size (see "CMA/mm^2 Calculation" on page 8-32).

Using Table B, select the smallest size part that will fit your total wire CMA (mm^2) value.

Table A. Part Number Selection

SolderGrip Part No.	Stud Size	Maximum Bundle Diameter†	Maximum Amp Rating	Wire Range (Min.–Max.) CMA [mm^2]	Typical Length
SGRT-1-02	2 [2]	4.1 [.161]	12.5 A	1400–5000 [0.7–2.5]	38 [1 1/2]
SGRT-2-03	3 [6]	5.0 [.195]	15 A	2400–6000 [1.2–3.0]	38 [1 1/2]
SGRT-2-04	4 [8]	—	15 A	2400–6000 [1.2–3.0]	38 [1 1/2]
SGRT-2-05	5 [10]	—	15 A	2400–6000 [1.2–3.0]	38 [1 1/2]
SGRT-2-06	6 [1/4]	—	15 A	2400–6000 [1.2–3.0]	38 [1 1/2]
SGRT-3-06	6 [1/4]	6.5 [.255]	33 A	5000–13,200 [2.5–6.6]	44.5 [1 3/4]
SGRT-3-08	8 [5/16]	—	33 A	5000–13,200 [2.5–6.6]	51.0 [2]
SGRT-4-06	6 [1/4]	9.0 [.355]	56 A	12,000–22,400 [6.0–11.2]	44.5 [1 3/4]
SGRT-4-08	8 [5/16]	—	56 A	12,000–22,400 [6.0–11.2]	51 [2]

†Maximum bundle diameter is measured over wire insulation.

Available in:

Americas	■
Europe	■
Asia Pacific	■

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SolderGrip Self-Fixturing Insulated Terminals (Continued)

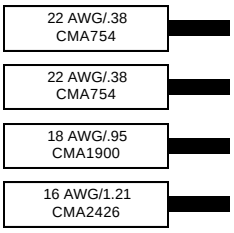
CMA/mm² Calculation

To calculate the total circular mil or mm² area of the wire bundle to be terminated, follow these steps:

1. Choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria. (Both measures provide the same results.)
2. In the workspace below, list the CMA or mm² for each conductor in the bundle. (Table B provides the CMA of typical conductors.)
3. Add together the values listed in the workspace below to obtain the total area.
4. Use Table A to select the smallest terminator that will fit the total CMA (mm²).

Wire Number	CMA	mm²	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			Solder Grip Part No.
Total			

CMA/mm² Example



Total CMA= 5834
Total mm² = 2.92
Correct part number (based on CMA of 5834 or mm² of 2.92):
SGRT-2-XX if bundle OD is less than 5.0 mm (0.195 in).

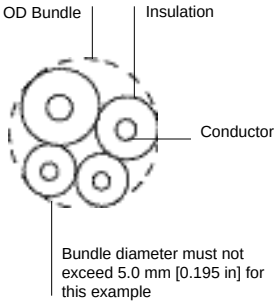


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Table B. CMA of Typical Copper Conductors

Strands	7	19	19	19	19	19	19	19	37
AWG	28	26	24	22	20	18	16	14	12
CMA	177	304	475	754	1216	1900	2426	3831	5874
mm^2	0.09	0.15	0.24	0.38	0.61	0.95	1.21	1.92	2.94

Table C. SolderGrip Wire Combinations (see Table A for Terminal Size [-XX])

Wire Combinations	Part No.	Wire Combinations	Part No.	Wire Combinations	Part No.
1 # 8	SGRT-4-XX	1 # 12 + 1 # 16 + 4 # 18	SGRT-4-XX	1 # 14 + 4 # 20	SGRT-3-XX
1 # 8 + 1 # 16	SGRT-4-XX	1 # 12 + 2 # 16	SGRT-3-XX	1 # 14 + 1 # 18	SGRT-2-XX
2 # 8 + 2 # 16	SGRT-4-XX	1 # 12 + 2 # 16 + 1 # 18	SGRT-3-XX	1 # 14 + 1 # 18 + 1 # 20	SGRT-3-XX
1 # 8 + 1 # 14	SGRT-4-XX	1 # 12 + 2 # 16 + 2 # 18	SGRT-4-XX	1 # 14 + 2 # 18	SGRT-3-XX
1 # 10	SGRT-3-XX	1 # 12 + 3 # 16	SGRT-4-XX	1 # 14 + 3 # 18	SGRT-3-XX
1 # 10 + 1 to 3 # 18	SGRT-3-XX	1 # 12 + 4 # 16	SGRT-4-XX	1 # 14 + 4 # 18	SGRT-3-XX
1 # 10 + 2 # 18	SGRT-3-XX	1 # 12 + 5 # 16	SGRT-4-XX	1 # 14 + 5 # 18	SGRT-4-XX
1 # 10 + 3 # 18	SGRT-4-XX	1 # 12 + 1 # 14 + 1 # 18	SGRT-3-XX	1 # 14 + 1 # 16	SGRT-3-XX
1 # 10 + 1 # 16	SGRT-3-XX	1 # 12 + 1 # 14 + 2 # 18	SGRT-4-XX	1 # 14 + 1 # 16 + 1 # 20	SGRT-3-XX
1 # 10 + 1 # 16 + 1 # 18	SGRT-4-XX	1 # 12 + 1 # 14 + 3 # 18	SGRT-4-XX	1 # 14 + 1 # 16 + 1 # 18	SGRT-3-XX
1 # 10 + 1 # 16 + 2 # 18	SGRT-4-XX	1 # 12 + 1 # 14 + 1 # 16	SGRT-3-XX	1 # 14 + 1 # 16 + 2 # 18	SGRT-3-XX
1 # 10 + 2 # 16	SGRT-4-XX	1 # 12 + 1 # 14 + 2 # 16	SGRT-4-XX	1 # 14 + 1 # 16 + 3 # 18	SGRT-3-XX
1 # 10 + 3 # 16	SGRT-4-XX	1 # 12 + 1 # 14 + 3 # 16	SGRT-4-XX	1 # 14 + 1 # 16 + 4 # 18	SGRT-4-XX
1 # 10 + 4 # 16	SGRT-4-XX	1 # 12 + 1 # 14 + 4 # 16	SGRT-4-XX	1 # 14 + 2 # 16	SGRT-3-XX
1 # 10 + 5 # 16	SGRT-4-XX	1 # 12 + 2 # 14	SGRT-4-XX	1 # 14 + 2 # 16 + 1 # 18	SGRT-3-XX
1 # 10 + 1 # 14	SGRT-3-XX	1 # 12 + 2 # 14 + 1 # 18	SGRT-4-XX	1 # 14 + 2 # 16 + 2 # 18	SGRT-3-XX
1 # 10 + 1 # 14 + 1 # 18	SGRT-4-XX	1 # 12 + 2 # 14 + 1 # 16	SGRT-4-XX	1 # 14 + 2 # 16 + 3 # 18	SGRT-4-XX
1 # 10 + 1 # 14 + 1 # 16	SGRT-4-XX	1 # 12 + 2 # 14 + 2 # 16	SGRT-4-XX	1 # 14 + 3 # 16	SGRT-3-XX
1 # 10 + 1 # 14 + 2 # 16	SGRT-3-XX	1 # 12 + 2 # 14 + 3 # 16	SGRT-4-XX	1 # 14 + 3 # 16 + 1 # 18	SGRT-3-XX
1 # 10 + 1 # 14 + 3 # 16	SGRT-4-XX	1 # 12 + 3 # 14	SGRT-4-XX	1 # 14 + 3 # 16 + 2 # 18	SGRT-4-XX
1 # 10 + 2 # 14	SGRT-4-XX	1 # 12 + 3 # 14 + 1 # 16	SGRT-4-XX	1 # 14 + 4 # 16	SGRT-4-XX
1 # 10 + 3 # 14	SGRT-4-XX	1 # 12 + 4 # 14	SGRT-4-XX	1 # 14 + 4 # 16 + 1 # 18	SGRT-4-XX
1 # 10 + 1 # 12	SGRT-4-XX	2 # 12 + 1 # 18	SGRT-4-XX	1 # 14 + 5 # 16	SGRT-4-XX
1 # 10 + 1 # 12 + 1 # 14	SGRT-4-XX	2 # 12 + 1 # 16	SGRT-4-XX	2 # 14	SGRT-3-XX
1 # 10 + 2 # 12	SGRT-4-XX	2 # 12 + 2 # 16 + 1 # 18	SGRT-4-XX	2 # 14	SGRT-3-XX
2 # 10	SGRT-4-XX	2 # 12 + 3 # 16	SGRT-4-XX	2 # 14	SGRT-3-XX
2 # 10 + 1 # 16	SGRT-4-XX	2 # 12 + 1 # 14 + 1 # 18	SGRT-4-XX	2 # 14	SGRT-3-XX
1 # 12	SGRT-3-XX	2 # 12 + 1 # 14 + 1 # 16	SGRT-4-XX	2 # 14	SGRT-3-XX
1 # 12 + 1 # 18	SGRT-3-XX	2 # 12 + 2 # 14	SGRT-4-XX	2 # 14 + 1 # 16	SGRT-3-XX
1 # 12 + 2 # 18	SGRT-3-XX	3 # 12 + 1 # 18	SGRT-4-XX	2 # 14 + 1 # 16	SGRT-3-XX
1 # 12 + 3 # 18	SGRT-3-XX	3 # 12 + 1 # 16	SGRT-4-XX	2 # 14 + 1 # 16	SGRT-3-XX
1 # 12 + 4 # 18	SGRT-4-XX	3 # 12 + 1 # 14	SGRT-4-XX	2 # 14 + 1 # 16	SGRT-3-XX
1 # 12 + 5 # 18	SGRT-4-XX	1 # 14	SGRT-2-XX	2 # 14 + 2 # 16	SGRT-3-XX
1 # 12 + 1 # 16	SGRT-3-XX	1 # 14 + 1 # 22	SGRT-2-XX	2 # 14 + 2 # 16	SGRT-3-XX
1 # 12 + 1 # 16 + 1 # 18	SGRT-3-XX	1 # 14 + 1 # 20	SGRT-2-XX	2 # 14 + 3 # 16	SGRT-4-XX
1 # 12 + 1 # 16 + 2 # 18	SGRT-3-XX	1 # 14 + 2 # 20	SGRT-3-XX	2 # 14 + 4 # 16	SGRT-4-XX
1 # 12 + 1 # 16 + 3 # 18	SGRT-4-XX	1 # 14 + 3 # 20	SGRT-3-XX	3 # 14	SGRT-3-XX

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Table C. SolderGrip Wire Combinations (see Table A for Terminal Size [-XX]) (Continued)

Wire Combinations	Part No.
3 # 14 + 1 # 16	SGRT-4-XX
3 # 14 + 2 # 16	SGRT-4-XX
3 # 14 + 3 # 16	SGRT-4-XX
4 # 14	SGRT-4-XX
4 # 14 + 1 # 16	SGRT-4-XX
4 # 14 + 2 # 16	SGRT-4-XX
5 # 14	SGRT-4-XX
5 # 14 + 1 # 16	SGRT-4-XX
1 # 16	SGRT-2-XX
1 # 16 + 1 # 22	SGRT-2-XX
1 # 16 + 2 # 22	SGRT-2-XX
1 # 16 + 3 # 22	SGRT-2-XX
1 # 16 + 1 # 20	SGRT-2-XX
1 # 16 + 1 # 20 + 1 # 22	SGRT-2-XX
1 # 16 + 2 # 20	SGRT-2-XX
1 # 16 + 3 # 20	SGRT-3-XX
1 # 16 + 4 # 20	SGRT-3-XX
1 # 16 + 5 # 20	SGRT-3-XX
1 # 16 + 1 # 18	SGRT-2-XX
1 # 16 + 1 # 18 + 1 # 20	SGRT-2-XX
1 # 16 + 1 # 18 + 2 # 20	SGRT-3-XX
1 # 16 + 1 # 18 + 3 # 20	SGRT-3-XX
1 # 16 + 1 # 18 + 4 # 20	SGRT-3-XX
1 # 16 + 2 # 18	SGRT-3-XX
1 # 16 + 2 # 18 + 1 # 20	SGRT-3-XX
1 # 16 + 2 # 18 + 2 # 20	SGRT-3-XX
1 # 16 + 2 # 18 + 3 # 20	SGRT-3-XX
1 # 16 + 3 # 18	SGRT-3-XX
1 # 16 + 3 # 18 + 1 # 20	SGRT-3-XX
1 # 16 + 3 # 18 + 2 # 20	SGRT-3-XX
1 # 16 + 4 # 18	SGRT-3-XX
1 # 16 + 4 # 18 + 1 # 20	SGRT-3-XX
1 # 16 + 5 # 18	SGRT-3-XX
2 # 16	SGRT-2-XX
2 # 16 + 1 # 20	SGRT-3-XX
2 # 16 + 2 # 20	SGRT-3-XX
2 # 16 + 3 # 20	SGRT-3-XX
2 # 16 + 4 # 20	SGRT-3-XX
2 # 16 + 1 # 18	SGRT-3-XX
2 # 16 + 1 # 18 + 1 # 20	SGRT-3-XX
2 # 16 + 1 # 18 + 2 # 20	SGRT-3-XX
2 # 16 + 1 # 18 + 3 # 20	SGRT-3-XX
2 # 16 + 2 # 18	SGRT-3-XX
2 # 16 + 2 # 18 + 1 # 20	SGRT-3-XX
2 # 16 + 2 # 18 + 2 # 20	SGRT-3-XX
2 # 16 + 2 # 18 + 3 # 20	SGRT-3-XX
2 # 16 + 3 # 18	SGRT-3-XX
2 # 16 + 3 # 18 + 1 # 20	SGRT-3-XX
3 # 16	SGRT-3-XX
3 # 16 + 1 # 20	SGRT-3-XX
3 # 16 + 2 # 20	SGRT-3-XX
3 # 16 + 3 # 20	SGRT-3-XX
3 # 16 + 1 # 18	SGRT-3-XX
3 # 16 + 1 # 18 + 1 # 20	SGRT-3-XX
3 # 16 + 1 # 18 + 2 # 20	SGRT-3-XX
3 # 16 + 2 # 18	SGRT-3-XX
3 # 16 + 2 # 18 + 1 # 20	SGRT-3-XX
3 # 16 + 3 # 18	SGRT-3-XX
4 # 16	SGRT-3-XX
4 # 16 + 1 # 20	SGRT-3-XX
4 # 16 + 2 # 20	SGRT-3-XX
4 # 16 + 1 # 18	SGRT-3-XX
4 # 16 + 1 # 18 + 1 # 20	SGRT-3-XX
4 # 16 + 2 # 18	SGRT-4-XX
5 # 16	SGRT-3-XX
5 # 16 + 1 # 20	SGRT-4-XX
5 # 16 + 1 # 18	SGRT-4-XX
6 # 16	SGRT-4-XX
1 # 18 + 1 # 22	SGRT-2-XX
1 # 18 + 2 # 22	SGRT-2-XX
1 # 18 + 3 # 22	SGRT-2-XX
1 # 18 + 1 # 20	SGRT-2-XX
1 # 18 + 1 # 20 + 1 # 22	SGRT-2-XX
—	—
1 # 18 + 1 # 20 + 2 # 22	SGRT-2-XX
1 # 18 + 2 # 20	SGRT-2-XX
1 # 18 + 3 # 20	SGRT-2-XX
1 # 18 + 4 # 20	SGRT-3-XX
1 # 18 + 5 # 20	SGRT-3-XX
2 # 18	SGRT-2-XX
2 # 18 + 1 # 22	SGRT-2-XX
2 # 18 + 1 # 20	SGRT-2-XX
2 # 18 + 2 # 20	SGRT-3-XX
2 # 18 + 3 # 20	SGRT-3-XX
2 # 18 + 4 # 20	SGRT-3-XX
3 # 18	SGRT-2-XX
3 # 18 + 1 # 20	SGRT-3-XX
3 # 18 + 2 # 20	SGRT-3-XX
3 # 18 + 3 # 20	SGRT-3-XX
4 # 18	SGRT-3-XX
4 # 18 + 1 # 20	SGRT-3-XX
4 # 18 + 2 # 20	SGRT-3-XX
5 # 18	SGRT-3-XX
5 # 18 + 1 # 20	SGRT-3-XX
6 # 18	SGRT-3-XX
1 # 20 + 2 # 22	SGRT-2-XX
1 # 20 + 3 # 22	SGRT-2-XX
1 # 20 + 4 # 22	SGRT-2-XX
2 # 20	SGRT-2-XX
2 # 20 + 1 # 22	SGRT-2-XX
2 # 20 + 2 # 22	SGRT-2-XX
2 # 20 + 3 # 22	SGRT-2-XX
3 # 20	SGRT-2-XX
3 # 20 + 1 # 22	SGRT-2-XX
4 # 20	SGRT-2-XX
5 # 20	SGRT-3-XX
6 # 20	SGRT-3-XX
4 # 22	SGRT-2-XX
5 # 22	SGRT-2-XX
6 # 22	SGRT-2-XX
—	—

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SolderGrip Self-Fixturing Insulated Terminals (Continued)

Installation

The SolderGrip product is pushed onto the conductors with a twisting motion. With the product in place, installation can be completed with the proper selection and use of heating tools and reflectors.

Either of the following Raychem heating tools is recommended:

- HL1802E
- CV-1981

Refer to Raychem installation procedure RPIP 820-01 for detailed instructions and recommended reflector attachments.

You will find ordering information for these tools in Section 10.

Product Characteristics

Material	
Insulation	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride (Kynar)
Solder and flux	Sn60 Pb40 with RAflux
Typical Performance	
Tensile strength	Exceeds strength of individual wires
Temperature rating	-55°C to +150°C [-67°F to +302°F]
Voltage Drop	Not to exceed that of equivalent length of wire by more than 1 mV
Dielectric Withstanding Voltage	Current leakage less than 2 mA(1.5 kV)

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Introduction

Raychem SolderSleeve terminators offer easy, one-step solutions for wire connections to pins, posts, and tabs and for mass wire terminations.

Designed for applications with temperatures up to 150°C [302°F], the products in this section include SolderSleeve discrete wire terminators, which are heat-shrinkable thermoplastic sleeves containing a precisely engineered fluxed solder preform.

SolderSleeve terminators are also available on carrier tape, spaced precisely to match connector terminal spacing, enabling termination of an entire row of wires at one time.

SolderSleeve wire-to-pin, wire-to-post, and wire-to-tab terminators, like all Raychem termination products, provide reliability and economical installation for greater productivity. They can be supplied either in bulk or on carrier tape.

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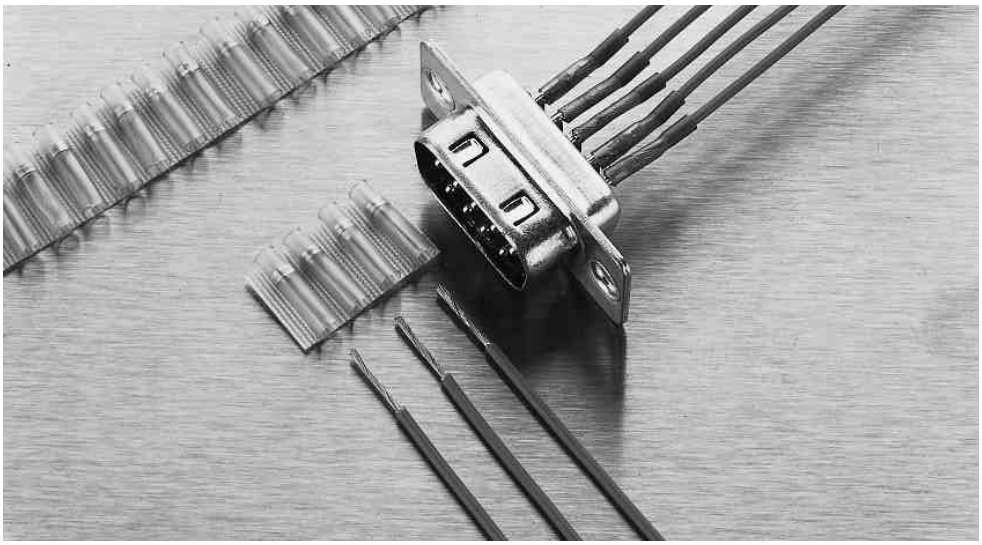
SolderSleeve Discrete Wire Terminators

Product Facts

- **Transparent polyvinylidene fluoride or polyolefin insulation sleeve provides encapsulation, inspectability, strain relief, and insulation**
- **Prefluxed solder preform offers a controlled soldering process**
- **One-piece design means easy installation and low installed cost**
- **Optional tape carrier provides convenience and ease of installation**
- **UL and CUL Recognized**



Applications

Used for terminating wires to component terminals, such as motor tabs, connector pins, and switch terminals.

Product selection process

1. Determine the application operating temperature.
2. From the Product Options table on the next page, select the product series appropriate for the application, based on the temperature required.
3. Determine your component connection point type (pin, post, or tab) and dimensions.
4. Determine your wire gauge.
5. Optional: Select tape carrier center-to-center spacing (D-71X series only). This should match center spacing of component terminals.
6. Select part number from the appropriate table:
   - For CWT series (applications with low-temperature wires—below 125°C [257°F]), use Table A.
   - For D-129/141/71X series (applications with wires rated higher than 125°C [257°F]), use Table B.

Installation

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Either of the following Raychem heating tools are recommended:

- HL1802E
- AA-400 Super Heater

Refer to Raychem installation procedure RCPS 200-12 (for D-129, D-141, D-71X) or RPIP 824-00 (for CWT) for detailed instructions and recommended reflector attachment.

You will find ordering information for these tools see section 10.

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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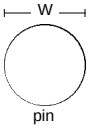
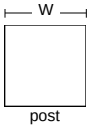
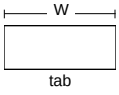
SolderSleeve Discrete Wire Terminators (Continued)

Product Options

Product Series	Max. Operating Temperature	Min. Wire Temperature Rating
CWT	125°C [257°F]	85°C [185°F]
D-129, D-141, D-71X	150°C [302°F]	125°C [257°F]

Note: Cadmium-free option (B-152 series) is available for operating temperature of 125˚C [257˚F]. Consult Tyco Electronics for details.

Table A. CWT Series (125°C [257°F] rated)

Connection-point Type and Size	Terminal Dimensions	Wire AWG/mm²	Part No.
	W = up to 0.63 [.025]	24 [0.24] 20 [0.61]	CWT-1501 CWT-1502
	W = 0.63 [.025] to 0.89 [0.035]	24 [0.24] 22 [0.38] 20 [0.61]	CWT-1501 CWT-1502 CWT-1503
	W = 0.89 [0.035] to 1.14 [.045]	24–22 [0.24–0.38] 20–18 [0.61–0.95]	CWT-1502 CWT-1503
	W = 1.14 [.045] to 1.52 [.060]	24–22 [0.24–0.38] 20–18 [0.61–0.95]	CWT-1503 CWT-1504
	W = up to1.52 [.060]	24–20 [0.24–0.61]	CWT-1501
	W = 1.27 [.050] to 2.28 [.090]	24-18 [0.24–0.95]	CWT-1502
	W = 1.77 [.070] to 2.79 [.110]	24-18 [0.24–0.95]	CWT-1503
	W = 2.54 [.100] to 3.80 [.150]	24-18 [0.24–0.95]	CWT-1504
	W = 2.28 [.090] to 4.70 [.187]	22-16 [0.38–1.21]	CWT-1505

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SolderSleeve Discrete Wire Terminators (Continued)

Table B. D-129/141/71X Series (up to 150°C [302°F] rated)

Connection-point Type and Size

Terminal Dimensions		Wire AWG	Wire mm²	Tape Carrier Spacing of Sleeves (Center-to-Center) None	1.27 [0.050]	2.54 [0.100]	3.17 [0.125]	4.0 [0.156]
W, pin	W = up to 0.61 [.024]	30–26	[0.05–0.15]	D-141-30	D-713-03	—	—	—
		24–22	[0.24–0.38]	D-141-07	—	D-711-00	—	—
	W = 0.63 [.025] to 0.81 [.032]	20	[0.61]	D-141-31	—	D-711-04	D-711-07	D-711-08
W, post	W = 0.76 [.030] to 1.27 [.050]	24–20	[0.24–0.61]	D-141-56	—	—	—	—
	W = up to 1.52 [.060]	24–20	[0.24–0.61]	D-129-05	—	D-714-01	—	—
W, tab	W = 1.27 [.050] to 2.28 [.090]	24–20	[0.24–0.61]	D-129-03	—	—	—	D-714-00
	W = 2.28 [.090] to 3.55 [.140]	24–20	[0.24–0.61]	D-129-0043	—	—	—	—

For Fine Wire Terminations 0.15 mm² (26 AWG) and Smaller*

Part No.*	Inside Diameter As Supplied**	Fully Recovered†	Length††
D-110-0062	1.0 [0.040]	0.6 [0.025]	16.0 [0.630]
D-110-0217	1.0 [0.040]	0.6 [0.025]	9.0 [0.360]
D-141-13	0.75 x 1.65 [0.030 X 0.065]	0.75 [0.030]	4.7 [0.185]
D-141-22	0.75 x 1.65 [0.030 X 0.065]	0.75 [0.030]	6.0 [0.240]
D-141-30	0.75 x 1.65 [0.030 X 0.065]	0.75 [0.030]	9.5 [0.375]

Note: Micro SolderSleeve terminators are used for attaching leads smaller than 26 AWG (0.15 mm²) to terminals less than 0.6 [.025] wide.

*The D-110 series sleeves are primarily for single wire terminations and do not have a wire stop. The D-141 series will accept either one or two wires; the parts have a built-in wire stop that will locate the wire approximately 0.76 [0.03] from bottom of terminal.

**Minimum. Wire insulation must be smaller than this. When using the D-141 parts for two-wire terminations, the combined wire insulation diameters must be less than 1.5 [.060].

†Maximum. The combination of conductor diameter and terminal width and the wire insulation must be greater than this.

††The terminal length should be at least 1.2 [0.05] shorter than this. The wire strip length must be adjusted so that, when terminated, the exposed conductor is covered by the sleeve.

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SolderSleeve Discrete Wire Terminators (Continued)

Product Characteristics

Material		
Insulation [D-129, D-141, D-71X]	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride	
Insulation [CWT]	Radiation-crosslinked, heat-shrinkable polyolefin	
Solder and flux [D-129, D-141, D-71X]	Solder: Sn63 Pb37	Flux: ROL1 per ANSI -J - 004 [RMA flux]
Solder and flux [CWT]	Solder: Sn50 Pb32 Cd 18	Flux: ROM1 per ANSI -J - 004 [RAflux]
Typical Performance		
Voltage drop	2.0 mV	
Tensile strength	Exceeds strength of conductor	
Dielectric strength	2.0 kV	
Temperature rating [CWT]	-55°C to 125°C [-67°F to 257°F]	
Temperature rating [D-129, D-141, D-71X]	-55°C to 150°C [-67°F to 302°F]	
Insulation resistance	1000 megohms	

Specifications/Approvals

Series	Agency	Raychem
CWT	ULand CULE87681	D-5023
D-129, D-141	ULand CULE87681	RT-1404

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Introduction

Raychem SolderSleeve shield grounding terminators provide an environmentally sealed, insulated, and encapsulated solder connection for a variety of applications. SolderSleeve terminators are available in many styles.

Designed for a wide variety of temperature applications ranging from -65°C to 200°C [-85°F to 392°F], the products in this section include:

- CWT-X SolderSleeve terminators, designed for low-temperature cables with operating temperatures up to 125°C [257°F] and suitable for most commercial environments.
- MIL-S-83519 SolderSleeve terminators, which are immersion resistant and available with or without a preinstalled ground lead.
- SO Seies SolderSleeve terminators, which also are immersion resistant and feature the Raychem BiAlloy temperature indication system.

All SolderSleeve products are reliable, versatile, and easy to install, resulting in lower installed costs.

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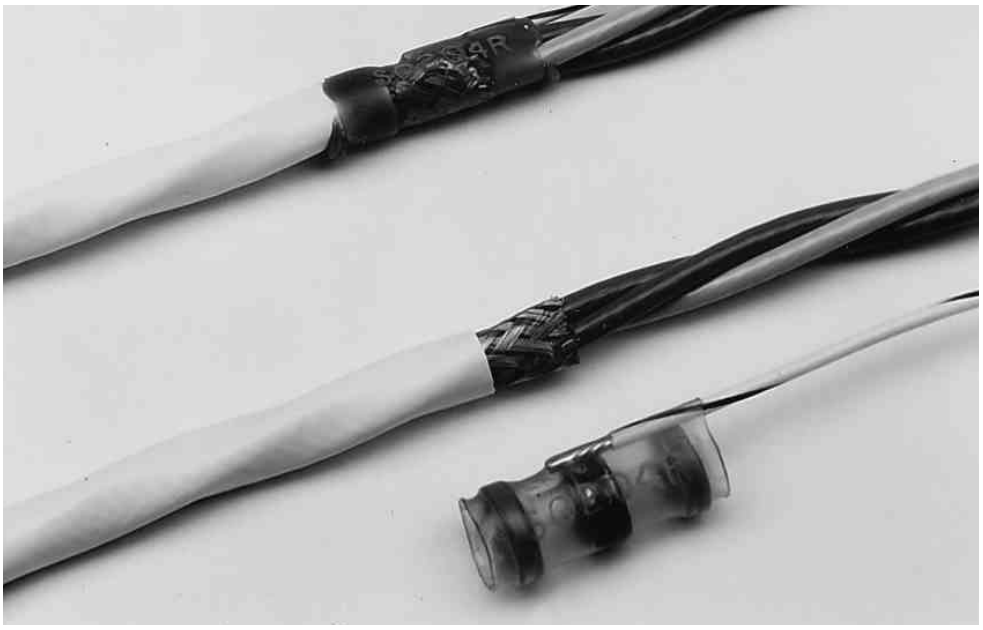
SolderSleeve Shield Terminators

Product Facts

- **Transparent insulation sleeve provides encapsulation, inspectability, strain relief, and insulation**
- **Prefluxed solder preform provides a controlled soldering process**
- **One-piece design offers easy installation and lower installed cost**
- **Optional preinstalled ground leads provide convenience and ease of installation**

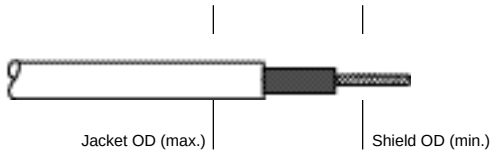


Applications

Used for shield-to-ground termination.

Product Selection Process

1. Select product series from the Product Options table below.
2. Determine cable dimensions.
3. Optional: Select preinstalled wire lead type (see Table G on page 8-45 for type descriptions).
4. Select part number (use the selection table indicated for your product series in the Product Options table below).
5. Refer to Table H on page 8-47 for cross-reference information.



Product Options (Refer to Table G on Page 8-45 for Additional Information)

Product Series	System Oper. Temperature (Max.)	Used on Cables Rated (Min.)	Environmental Protection	Solder Alloy	Flux Type	Insulation Material	Part No. Selection Table
CWT	125°C [257°F]	85°C [185°F]	Splash resistant	Cd18	RA	Polyolefin	A
SO63*	150°C [302°F]	125°C [257°F]	Immersion resistant	Sn63	RMA	Polyvinylidene fluoride	B
S01/S02**, S03	150°C [302°F]	125°C [257°F]	Immersion resistant	Sn63	RMA	Polyvinylidene fluoride	C, D
SO96***	175°C [347°F]	150°C [302°F]	Immersion resistant	Sn96	RA	Polyvinylidene fluoride	E
SO175****	175˚C [347°F]	150˚C [302°F]	Immersion resistant	Sn96	RA	Polyvinylidene fluoride	F

*Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with BiAlloy temperature indicator.
**Qualified to SAE-AS83519 (formerly MIL-S-83519), supplied with thermochromic temperature indicator.
***Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with thermochromic temperature indicator.
****Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519), supplied with BiAlloy temperature indicator.
Note: Cadmium-free option (B-152 series) is available for operating temperature of 125˚C [257˚F]. Consult Tyco Electronics for details.

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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SolderSleeve Shield Terminators (Continued)

Table A. CWT Series (125°C [257°F] rated)

Cable OD		Part Nos.	
Jacket OD Max.	Shield OD Min.	No Preinstalled Lead	With Preinstalled Lead (22AWG/0.38 mm² green)
1.7 [.065]	0.9 [.035]	CWT-3801	—
1.95 [.075]	1.1 [.043]	CWT-3802	—
2.7 [.105]	1.5 [.059]	CWT-3	CWT-3-W122-5
4.5 [.180]	2.0 [.079]	CWT-5	CWT-5-W122-5
6.0 [.235]	3.3 [.130]	CWT-6	CWT-6-W122-5
7.0 [.275]	3.3 [.130]	CWT-7	CWT-7-W122-5
8.7 [.340]	4.5 [.177]	CWT-9	CWT-9-W122-5
10.7 [.420]	4.5 [.177]	CWT-11	CWT-11-W122-5
13.0 [.510]	7.0 [.276]	CWT-13	CWT-13-W122-5

*See Table G on page 8-45 for lead description.
Note: The CWTseries is suitable for applications using low-temperature wires (typically rated at 85°C [185°F] to 125°C [257°F]) with bare copper or tin plating.

Table B. SO63 Series

BiAlloy Temperature Indication System

This system greatly enhances the reliability and repeatability of SO63 series terminators while reducing installed cost. The heat-shrinkable thermoplastic sleeve contains a precisely engineered, fluxed solder band that is visible through the sleeve. The band provides exactly the amount of solder and flux required to terminate the ground lead to the cable shield. Encircling the band is a small temperature indicator ring. This ring melts only when the surfaces to be joined have reached the correct soldering temperature, thus ensuring a properly soldered connection. Process control is built into each sleeve.

Cable OD			Part Nos.					
			Preinstalled Lead Option*				Braid Strap	
Jacket OD Max.	Shield OD Min.	No Preinstalled Lead	20 AWG	22 AWG	24 AWG	26 AWG	Nickel Plated	Tin Plated
1.95 [0.075]	0.90 [.035]	SO63-1-00	SO63-1-55-20-90	SO63-1-55-22-90	SO63-1-55-24-90	SO63-1-55-26-90	SO63-1-01	SO63-1-9030
2.7 [0.105]	1.40 [.055]	SO63-2-00	SO63-2-55-20-90	SO63-2-55-22-90	SO63-2-55-24-90	SO63-2-55-26-90	SO63-2-01	SO63-2-9030
4.3 [0.170]	2.15 [.085]	SO63-3-00	SO63-3-55-20-90	SO63-3-55-22-90	SO63-3-55-24-90	SO63-3-55-26-90	SO63-3-01	SO63-3-9030
6.0 [0.235]	3.30 [.130]	SO63-4-00	SO63-4-55-20-90	SO63-4-55-22-90	SO63-4-55-24-90	SO63-4-55-26-90	SO63-4-01	SO63-4-9030
7.0 [0.275]	4.30 [.170]	SO63-5-00	SO63-5-55-20-90	SO63-5-55-22-90	SO63-5-55-24-90	SO63-5-55-26-90	SO63-5-01	SO63-5-9030

*See Table G on page 8-45 for lead description. Color of wire lead is denoted by the last two digits of the part number as follows:
90 = White with a black stripe 9 = White 0 = Black 6 = Blue (24 AWG only) 5 = Green (20, 22, 24 AWG)
The SO63 series is immersion resistant, features the Raychem BiAlloy temperature indication system, and meets the performance requirements of SAE-AS83519 (formerly MIL-S-83519) .

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Table C. S01/S02 M83519 Series

Thermochromic Temperature Indicator

The M83519 (S01 and S02) series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both manufacturing and Quality Control an aid in the inspection of the completed termination.

Cable OD		Part No. (MIL Part Number and Raychem Part No.) by Lead Option					
Jacket OD Max	Shield OD Min	No Preinstalled Lead		Preinstalled Lead Option*			
				20 AWG		22 AWG	
		MIL	Raychem	MIL	Raychem	MIL	Raychem
1.95 [0.075]	0.9 [.035]	M83519/1-1	S01-01-R	M83519/2-1	S02-01-R	M83519/2-6	S02-06-R
2.7[0.105]	1.40 [.055]	M83519/1-2	S01-02-R	M83519/2-2	S02-02-R	M83519/2-7	S02-07-R
4.3 [0.170]	2.15 [.085]	M83519/1-3	S01-03-R	M83519/2-3	S02-03-R	M83519/2-8	S02-08-R
6.0 [0.235]	3.30 [.130]	M83519/1-4	S01-04-R	M83519/2-4	S02-04-R	M83519/2-9	S02-09-R
7.0 [0.275]	4.30 [.170]	M83519/1-5	S01-05-R	M83519/2-5	S02-05-R	M83519/2-10	S02-10-R
Jacket OD Max.	Shield OD Min.			Preinstalled Lead Option*			
				24 AWG		26 AWG	
1.95 [0.075]	0.9 [.035]			M83519/2-11	S02-11-R	M83519/2-16	S02-16-R
2.7 [0.105]	1.40 [.055]			M83519/2-12	S02-12-R	M83519/2-17	S02-17-R
4.3[0.170]	2.15 [.085]			M83519/2-13	S02-13-R	M83519/2-18	S02-18-R
6.0 [0.235]	3.30 [.130]			M83519/2-14	S02-14-R	M83519/2-19	S02-19-R
7.0 [0.275]	4.30 [.170]			M83519/2-15	S02-15-R	M83519/2-20	S02-20-R

*See Table G for lead description.

M83519 is the qualified product listed in SAE-AS83519 (formerly MIL-S-83519) . The series features a thermochromic temperature indicator to assist in termination and inspection. The Raychem part number is permanently marked on the sleeve.

Table D. S03 Series

Thermochromic Temperature Indicator

The S03 series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both Manufacturing and Quality Control an aid in the inspection of the completed termination.

Cable OD		Part No.	
Jacket OD Max.	Shield OD Min.	Preinstalled Lead Option*	
		Tin plated Braid Strap	Nickel plated Braid Strap
1.95 [0.075]	0.9 [.035]	S03-01-R	S03-06-R
2.7 [0.105]	1.40 [.055]	S03-02-R	S03-07-R
4.3 [0.170]	2.15 [.085]	S03-03-R	S03-08-R
6.0 [0.235]	3.30 [.130]	S03-04-R	S03-09-R
7.0 [0.275]	4.30 [.170]	S03-05-R	S03-10-R

*See Table G for lead description.

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SolderSleeve Shield Terminators (Continued)

Table E. SO96 Series (175°C [347°F] rated)

Thermochromic Temperature Indicator

The SO96 series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both manufacturing and Quality Control an aid in the inspection of the completed termination.

Cable OD		Part No.		
Jacket OD Max.	Shield OD Min.	No Preinstalled Lead	Preinstalled Lead Option*	
			22 AWG	Braid Strap
1.95 [0.075]	0.9 [.035]	SO96-1-00	SO96-1-55-22-90	SO96-1-01
2.7 [0.105]	1.40 [.055]	SO96-2-00	SO96-2-55-22-90	SO96-2-01
4.3 [0.170]	2.15 [.085]	SO96-3-00	SO96-3-55-22-90	SO96-3-01
6.0 [0.235]	3.30 [.130]	SO96-4-00	SO96-4-55-22-90	SO96-4-01
7.0 [0.275]	4.30 [.170]	SO96-5-00	SO96-5-55-22-90	SO96-5-01

*See Table G for lead description.
The SO96 series is designed for high-temperature applications with operating temperature requirements up to 200°C [392°F]. This series features a thermochromic temperature indicator and meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) . The solder is Sn96 with RAflux compatible with nickel-plated shields.

Table F. SO175 Series (175°C [347°F] rated)

BiAlloy Temperature Indication System

This system greatly enhances the reliability and repeatability of SO175 series terminators while reducing installed cost. The temperature indicator ring, encircling the solder preform, melts to indicate the very minimum amount of heat.

Cable OD		Part No.		
Jacket OD Max.	Shield OD Min.	No Preinstalled Lead	Preinstalled Lead Option*	
			22 AWG	Braid Strap
1.95 [0.075]	0.90 [0.035]	SO175-1-00	SO175-1-1-55-22-90	SO175-1-01
2.7 [0.105]	1.40 [0.055]	SO175-2-00	SO175-2-1-55-22-90	SO175-2-01
4.3 [0.170]	2.15 [0.085]	SO175-3-00	SO175-3-1-55-22-90	SO175-3-01
6.0 [0.235]	3.30 [0.130]	SO175-4-00	SO175-4-1-55-22-90	SO175-4-01
7.0 [0.275]	4.30 [0.170]	SO175-5-00	SO175-5-1-55-22-90	SO175-5-01

*See Table G for lead description.

Table G. Preinstalled Lead Description

Series	Lead Type	Remarks	Plating	Stranding	Min. Length
M83519, SO63	55A0111	MIL-W-22759/32	Tin	Stranded	150 [6.00]
SO96, SO175	55A0813	MIL-W-22759/41	Nickel	Stranded	150 [6.00]
SO63, SO96, S03	Braid strap	Uninsulated	Nickel	40 x 38 AWG	150 [6.00]
CWT	XLpolyethylene	ULListed	Tin	Stranded (W1)	150 [6.00]
SO63, S03	Braid Strap	Uninsulated	Tin	Stranded	150 [6.00]

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SolderSleeve Shield Terminators (Continued)

Product Characteristics

Material		
Insulation		
SO, M83519	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride	
CWT	Radiation-crosslinked, heat-shrinkable polyolefin	
Solder and flux		
SO63, M83519, S03	Solder: Sn63 Pb37	Flux: ROL1 per ANSI - J - 004 (RMAFlux)
SO96, SO175 series	Solder: Sn96 Ag4	Flux: ROM1 per ANSI - J - 004 (RAFlux)
CWT	Solder: Sn50 Pb32 Cd18	Flux: ROM1 per ANSI - J - 004 (RAFlux)
Ground lead		
CWTseries	XLpolyethylene	
SO, M83519, SO175	MIL-W-22759/32 or /41	
Typical Performance		
Voltage drop	2.5 mV	
Tensile strength	Exceeds strength of ground lead	
Dielectric strength	1.0 kV immersed	
Temperature rating		
CWT	-55°C to 125°C [-67°F to 257°F]	
SO63/M83519/S03	-55°C to 150°C [-67°F to 302°F]	
SO96/SO175 series	-55°C to 175°C [-67°F to 347°F]	
Insulation resistance	1000 megohms	

Specifications/Approvals

Series	Agency	Raychem
CWT	—	D-5023
SO63*	NAS 1747	RT-1404
M83519**	MIL-S-83519/1&/2	RT-1404
SO96***	NAS 1747	RT-1404
SO175		RT-1404

* Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with BiAlloy temperature indicator.
** Qualified to SAE-AS83519 (formerly MIL-S-83519), supplied with thermochromic temperature indicator.
***Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with thermochromic temperature indicator.

Installation

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following Raychem heating tools is recommended:

- HL1802E
- AA-400 Super Heater
- CV-1981
- MiniRay
- IR-1759

For detailed instructions and recommended reflector attachments, refer to the appropriate Raychem installation procedure:

Series	Procedure
CWT	**RPIP 655-00-D**
SO63	**RCPS 100-70**
M83519 (S01/S02)	**RCPS 100-70**
SO96	**RCPS 100-70**
S03	**RCPS 100-70**
SO175	**RCPS-100-70**

You will find ordering information for these tools in section 10.

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SolderSleeve Shield Terminators (Continued)

Table H. NAS, M83519, and Raychem Cross-Reference

NAS Part No.	Raychem D Series Part No.	NAS Comment
1744-1	D-1744-01	
1744-2	D-1744-02	
1744-3	D-1744-03	
1744-4	D-1744-04	
1744-5	D-1744-05	
1744-6	D-1744-06	
1744-7	D-1744-07	
1744-8	D-1744-08	
1745-1	D-144-25	Inactive, Use SAE-AS83519/1-1 (formerly MIL-S-83519)
1745-2	D-100-00	Inactive, Use SAE-AS83519/1-2 (formerly MIL-S-83519)
1745-3	D-101-00	Inactive, Use SAE-AS83519/1-3 (formerly MIL-S-83519)
1745-4	D-103-00	Inactive, Use SAE-AS83519/1-5 (formerly MIL-S-83519)
1745-5	D-144-26	
1745-6	D-100-31	
1745-7	D-101-31	
1745-8	D-103-31	
1745-9		Obsolete - Use NAS1745-13
1745-10		Obsolete - Use NAS1745-14
1745-11		Obsolete - Use NAS1745-15
1745-12		Obsolete - Use NAS1745-16
1745-13	D-142-83	Inactive, Use SAE-AS83519/1-1 (formerly MIL-S-83519)
1745-14	D-142-50	Inactive, Use SAE-AS83519/1-2(formerly MIL-S-83519)
1745-15	D-142-51	Inactive, Use SAE-AS83519/1-3 (formerly MIL-S-83519)
1745-16	D-142-52	Inactive, Use SAE-AS83519/1-5 (formerly MIL-S-83519)
1745-17	D-107-00	Inactive, Use SAE-AS83519/1-4 (formerly MIL-S-83519)
1745-18	D-104-00	
1745-19	D-105-00	
1745-20	D-107-31	
1745-21	D-104-31	
1745-22	D-105-31	
1745-23	D-142-56	Inactive, Use SAE-AS83519/1-4 (formerly MIL-S-83519)
1745-24	D-142-65	
1745-25	D-142-66	
1746-1	D-144-25	Inactive, Use SAE-AS83519/1-1 (formerly MIL-S-83519)
1746-2	D-144-00	Inactive, Use SAE-AS83519/1-2 (formerly MIL-S-83519)
1746-3	D-144-01	Inactive, Use SAE-AS83519/1-3 (formerly MIL-S-83519)
1746-4	D-144-02	Inactive, Use SAE-AS83519/1-5 (formerly MIL-S-83519)
1746-5	D-144-26	
1746-6	D-144-03	
1746-7	D-144-04	
1746-8	D-144-05	
1746-9	D-144-46	Inactive, Use SAE-AS83519/1-4 (formerly MIL-S-83519)
1746-10	D-144-37	

Military Part No.	Raychem S01/S02 Series* Part No.	Raychem SO63 Series** Part No.
M83519/1-1	S01-01-R	SO63-1-00
M83519/1-2	S01-02-R	SO63-2-00
M83519/1-3	S01-03-R	SO63-3-00
M83519/1-4	S01-04-R	SO63-4-00
M83519/1-5	S01-05-R	SO63-5-00
M83519/2-1	S02-01-R	SO63-1-55-20-90
M83519/2-2	S02-02-R	SO63-2-55-20-90
M83519/2-3	S02-03-R	SO63-3-55-20-90
M83519/2-4	S02-04-R	SO63-4-55-20-90
M83519/2-5	S02-05-R	SO63-5-55-20-90
M83519/2-6	S02-06-R	SO63-1-55-22-90
M83519/2-7	S02-07-R	SO63-2-55-22-90
M83519/2-8	S02-08-R	SO63-3-55-22-90
M83519/2-9	S02-09-R	SO63-4-55-22-90
M83519/2-10	S02-10-R	SO63-5-55-22-90
M83519/2-11	S02-11-R	SO63-1-55-24-90
M83519/2-12	S02-12-R	SO63-2-55-24-90
M83519/2-13	S02-13-R	SO63-3-55-24-90
M83519/2-14	S02-14-R	SO63-4-55-24-90
M83519/2-15	S02-15-R	SO63-5-55-24-90
M83519/2-16	S02-16-R	SO63-1-55-26-90
M83519/2-17	S02-17-R	SO63-2-55-26-90
M83519/2-18	S02-18-R	SO63-3-55-26-90
M83519/2-19	S02-19-R	SO63-4-55-26-90
M83519/2-20	S02-20-R	SO63-5-55-26-90

* QPLlisted to SAE-AS83519 (formerly MIL-S-83519)

** Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519)

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Introduction

Raychem SolderSleeve coaxial cable terminators allow reliable, easy terminations in a variety of coaxial cable applications, including printed circuit boards (PCBs). The insulating and strain-relieving capabilities of SolderSleeve terminators provide the ideal solution to center-conductor breakage problems.

Designed for applications with temperatures up to 150°C [302°F], the products in this section include:

- SolderSleeve coaxial cable terminators, which allow reliable, economical attachment of coaxial cable to connector terminals, printed wiring assemblies, or solderless wrap terminals.
- One-piece SolderSleeve PCB coaxial cable terminators, which permit quick, easy, and cost-effective terminations of coaxial cable to printed circuit boards.
- RF one-step BNC/TNC connectors, which are single-piece assemblies for terminating the center conductor and the braid of a broad range of coaxial cables. They are fully intermateable with MIL-C-39012C connectors and are available in 50-ohm and 75-ohm versions (refer to pages 8-53 to 8-58 for product information).

With precisely measured solder and flux, SolderSleeve products provide exact process control of terminations. The SolderSleeve method means strong connections with the lowest possible voltage drop. Small, lightweight SolderSleeve terminators are also the ideal solution for high-density packaging problems.

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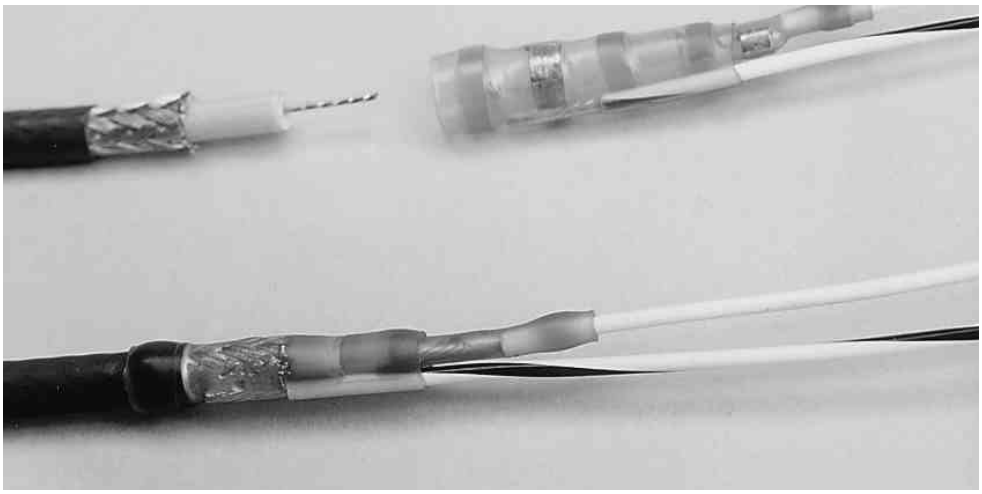
Singapore: 65-4866-151
UK: 44-1793-528171

SolderSleeve Coaxial Cable Terminators

Product Facts

- **Transparent polyvinylidene fluoride or polyolefin insulation sleeve provides encapsulation, inspectability, strain relief (eliminates center conductor breakage), and insulation.**
- **Prefluxed solder preform provides a controlled soldering process**
- **One-piece design provides easy installation and lower installed cost**
- **Preinstalled termination leads provide convenience and ease of installation**



Applications

Used for terminating coaxial cable to component terminals, contacts, printed circuit boards, and solderless wrap terminals.

Product Selection Process

1. Select product series from the product options table below.
2. Select preinstalled lead type from the table below.
3. Determine cable RG number or dimensions.
4. Select part number from Table A (CWT series) or Table B (B-02X/B-04X series) on the next page.

Product Options

Product Series	Max. Operating Temp.	Use on Cables Rated (Min)	Cable Shield Plating	Part No. Selection Table	Design
CWT	125°C [257°F]	85°C [185°F]	Tin, copper	A	2-pc.
B-02X/B-04X	150°C [302°F]	125°C [257°F]	Tin, silver	B	1-pc.
D-181	150°C [302°F]	125°C [257°F]	Tin, silver	C	2-pc.
D-184	125°C [257°F]	85°C [185°F]	Tin	D	2-pc.

Preinstalled Lead Descriptions

Series	Lead Type	Plating	Stranding	AWG	Length	Color
CWT	XLpolyethelene	Tin	Stranded (W1)	22	150 [6.000]	White (cntr), green (grnd)
B-021	M81822/13 (solderless wrap)	Silver	Solid-OFHC	24—30	150 [6.000]	White (cntr), blue (grnd)
B-041	M81822/13 (solderless wrap)	Silver	Solid-OFHC	24—30	150 [6.000]	White (cntr), blue (grnd)
B-043	M81822/13 (solderless wrap)	Silver	Solid-OFHC	24—30	150 [6.000]	White (cntr), blue (grnd)
B-020	55A0111 (MIL-W-22759/32)	Tin	Stranded	20—30	150 [6.000]	White (cntr), blue (grnd)
B-040	55A0111 (MIL-W-22759/32)	Tin	Stranded	20—30	150 [6.000]	White (cntr), blue (grnd)
B-044	55A0111 (MIL-W-22759/32)	Tin	Stranded	20—30	150 [6.000]	White (cntr), blue (grnd)
D-181-12XX	55A0111 (MIL-W-22759/32)	Tin	Stranded	20—30	150 [6.000]	White (cntr), white w/black stripe (grnd)
D-181-22XX	55A0111 (MIL-W-22759/32)	Tin	Stranded	20—30	150 [6.000]	White (cntr), white w/black stripe (grnd)
D-181-32XX	55A0111 (MIL-W-22759/32)	Tin	Stranded	20—30	150 [6.000]	White (cntr), white w/black stripe (grnd)
D-181-18XX	M81822/13	Silver	Solid	26 – 30	150 [6.000]	White (cntr), blue (grnd)
D-181-28XX	M81822/13	Silver	Solid	26 – 30	150 [6.000]	White (cntr), blue (grnd)
D-184	55A0111 (MIL-W-22759/32)	Tin	Stranded	20 – 26	150 [6.000]	White (cntr), white w/black stripe (grnd)

Product Characteristics

Material		
Insulation (B-02X/B-04X, D-181, D-184)	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride (Kynar)	
Insulation (CWTseries)	Radiation-crosslinked, heat-shrinkable polyolefin	
Solder and flux (B-02X/B-04X, D-181)	Solder: Sn63 Pb37	Flux: ROL1 per ANSI-J-004 (RMAFlux)
Solder and flux (CWTseries, D-184)	Solder: Sn50 Pb32 Cd18	Flux: ROM1 per ANSI-J-004 (RAFlux)
Typical Performance		
Voltage drop	2.0 mV	
Tensile strength	Exceeds strength of conductor	
Dielectric strength	2.0 kV	
Temperature rating (CWT, D-184)	-55°C to 125°C [-67°F to 257°F]	
Temperature rating (B-02X/B-04X, D-181)	-55°C to 150°C [-67°F to 302°F]	
Insulation resistance	1000 megohms	

Available in:

Americas	■
Europe	■
Asia Pacific	■

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SolderSleeve Coaxial Cable Terminators (Continued)

Table A. CWT Series Part Numbers

Cable RG Number	Dimensions		Part No. With Preinstalled Lead AWG/0.38 mm² Green/White)
	Dielectric OD	Jacket OD	
174	0.80–2.30 [.032–.091]	1.30–2.80 [.051–.110]	CWT-4174-W122-5/9
58, 122	2.00–2.80 [.079–.110]	2.50–4.40 [.100–.173]	CWT-4058-W122-5/9
59	2.80–3.30 [.110–.130]	3.20–6.00 [.125–.235]	CWT-4059-W122-5/9

Table B. B-02X/B-04X Series Part Numbers

Part 1: Coaxial Product Group Selection

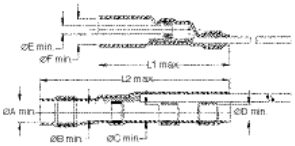
Typical Compatible Part No.		Dimension Range				
RG Cable Number	Raychem Cable Description	Jacket OD (Max.)	Shield OD	Dielectric OD	Conductor OD	One-Piece Coaxial Product Group
RG178, RG404	5030A13XX 5028A13XX	3.40 [.134]	1.30–2.30 [.051–.091]	0.50–1.70 [.019–.067]	0.30–0.80 [.011–.032]	Group 1
RG179, RG316	5024A13XX 7530A13XX 7526A13XX 9530A13XX	4.40 [.173]	1.50–2.80 [.060–.110]	1.20–2.50 [.047–.100]	0.30–1.60 [.011–.063]	Group 2
RG180, RG302, RG303	9527A13XX 9528A13XX	6.30 [.248]	2.40–4.60 [.094–.181]	1.40–4.30 [.055–.169]	0.30–2.80 [.011–.110]	Group 3

Part 2: Product Part Number Selection

One-Piece Coaxial Product Group	Preinstalled Wire Type	Preinstalled Wire Size					
		20 AWG	22 AWG	24 AWG	26 AWG	28 AWG	30 AWG
Group 1	Stranded (M22759)	—	B-044-22-N	B-044-24-N	B-044-26-N	—	—
	Solid (M81822)	—	—	B-043-24-N	B-043-26-N	B-043-28-N	B-043-30-N
Group 2	Stranded (M22759)	B-040-20-N	B-040-22-N	B-040-24-N	B-040-26-N	B-040-28-N	B-040-30-N
	Solid (M81822)	—	—	B-041-24-N	B-041-26-N	B-041-28-N	B-041-30-N
Group 3	Stranded (M22759)	B-020-20-N	B-020-22-N	B-020-24-N	B-020-26-N	—	—
	Solid (M81822)	—	—	—	B-021-26-N	—	—

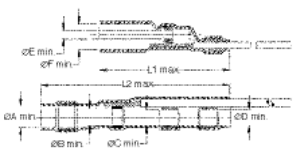
1. The B-02X/B-04X series uses a one-piece design to terminate coaxial cables rated at 125°C minimum.
2. Using Part 1 of this table, select the appropriate coaxial product group (1, 2, or 3) based on your RG cable number, Raychem cable description, or cable dimensions.
3. Using Part 2 of this table, select the product part number based on the coaxial product group you selected in Part 1 and the appropriate preinstalled lead type you selected on the previous page.

Table C. D-181 Series Part Numbers



Product Name	Product Dimensions								Wire AWG
	A min.	B min.	C min.	D min.	E min.	F min.	L1 max.	L2 max.	
D-181-1220-90/9									20
D-181-1222-90/9									22
D-181-1224-90/9	3.7	3.2	2.7	2.4	2.3	0.71	17	21.5	24
D-181-1226-90/9	[0.145]	[0.125]	[0.105]	[0.095]	[0.09]	[0.028]	[0.67]	[0.85]	26
D-181-1826-6/9									26
D-181-1830-6/9									30
D-181-2220-90/9									20
D-181-2222-90/9									22
D-181-2224-90/9	4.5	4	3.45	2.9	3	1.1	17	22.7	24
D-181-2226-90/9	[0.18]	[0.16]	[0.135]	[0.115]	[0.12]	[0.045]	[0.67]	[0.895]	26
D-181-2826-6/9									26
D-181-2830-6/9									30
D-181-3220-90/9									20
D-181-3222-90/9								]	22
D-181-3224-90/9	5.2	4.7	4.45	3.95	4	1.3	17	21.5	24
D-181-3226-90/9	[0.205]	[0.185]	[0.175]	[0.155]	[0.16]	[0.055]	[0.67]	[0.85]	26
D-181-3826-6/9									26
D-181-3830-6/9									30

Table D. D-184 Series Part Numbers



Product Name	Product Dimensions								Wire AWG
	A min.	B min.	C min.	D min.	E min.	F min.	L1 max.	L2 max.	
D-184-1220-90/9									20
D-184-1222-90/9	3.7	3.2	2.7	2.4	2.3	0.71	17	21.5	22
D-184-1224-90/9	[0.145]	[0.125]	[0.105]	[0.095]	[0.09]	[0.028]	[0.67]	[0.85]	24
D-184-1226-90/9									26
D-184-2220-90/9									20
D-184-2222-90/9	4.5	4	3.45	2.9	3	1.1	17	22.7	22
D-184-2224-90/9	[0.18]	[0.16]	[0.135]	[0.115]	[0.12]	[0.045]	[0.67]	[0.895]	24
D-184-2226-90/9									26

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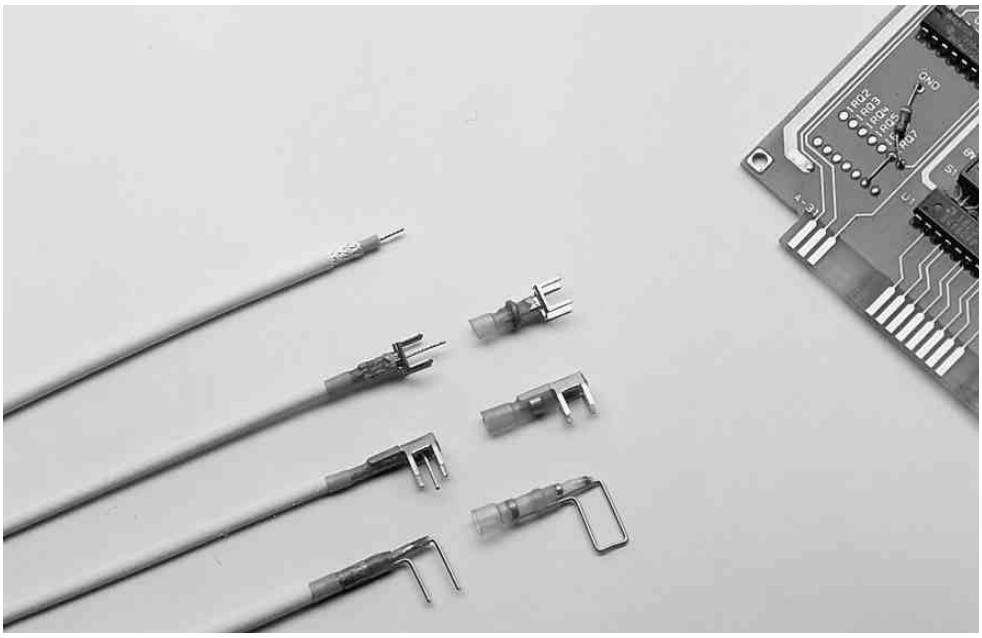
SolderSleeve PCB/Coaxial Cable Terminators

Product Facts

- **Provides a completely shielded, low-resistance, matched-impedance termination with very low VSWR (D-607 series only)**
- **Transparent polyvinylidene fluoride insulation sleeve provides encapsulation, inspectability, strain relief, and insulation**
- **Prefluxed solder preform provides a controlled soldering process**
- **One-piece design offers easy installation and lower installed cost**
- **Preinstalled PCB termination body provides convenience and ease of installation**



Applications

Used for terminating coaxial cable to printed circuit boards.

Installation

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following Raychem heating tools is recommended:

- HL1802E
- AA-400 Super Heater
- IR-1759 MiniRay
- CV-1981

Refer to Raychem installation procedure ES61139 for detailed instructions and recommended reflector attachments.

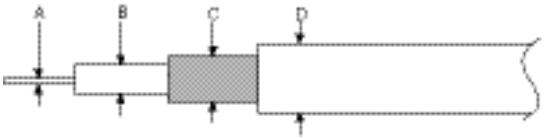
You will find ordering information for these tools in Section 10.

Product Selection Process

1. Select product series from the Product Options table below.
2. Determine cable RG number or outside diameter dimensions.
3. Select the appropriate part number from Table A (D-607 series) or Table B (B-046 series).

- For D-607 (matched impedance) series, determine straight or right-angle entry to PCB and grid pattern, then select the appropriate part number from Table A on the next page.
- For B-046 (PinPak, or pin to ground) series, determine hole spacing and diameter. Refer to Table B for product selection (see illustration below for cable dimensions).

Available in:	
Americas	■
Europe	■
Asia Pacific	■



Product Options

Product Series	Typical Application Performance	Shield Method	Part No. Selection Table
D-607	Matched impedance up to 2.3 GHz	Metal body	A
B-046	Effective transmission up to 100 MHz	Pin to ground	B

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Specifications/Approvals

Series	Raychem
D-607	RT-1404
B-046	RT-1404

Table A. D-607 Series Part Numbers

RG Cable No.	Cable Dimensions (mm/in) Max. Outside Diameter			Part No. Entry to PCB		
	Jacket	Shield	Dielectric	Straight grid 5.08 [.200]	Right-Angle Grid 5.08 [.200]	Straight Grid 2.54 [.100]
174, 178, 179, 316, 404	1.5–3.55 [.060–.140]	1.1–3.15 [.045–.125]	0.60–2.25 [.025–.090]	D-607-09	D-607-10	D-607-40*

Table B. B-046 Series Part Numbers

RG Cable No.	Cable Dimensions				Pin Diameter	Part No.		
	A	B	C	D Max.		Spacing Between Pins 2.54 [.100]	5.08 [.200]	6.35 [.250]
178, 404	0.30–0.80 [.011–.032]	0.5–1.7 [.019–.067]	1.3–2.3 [.050–.091]	3.4 [.134]	0.6 [.023] 0.8 [.031]	B-046-14-N	B-046-10-N	B-046-12-N
							B-046-11-N	B-046-13-N
179, 316	0.3–1.6 [.011–.063]	1.2–2.5 [.047–.100]	.1.5–2.8 [.060–.110]	4.4 [.173]	0.6 [.023] 0.8 [.031]	B-046-15-N	B-046-66-N	B-046-16-N
							B-046-68-N	B-046-18-N

Product Characteristics

Material		
Insulation	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride	
Solder and flux	Solder: Sn63 Pb37	Flux: ROL1 per ANSI - J - 004 (RMAflux)
Termination body/pin	Copper alloy, solder-plated	
Typical Performance		
Voltage drop	2.0 mV	
Tensile strength	Exceeds strength of conductor	
Dielectric strength	2.0 kV	
Temperature rating	-55°C to 150°C [-67°F to 302°F]	
Insulation resistance	1000 megohms	
Electrical Performance (typical) D-607 Series Only		
Frequency	**VSWR (D-607-09, -40)**	**VSWR (D-607-10)**
350 MHz	1.04 max.	1.04 max.
700 MHz	1.05 max.	1.09 max.
2.3 GHz	1.09 max.	1.12 max.

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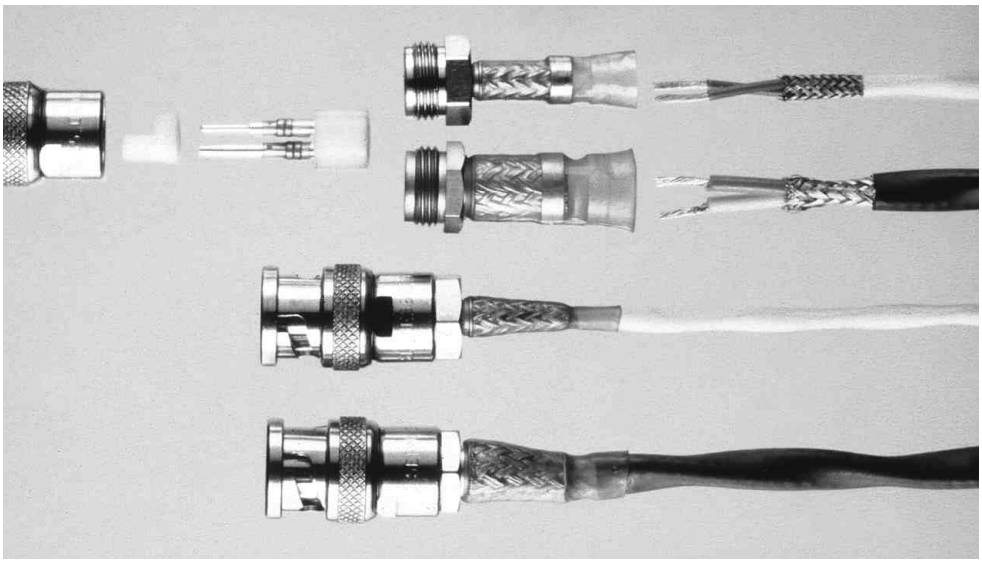
RF One-Step BNC/TNC Connectors

Product Facts

- Easy, quick installation
- Outstanding cable-retention force
- Solder-solder connection type (center conductor and braid)
- One-step termination for easy, quick installation and lower installed cost
- Exceptional cable retention force to withstand high vibration and frequent mates and unmates
- Fully soldered center conductor and braid
- Excellent built-in strain relief against vibration and excessive handling
- Long-term reliability
- Controlled soldering termination
- Use with standard RG/U cables and Raychem Cheminax cables
- Three product sizes to accommodate a wide range of cables
- Meets performance requirements of MIL-C-39012 up to 2.8 GHz



Applications

One-Step BNC/TNC connectors are single-piece assemblies for terminating the center conductor and the braid of a broad range of coaxial cables.

The connectors are fully intermateable with MIL-C-39012 connectors and are available in 50-ohm and 75-ohm versions.

Specifications	Installation	
Raychem RB-115	For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following Raychem heating tools is recommended: • Steinel Model HL1802E • CV-1981	Refer to Raychem installation procedure RPIP683-00 for detailed instructions.

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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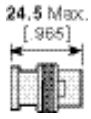
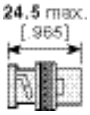
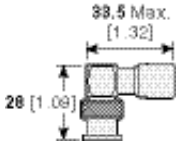
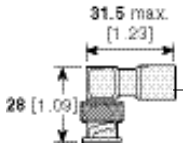
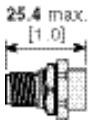
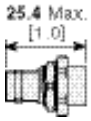
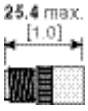
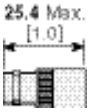
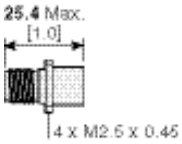
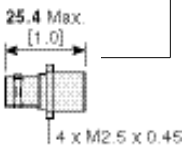
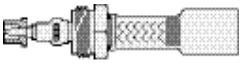
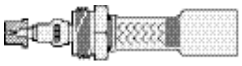
RF One-Step BNC/TNC Connectors (Continued)

Product Options and Part Numbering System

RXX - XX - X - XX	Connector Style Dash No. -XX	Style	Connector Type TNC	Connector Type BNC
	-00	Straight plug		
	-01	Right-angle plug		
	-02	Straight bulkhead jack		
	-03	Straight jack		
	-04	Straight panel jack		



Male



Female

Connector size

- L = Large
- M = Medium
- S = Small

- 50 = 50 ohms
- 75 = 75 ohms

- D = Nickel-plated brass body, gold-plated brass pin

- B = BNC
- T= TNC

Example: RBD-50-L-00 is a BNC connector, 50 ohms, large size, with straight plug body.

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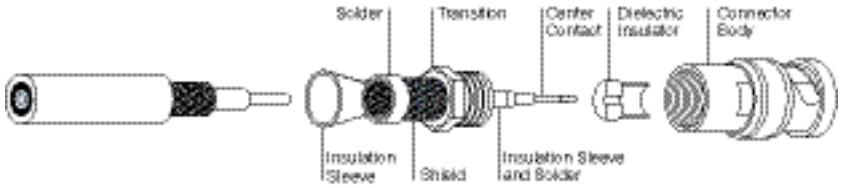
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

RF One-Step BNC/TNC Connectors (Continued)

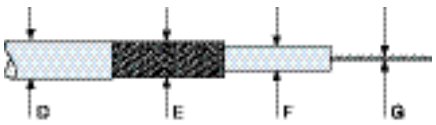
Product Characteristics



Material		
Center contact		Gold-plated beryllium copper (female)
		Gold-plated brass (male)
Dielectric insulator		PTFE
Transition		Silver-plated brass
Connector body		Nickel-plated brass
Solder and flux		Sn63Pb37, RMAflux
Braided shield		Tin-plated copper wire per ASTM B3
Insulation sleeve		Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride, transparent blue
Strain relief/sealing sleeve		Radiation-crosslinked, heat-shrinkable modified polyolefin with adhesive, black
Typical Performance		
Dielectric withstand voltage		1500 V
Insulation resistance		5000 megohms
Temperature rating		-55˚C to 150˚C [-67˚F to 302˚F]
Contact resistance-straight		Inner = 1.5 milliohms, outer = 1.0 milliohm
Contact resistance — right-angle		Inner = 2.5 milliohms, outer = 1.5 milliohms
Cable retention force		295N (66 lb) to 822N (196 lb)
Voltage rating		500 V RMS
Connector durability		500 mating cycles minimum
Electrical Performance		
Nominal impedance		50 and 75 ohms
Frequency range		Up to 2.8 GHz

Part Selection Process

1. From Product Options and Dimensions on page 7035, select the connector style you need (BNC or TNC, plug or jack, male or female contacts).
2. From the tables that follow, find the appropriate table for the connector style you selected.
3. From the appropriate table, select the connector part number based on the RG cable type or Raychem cable part number. For cable types not shown use the cable dimensions.
   Note: The cable dimensions in each table are keyed to the diagram below.



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RF One-Step BNC/TNC Connectors (Continued)

Impedance (ohms)	Cable Type		Cable Dimensions				Part No.
	RG Cables	Raychem Cables	D (Min.–Max.)	E (Min.–Max.)	F (Max.)	G (Max.)	
BNC Straight Plugs, Male Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-00
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-00
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-00
75	RG-179, RG-187	7530A1317	1.50–5.00 [.060–.217]	5 0.90-3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-00
75	—	7524A1311, 7528A1317	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.70 [.126]	1.25 [.050]	RBD-75-M-00
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.00–.12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.3 [.287]	2.45 [.100]	RBD-75-L-00
BNC Right-Angle Plugs, Male Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-01
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-01
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00–12.50 [.197–.500]	4.1–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-01
75	RG-179, RG-187	7530A1317	1.50–5.50 [.060–.217]	0.9-3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-01
75	—	524A1311, 7528A1317	3.50–7.00 [.138–.276]	2.1–5.00 [.083–.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-01
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.00–12.50 [.197–.500]	4.1–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-01
BNC Straight Bulkhead Jacks, Female Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-02
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-02
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-02
75	RG-179, RG-187	7530A1317	1.50–5.00 [.060–.217]	5 0.90-3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-02
75	—	75 7524A1311, 7528A1317	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-02
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.00-12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-02
BNC Straight Jacks, Female Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-03
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-03
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-03
75	RG-179, RG-187	7530A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-03
75	—	75 7524A1311, 7528A1317	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-03
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-03
BNC Straight Panel Jacks, Female Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-50-S-04
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RBD-50-M-04
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-50-L-04
75	RG-179, RG-187	7530A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RBD-75-S-04
75	—	7524A1311, 7528A1317	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.70 [.146]	1.25 [.050]	RBD-75-M-04
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.00–12.50 [.197–.500]	4.10–9.5o [.161–.375]	7.30 [.287]	2.45 [.100]	RBD-75-L-04

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UK: 44-1793-528171

RF One-Step BNC/TNC Connectors (Continued)

TNC Coaxial Connectors

Impedance (ohms)	Cable Type: RG Cables	Raychem Cables	Cable Dimensions: D (Min.–Max.)	E (Min.–Max.)	F (Max.)	G (Max.)	Part No.
TNC Straight Plugs, Male Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-00
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RTD-50-M-00
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RTD-50-L-00
75	RG-179, RG-187	7530A1317	1.50–5.50 [.060–.217]	0.90-3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-00
75	—	7524A1311, 7528A1317	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.70 [.146]	1.25 [.050]	RTD-75-M-00
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RTD-75-L-00
TNC Straight Jacks, Female Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.5–5.5 [.060–.217]	0.9–3.0 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-03
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.5–7.0 [.138–.276]	2.1–5.0 [.083–.197]	3.0 [.118]	1.25 [.050]	RTD-50-M-03
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.0–12.5 [.197–.500]	4.1–9.5 [.161–.375]	7.3 [.287]	2.45 [.100]	RTD-50-L-03
75	RG-179, RG-187	7530A1317	1.5–5.5 [.060–.217]	0.9–3.0 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-03
75	—	7524A1311, 7528A1317	3.5–7.0 [.138–.276]	2.1–5.0 [.083–.197]	3.7 [.146]	1.25 [.050]	RTD-75-M-03
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.0–12.5 [.197–.500]	4.1–9.5 [.161–.375]	7.3 [.287]	2.45 [.100]	RTD-75-L-03
TNC Straight Panel Jacks, Female Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.5–5.5 [.060–.217]	0.9–3.0 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-04
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.5–7.0 [.138–.276]	2.1–5.0 [.083–.197]	3.0 [.118]	1.25 [.050]	RTD-50-M-04
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.0–12.5 [.197–.500]	4.1–9.5 [.161–.375]	7.3 [.287]	2.45 [.100]	RTD-50-L-04
75	RG-179, RG-187	7530A1317	1.5–5.5 [.060–.217]	0.9–3.0 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-04
75	—	7524A1311, 7528A1317	3.5–7.0 [.138–.276]	2.1–5.0 [.083–.197]	3.7 [.146]	1.25 [.050]	RTD-75-M-04
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.0–12.5 [.197–.500]	4.1–9.5 [.161–.375]	7.3 [.287]	2.45 [.100]	RTD-75-L-04

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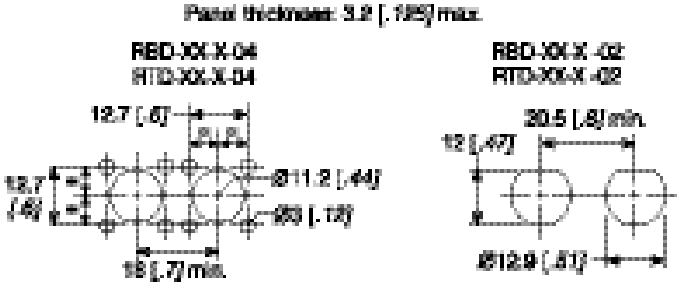
TNC Coaxial Connectors



Cable Type			Cable Dimensions				Part No.
Impedance (ohms)	RG Cables	Raychem Cables	D (Min.–Max.)	E (Min.–Max.)	F (Max.)	G (Max.)	
TNC Straight Bulkhead Jacks, Female Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-02
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.5–7.0 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RTD-50-M-02
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.0–12.5 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RTD-50-L-02
75	RG-179, RG-187	7530A1317	1.5–5.5 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-02
75	—	7524A1311, 7528A1317	3.5–7.0 [.138–.276]	2.10–5.00 [.083–.197]	3.70 [.146]	1.25 [.050]	RTD-75-M-02
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.0–12.5 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RTD-75-L-02
TNC Right-Angle Plugs, Male Contacts							
50	RG-174, RG-178, RG-188, RG-196,RG–316	5026A1311, 5028A1317, 5030A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-50-S-01
50	RG-58, RG-141, RG-142, RG-303, RG-400	5019D3318, 5021D1331, 5020A1311	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.00 [.118]	1.25 [.050]	RTD-50-M-01
50	RG-165, RG-215, RG-213, RG-225, RG-214	5012F3332, 5012A3311	5.00–12.50 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RTD-50-L-01
75	RG-179, RG-187	7530A1317	1.50–5.50 [.060–.217]	0.90–3.00 [.035–.118]	1.55 [.060]	0.65 [.025]	RTD-75-S-01
75	—	7524A1311, 7528A1317	3.50–7.00 [.138–.276]	2.10–5.00 [.083–.197]	3.70 [.146]	1.25 [.050]	RTD-75-M-01
75	RG-6, RG-11, RG-12, RG-59 RG-144, RG-216	—	5.0–12.5 [.197–.500]	4.10–9.50 [.161–.375]	7.30 [.287]	2.45 [.100]	RTD-75-L-01

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Introduction

The question is, how to meet growing performance requirements for shielded cable system fabrication and maintenance while minimizing electromagnetic interference (EMI). The answer is Raychem SolderShield cable splices. SolderShield devices are one-piece products consisting of a flux-coated, solder-impregnated copper shield braid encased in a heat-shrinkable insulation sleeve.

SolderShield cable-to-cable splice kits, designed for single-conductor or multi-conductor shielded cables, are ideal for fabrication/repair/rework while restoring the electrical integrity of the cable.

SolderShield devices perform even in demanding environments. They are reliable, versatile, and easy to install.

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SolderShield Shielded and Coaxial Cable Splices

Product Facts

- **Flux-coated, solder-impregnated copper shield braid encased in a transparent heat-shrinkable insulation sleeve provides a controlled soldering process, encapsulation, inspectability, strain relief, and insulation**
- **One-piece design provides easy installation and lower installed cost**
- **Circumferential (360°) shielding results in EMI protection and shield continuity equal to or better than the original cable**
- **Conductor splices are made using Raychem MiniSeal crimp products, which are recognized by MIL-S-81824 and MIL-W-5088**

Applications

Used for splicing a wide range of cables, including coaxial and multiconductor cables.

SolderShield devices can be used to repair or splice shielded or coaxial cables. These products consist of a MiniSeal crimp splice plus a flux-coated, solder-impregnated copper shield encased in a heat-shrinkable sealing sleeve, for splicing the shields. SolderShield kits terminate single- or multiple-conductor cables, eliminate EMI problems at the splice, and provide strain relief for the cable.

Product Selection Process

For splicing multiconductor cables refer to Table A.

For splicing coaxial cables refer to Table B.

Installation

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following Raychem heating tools is recommended:

- HL1802E
- IR-1759 MiniRay
- CV-1981

Refer to Raychem installation procedure RCPS 150-02 (D-150 series) and RPIP 699-00 (B-202 series) for detailed instructions and recommended reflector attachment.

You will find ordering information for most of these tools in Section 10.

Specifications/Approvals

Series	Military	Raychem
D-150	US: M81824 (conductor splice only) UK: RAF AP1130-2008-1	RT-1404

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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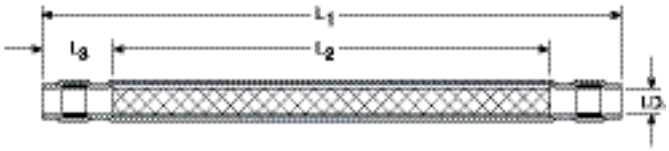
UK: 44-1793-528171

SolderShield Shielded and Coaxial Cable Splices (Continued)

Table A. Multiconductor Cable Splices

Each SolderShield part consists of a SolderShield splice and one or more conductor splices. Refer to information below for description and numbers of conductor splices.

SolderShield Splice



Crimp Splice

SolderShield Product Dimensions

Part No.		Dimensions				Conductor Splice Size Range CMA [mm²] Min.–Max.	Color Code	Quantity Per Kit
Tin Plated	Nickel Plated	L1 Max.	L2 Nom.	L3 Min.	ID Min.			
D-150-0168	D-150-0228	80.50 [3.17]	50.00 [1.97]	10.20 [.400]	3.00 [.118]	304–1510 [0.15–0.75]	Red	1
D-150-0169	D-150-0229	80.50 [3.17]	50.00 [1.97]	10.20 [.400]	4.00 [.157]	779–2680 [0.39–1.34]	Blue	1
D-150-0170	D-150-0230	80.50 [3.17]	50.00 [1.97]	10.20 [.400]	5.00 [.197]	1900–6755 [0.95–3.37]	Yellow	1
D-150-0174	D-150-0231	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	4.00 [.157]	304–1510 [0.15–0.75]	Red	2
D-150-0175	D-150-0232	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	5.00 [.197]	779–2680 [0.39–1.34]	Blue	2
D-150-0176	D-150-0233	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	6.00 [.236]	1900–6755 [0.95–3.37]	Yellow	2
D-150-0177	D-150-0234	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	9.00 [.356]	304–1510 [0.15–0.75]	Yellow	2
D-150-0178	D-150-0235	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	4.00 [.157]	304–1510 [0.15–0.75]	Red	4
D-150-0179	D-150-0236	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	5.00 [.197]	779–2680 [0.39–1.34]	Red	4
D-150-0180	D-150-0237	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	6.00 [.236]	1900–6755 [0.95–3.37]	Blue	4
D-150-0181	D-150-0238	10.60 [4.17]	75.00 [2.95]	10.20 [.400]	9.00 [.353]	1900–6755 [0.95–3.37]	Yellow	4

Note: The SolderShield splice kits listed in this table are for 1:1 cable splices. The kits can be used on cables with tin-, silver-, and nickel-plated copper conductors. All the kits have environmental-sealing capability. The cable temperature rating must be 125°C minimum.

To find the splice kit part number for your application:

1. Determine the number of conductors in the cable to be spliced.
2. Determine the gauge of each conductor or the maximum jacket OD.
3. Determine the conductor plating.
4. Select the appropriate part number from the table above.

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USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

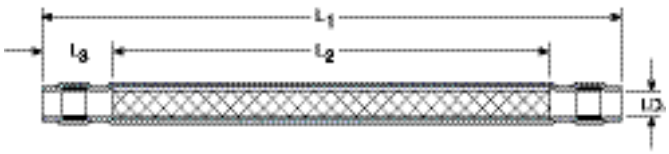
South America: 55-11-3611-1514
Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

SolderShield Shielded and Coaxial Cable Splices (Continued)

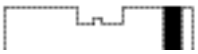
Table B. Coaxial Cable Splices

Each SolderShield part consists of a SolderShield splice and one or more conductor splices. Refer to information below for description and numbers of conductor splices.

SolderShield Splice



Crimp Splice



RG Cable No.	Raychem Cable Description	Conductor Splice Qty/Kit	Part No.	SolderShield Dimensions		
				L1 Max	L2 Min	ID Min
8A, 9B, 11	5012A3311	1	D-150-0214	80.50 [3.170]	50.00 [1.970]	12.00 [.472]
13, 26, 31	5012E1339					
115, 144, 149	7518A1311					
165, 213, 214	—					
216, 235, 391	—					
393, 397	—					
178, 196,	5028A1317	1	D-150-0094	80.50 [3.170]	50.00 [1.970]	3.00 [.118]
179, 187, 188,	7528A1317					
316, 404, M17/138-00001,	5030A1317					
M17/136-00001	7530A1317					
180, 195	5024A1311	1	D-150-0095	80.50 [3.170]	50.00 [1.970]	4.00 [.157]
M17/137-00001	7526A1311					
M17/139-00001	9527A1318					
—	9530E1014					
124, 140, 141	5020A1311	1	D-150-0096	80.50 [3.170]	50.00 [1.970]	5.00 [.236]
159, 302, 303	5022A1311					
—	7522A1311					
—	7523D1331					
—	7524A1311					
29, 30, 55B	5019D3318	1	B-202-81*	56.00 [2.200]	23.00 [.900]	7.00 [.275]
58, 223	5021D1331					
—	5022A1311					
59, 62, 71	7523D1331	1	B-202-82*	56.00 [2.200]	23.00 [.900]	7.00 [.275]
—	7524A1311					
—	9524A1311					

*These kits use solder to terminate the center conductors. All other kits use crimp.
All kits are for one-to-one coaxial cable splices, and all kits have environmental sealing capability. Each kit contains products to splice conductors, build up dielectric, splice the shield, and provide insulation.

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SolderShield Shielded and Coaxial Cable Splices (Continued)

Product Characteristics

Materials		
Insulation sleeve	Radiation-crosslinked polyvinylidene fluoride	
Meltable inserts	Fluorocarbon-based thermoplastic	
MiniSeal crimp splice	Base metal: Copper alloy C10200 per ASTM B75 Plating: Tin per MIL-T-10727 or nickel per QQ-N-290	
SolderShield shield splice	Base metal: Tin-plated copper wire braid per ASTM B3 Solder and flux coating: Type Sn63 Pb37. Flux: ROM1 per ANSI - J - STD - 004 (RAflux)	
Parameter	**Test Method**	**Requirement**
Electromechanical Performance		
Dielectric strength (shield connection)	—	No breakdown or arcing at 1000 Vac (RMS)
Dielectric strength (conductor connection)	—	2.5 kV
Voltage drop	MIL-S-81824	Less than 2.0-millivolt increase
Insulation resistance (shield connection)	—	1000 megohms minimum at 500 Vdc
Insulation resistance (conductor connection)	—	5000 megohms
Tensile strength for MiniSeal	MIL-S-81824	Exceed yield strength (pounds) of wire.
Tensile strength for SolderShield	MIL-S-81824	75% of strength (pounds) of unspliced cable
Temperature rating	—	-55°C to 150°C [-67°F to 302°F]
Environmental Resistance		
Salt spray	MIL-STD-202 M101	Meet voltage drop requirement.
Heat aging	750 hours at 150°C [302°F]	Meet all electromechanical requirements.
Temperature cycling	MIL-STD-202 M107C	Meet all electromechanical requirements.
Altitude immersion	Immersion at 22,860m [75,000 ft]	Meet insulation-resistance requirement.
Corrosion resistance	—	No evidence of corrosion after testing in accordance with MIL-STD-202, Method 101, Test Condition A

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Introduction

Raychem SolderTacts shielded contacts are designed to provide reliable, one-piece solder terminations for use with circular and rectangular connectors. These controlled soldering contacts help speed installation and reduce installed costs while eliminating the variables associated with hard-to-handle crimped terminations.

With Tyco Electronics' controlled soldering technology, the connections typically exceed the strength of the wire. Transparent insulation and inspection windows permit fully inspectable terminations.

SolderTacts products are available to terminate coaxial cable and twisted wire pairs in both military and commercial applications.

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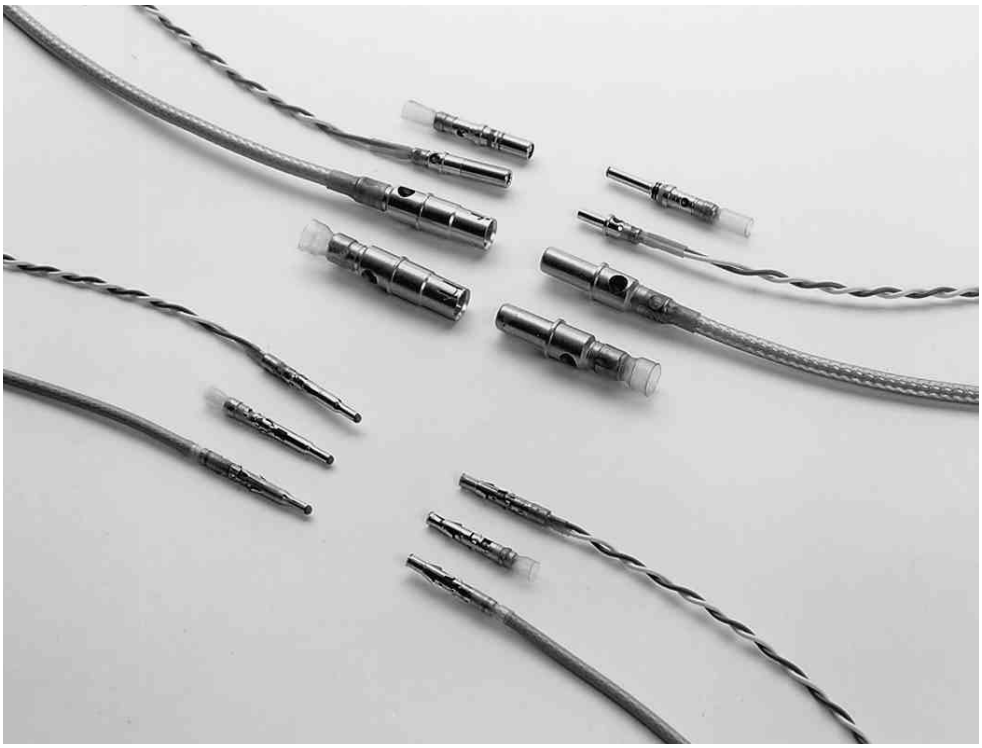
SolderTacts Shielded One-Piece Solder Contacts

Product Facts

- **Reliable one-piece solder contacts: through-connector shielding reduces cross-talk, and improves signal transmission**
- **One-step installation**
- **Solder joints are strong and reliable**
- **Terminations are fully inspectable**
- **Termination for coax cables, shielded wires, twisted pairs, triaxial cables, for a variety of commercial and military connectors**



Applications

One-piece controlled-soldering SolderTacts contacts connectors are designed to terminate coaxial cables, shielded wires, and twisted pairs faster and more reliably than any other method. SolderTacts contacts eliminate the variables associated with hard-to-handle crimping. Their one-step installation accelerates production while reducing handling and installed costs.

Controlled Soldering

SolderTacts contacts provide the optimum amount and type of solder and flux in prefluxed solder preforms to control soldering and reduce operator sensitivity. The geometry of the coaxial cable is carried through the connector to eliminate separate pins, help reduce cross talk, and improve shielding effectiveness and signal transmission.

SolderTacts contacts provide simultaneous electrical connection and strain relief. Heat-shrinkable tubing insulations eliminate stress concentration on the wire within the contact. Because the insulation is transparent and inspection windows are provided, terminations are fully inspectable.

Compatibility

The design versatility of SolderTacts contacts makes them exceptionally well suited to military applications, along with commercial aerospace, instrumentation and computers. SolderTacts products are compatible with most standard connector cavities. SolderTacts contacts are intermateable and intermountable with contacts qualified to the indicated specification.

SolderTacts shielded contacts can be terminated with standard Raychem heating tools. Once terminated, they can be installed into connector cavities with standard insertion and extraction tools. They are replaceable without cutting and restripping or shortening the cable.

Specifications/Approvals

Series	Raychem
D-602	D-6002

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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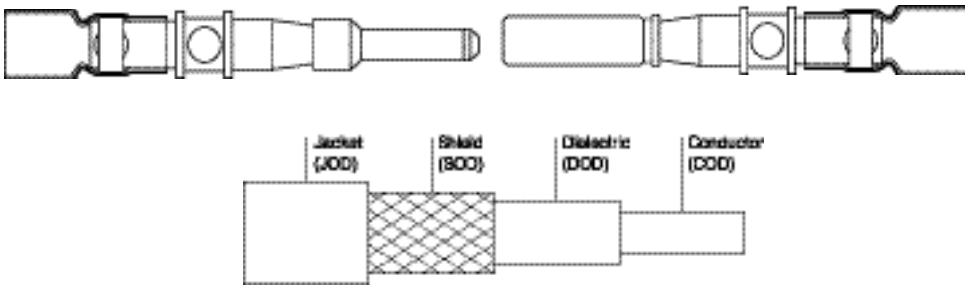
SolderTacts Shielded One-Piece Solder Contacts (Continued)



SolderTacts Product Construction, MIL-C-26482 Series

SolderTacts Series: MIL-C-26482

Contact Military Specification	Cable Diameter				Wire (AWG)	Raychem SolderTacts Part No.	Size	Polarity	Cable Type
	JOD	SOD	DOD	COD					
MIS-20067/5-001†	1.78–4.70 [.070–.185]	1.65–2.79 [.065–.110]	.76–2.03 [.030–.080]	.23–.51 [.009–.020]	24–32	D-602-16	12	S	Coaxial
MIS-20067/6-001†	1.78–4.70 [.070–.185]	1.65–2.79 [.065–.110]	.76–2.03 [.030–.080]	.23–.51 [.009–.020]	24–32	D-602-17	12	P	Coaxial
—	1.52–3.30 [.060–.130]	1.68–2.13 [.066–.089]	.91–1.75 [.036–.069]	.30–.66 [.012–.026]	24–30	D-602-46	16	P	Coaxial
—	1.52–3.30 [.060–.130]	1.68–2.13 [.066–.089]	.91–1.75 [.036–.069]	.30–.66 [.012–.026]	26–32	D-602-47	16	S	Coaxial
—	—	—	.76–1.24 [.030–.049]	.28–.79 [.011–.031]	24–30	D-602-56	16	P	Twinax
—	—	—	.76–1.24 [.030–.049]	.28–.79 [.011–.031]	24–30	D-602-57	16	S	Twinax

†These SolderTacts contacts are on qualified parts list for indicated specification.

Tooling Selection Guide

Part Numbers	Engineering Standard (Termination Instructions)	Convection (Hot Air) Heating AT-1319 Adapter	Repair Wand	IR1004 Infrared Semiautomatic Heater Tool Set	Contact Insertion Tool	Contact Removal Tool
D-602-46/47	ES61137	AT-1319-17	*	*	AD-1525	AD-1526
D-602-56/57	ES61138	—	—	—	(M81969/17-04)	(M81969/19-08)
D-602-16/17	ES61161	—	—	—	—	—

*Could be developed.

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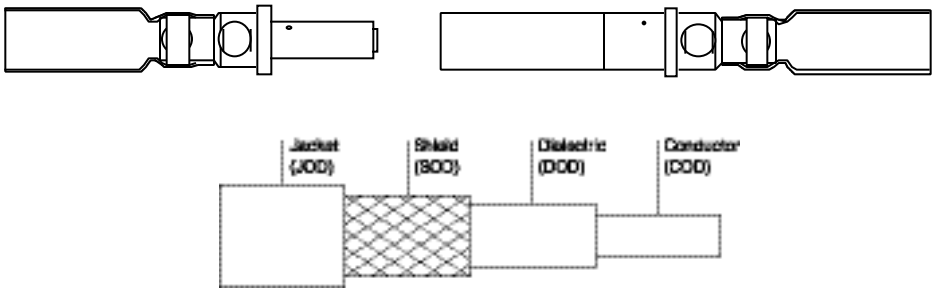
SolderTacts Shielded One-Piece Solder Contacts (Continued)

SolderTacts Series:
MIL-C-28748 Series



SolderTacts product construction, MIL-C-28748 Series

Contact Military Specification	Cable Diameter				Wire (AWG)	Raychem SolderTacts Part No.	Size	Polarity	Cable Type
	JOD	SOD	DOD	COD					
MIS-20067/2-002[a]	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.78 [.036-.070]	.23–.89 [.009-.035]	26–32	D-602-44	16	P	Coaxial
MIS-20067/1-001[a]	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.78 [.036-.070]	.23–.89 [.009-.035]	26–32	D-602-45	16	S	Coaxial
MIS-20067/4-001[a]	—	—	.76–1.24 [.030-.049]	.28–.79 [.011-.031]	24–30	D-602-54	16	P	Twisted pair
MIS-20067/3-001[a]	—	—	.76–1.24 [.030-.049]	.28–.79 [.011-.031]	24–30	D-602-55	16	S	Twisted pair
M39029/79[b]	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.68 [.036-.066]	.30–.66 [.012-.026]	26–32	D-602-72	16	P	Coaxial
M39029/80[b]	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.68 [.036-.066]	.30–.66 [.012-.026]	26–32	D-602-73	16	S	Coaxial
M39029/40[b]	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.68 [.036-.066]	.30–.66 [.012-.026]	26–32	D-602-76	16	P	Coaxial
M39029/41[b]	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.68 [.036-.066]	.30–.66 [.012-.026]	26–32	D-602-77	16	S	Coaxial
—	—	—	.76–1.24 [.030-.049]	.28–.79 [.011-.031]	24–30	D-602-0126	16	P	Twisted pair[c]
—	—	—	.76–1.24 [.030-.049]	.28–.79 [.011-.031]	24–30	D-602-0127	16	S	Twisted pair[c]
—	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.78 [.036-.070]	.23–.46 [.009-.018]	28–32	D-602-0172	16	P	Coaxial
MIS-20067/2-001, 003[a]	1.52–3.35 [.060-.132]	1.68–2.13 [.066-.084]	.91–1.78 [.036-.070]	.23–.46 [.009-.018]	28–32	D-602-0173	16	S	Coaxial
MIS-20067/8-001[a]	—	—	1.40–3.15 [.055-.124]	.64–1.57 [.025-.062]	16–20	D-610-09	16	P	Power
MIS-20067/7-001[a]	—	—	1.40–3.15 [.055-.124]	.64–1.57 [.025-.062]	16–20	D-610-10	16	S	Power

a These SolderTacts contacts are on the qualified parts list for indicated specification.
b These SolderTacts contacts are intermateable and intermountable with contacts qualified to the indicated specification; they replace crimp-style termination.
c These SolderTacts contacts are designed for twisted-pair cable per MIL-STD-1553B.

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Tooling Selection Guide: MIL-C-28748 Series

SolderTacts Series	Part No.	Engineering Standard (Termination Instructions)	Convection (Hot Air) Heating		IR1004 Infrared Semiautomatic Heater Tool Set
			AT-1319 Adapter	Repair Wand	
748	D-602-44/45	ES61133	AT-1319-14	AD-1480	Tool Set #2
	D-602-0172/0173	ES61240	—	—	—
	D-602-54/55	ES61132	—	—	—
	D-602-0126/0127	ES61199	—	—	—
	D-610-09/10	ES61187	AT-1319-15	AD-1571	Tool Set #10 (AT-1044-12)
	D-602-72/73	ES61135	AT-1319-18	AD-1486	Tool Set #5 (AT-1044-63)
	D-602-76/77	ES61164	AT-1319-20	AD-1554	Tool Set #6 (AT-1044-64)

SolderTacts Series	Contact Insertion Tool	Contact Removal Tool	Special Tools		
748	*	AD-1447	AD-1457A (bushing tool)	AD-1464 (flex tip removal tool)	AD-1496 (twisted pair cut-to-length tool)

*Not applicable.

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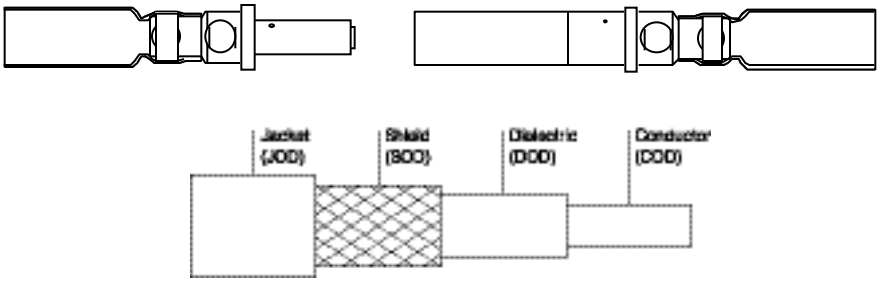
SolderTacts Shielded One-Piece Solder Contacts (Continued)

SolderTacts Series: MIL-C-38999, Series I, II, III, IV Circular Connectors

SolderTacts Product Construction, MIL-C-38999 Series



Contact Military Specification	United States Air Force Drawing No.	Cable Diameter				Wire (AWG)	Raychem SolderTacts Part Number	Size	Polarity	Cable Type
		JOD	SOD	DOD	COD					
Series I, III, and IV										
M39029/60[a]	—	3.81–5.94 [.150-.234]	3.10–4.32 [.150-.170]	1.52–3.84 [.060-.151]	.48–1.09 [.019-.043]	22–24	D-602-0122	8	P	Coaxial
M39029/59[a]	—	3.81–5.94 [.150-.234]	3.10–4.32 [.150-.170]	1.52–3.84 [.060-.151]	.48–1.09 [.019-.043]	22–24	D-602-0123	8	S	Coaxial
M39029/76[a]	915304-1	1.27–2.62 [.050-.103]	1.68–2.13 [.066-.084]	.91–1.73 [.036-.068]	.23–.58 [.009-.023]	26–30	D-602-0140	16	P	Coaxial
M39029/77[a]	915305-1	1.27–2.62 [.050-.103]	1.68–2.13 [.066-.084]	.91–1.73 [.036-.068]	.23–.58 [.009-.023]	26–30	D-602-0141	16	S	Coaxial
M39029/76[a]	915304-2	—	—	.64–1.09 [.025-.043]	.23–.58 [.009-.023]	26–30	D-602-0142	16	P	Twisted pair
M39029/77[a]	915305-2	—	—	.64–1.09 [.025-.043]	.23–.58 [.009-.023]	26–30	D-602-0143	16	S	Twisted pair
M39029/28[a]	915307-1	1.47–3.10 [.058-.122]	1.68–2.39 [.066-.094]	1.12–2.03 [.044-.080]	.48–.89 [.019-.035]	24–32	D-602-0144	12	P	Coaxial
M39029/75[a]	915308-1	1.47–3.10 [.058-.122]	1.68–2.39 [.066-.094]	1.12–2.03 [.044-.080]	.48–.89 [.019-.035]	24–32	D-602-0145	12	S	Coaxial
M39029/28[a]	915307-3	—	—	.74–1.45 [.029-.057]	.48–.89 [.019-.035]	22–26	D-602-0146	12	P	Twisted pair
M39029/75[a]	915308-3	—	—	.74–1.45 [.029-.057]	.48–.89 [.019-.035]	22–26	D-602-0147	12	S	Twisted pair
M39029/28[a]	915307-2	1.90–3.81 [.075-.150]	2.54–2.97 [.100-.117]	1.27–2.62 [.050-.103]	.48–.89 [.019-.035]	22, 28	D-602-0150	12	P	Coaxial
M39029/75[a]	915308-2	1.90–3.81 [.075-.150]	2.54–2.97 [.100-.117]	1.27–2.62 [.050-.103]	.48–.89 [.019-.035]	22, 28	D-602-0151	12	S	Coaxial
—	8340712-OS-01	2.49–3.42 [.098-.135]	1.68–3.05 [.066-.120]	.76–1.24 [.030-.049]	.27–.79 [.011-.031]	24–26	D-602-1108	8	S	Twisted pair[b]
—	8340713-OS-01	2.49–3.42 [.098-.135]	1.68–3.05 [.066-.120]	.76–1.24 [.030-.049]	.27–.79 [.011-.031]	24–26	D-602-1109	8	P	Twisted pair[b]
—	—	2.49–3.76 [.098-.148]	1.68–3.30 [.066-.130]	.91–1.78 [.036-.070]	.23–.89 [.009-.035]	22–26	D-602-1110	8	S	Triaxial
—	—	2.49–3.76 [.098-.148]	1.68–3.30 [.066-.130]	.91–1.78 [.036-.070]	.23–.89 [.009-.035]	22–26	D-602-1111	8	P	Triaxial
—	8340712-OL-01	2.49–3.42 [.098-.135]	1.68–3.05 [.066-.120]	.76–1.24 [.030-.049]	.27–.79 [.011-.031]	24–26	D-602-1112	8	S	Twisted pair[b]
—	8340713-OL-01	2.49–3.42 [.098-.135]	1.68–3.05 [.066-.120]	.76–1.24 [.030-.049]	.27–.79 [.011-.031]	24–26	D-602-1113	8	P	Twisted pair[b]
M39029/90[a]	8912020-OS-01	3.68 [.145] Max.	—	.64–1.29 [.029-.051]	.27–.74 [.011-.029]	24–26	DK-602-0156-N-1	8	P	Twinaxial[c]
M39029/90[a]	8912020-DL-01	4.11 [.162] Max.	—	.64–1.29 [.029-.051]	.27–.74 [.011-.029]	24–26	DK-602-0156-N-2	8	P	Twinaxial[c]

a These SolderTacts contacts are intermateable and intermountable with contacts qualified to indicated specification; they replace crimp-style termination.
b These SolderTacts contacts are designed for shielded twisted pair cable per MIL-STD-1553B.
c These SolderTacts contacts are designed for databus contacts per MIL-STD-1553B.

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SolderTacts Series: MIL-C-38999, Series I, II, III, IV Circular Connectors

(Continued)

Contact Military Specification	United States Air Force Drawing No.	Cable Diameter (in inches)				Wire (AWG)	Raychem SolderTacts Part Number	Size	Polarity	Cable Type
		JOD	SOD	DOD	COD					
Series I, III, and IV										
M39029/90[a]	8912020-EL-01	4.50 max. [.177]	—	.74-1.30 [.029–.051]	.24-.74 [.011–.029]	24–26	DK-602-0156-N-3	8	P	Twinaxial[c]
M39029/91[a]	8912019-OS-01	3.68 max. [.145]	—	.74-1.30 [.029–.051]	.24-.74 [.011–.029]	24–26	DK-602-0157-N-1	8	S	Twinaxial[c]
M39029/91[a]	8912019-DL-01	4.12 max. [.162]	—	.74-1.30 [.029–.051]	.24-.74 [.011–.029]	24–26	DK-602-0157-N-2	8	S	Twinaxial[c]
M39029/91[a]	8912019-EL-01	4.50 max. [.177]	—	.74-1.30 [.029–.051]	.24-.74 [.011–.029]	24–26	DK-602-0157-N-3	8	S	Twinaxial[c]
M39029/90[a]	8912020-OL-01	4.67 max. [.184]	—	—	—	20	DK-602-0169-1	8	P	Twinaxial[c]
M39029/91[a]	8912019-OL-01	4.67 max. [.184]	—	—	—	20	DK-602-0170-1	8	S	Twinaxial[c]
Series II										
M39029/76[a]	915304-1	1.27-2.62 [.050–.103]	1.68-2.13 [.066–.084]	.91-1.73 [.036–.068]	.23-.58 [.009–.023]	26–30	D-602-0140	16	P	Coaxial
M39029/77[a]	915306-1	1.27-2.62 [.050–.103]	1.68-2.13 [.066–.084]	.91-1.73 [.036–.068]	.23-.58 [.009–.023]	26–30	D-602-0171	16	S	Coaxial
M39029/76[a]	915304-2	—	—	.64-1.09 [.025–.043]	.23-.58 [.009–.023]	26–30	D-602-0142	16	P	Twisted pair
M39029/77[a]	915306-2	—	—	.64-1.07 [.025–.042]	.23-.58 [.009–.023]	26–30	D-602-0174	16	S	Twisted pair

a These SolderTacts contacts are intermateable and intermountable with contacts qualified to indicated specification; they replace crimp-style termination.
b These SolderTacts contacts are designed for shielded twisted pair cable per MIL-STD-1553B.
c These SolderTacts contacts are designed for databus contacts per MIL-STD-1553B.

Tooling Selection Guide

SolderTacts Series	Part Numbers (D-602-)	Engineering Standard (Termination Instructions)	Convection (Hot Air) Heating AT-1319 Adapter	Repair Wand	IR1004 Infrared Semiautomatic Heater Tool Set	Contact Insertion Tool	Contact Removal Tool*
999 Size 16	0140/0141	ES61226	AT-1319-78	AD-1565	AT-1044-70 (P)	M81969/8-07 or M81969/14-03	M81869/8-08 or M81969/14-03
	0142/0143	ES61224	—	—	AT-1044-69 (S)		
	0171	ES61226	AT-1319-27	AD-1572	—		
	0174	ES61224	—	—	—		
999 Size 12	0144/0145	ES61206	AT-1319-24	AD-1566	AT-1044-72 (P)	M81969/8-09 or M81969/14-04	M81969/8-10 or M81969/14-04
	0146/0147	ES61218	—	—	AT-1044-71 (S)		
	0150/0151	ES61223	—	—	—		
999 Size 8	0122/0123	ES61179	AT-1319-22	AD-1568	—	—	M81969/14-06 or Astro ATBX-2277
	1108/1109	ES61172	AT-1319-22 and AT-1319-14	—			
	1110/1111	ES61172		AD-1568 and AD-1480			
	1112/1113	ES61184					
	0156/0157-X	ES61231					
	0169/0170-X	ES61235					

*Tyco Electronics does not provide this tool. See connector manufacturer.

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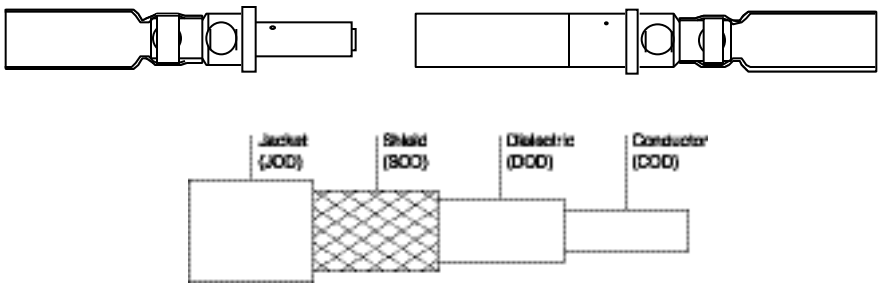
SolderTacts Shielded One-Piece Solder Contacts (Continued)

SolderTacts Series: Subminiature*

SolderTacts Product Construction, Submin Series



Raychem Cable Diameter

SolderTacts	Size	Polarity	Cable Type	Cable Diameter				
				JOD	SOD	DOD	COD	(AWG)
D-602-0278	16	P	Coaxial	1.52–2.92 [.060-.115]	1.85–2.18 [.073-.086]	.64–1.91 [.025-.075]	.23–.74 [.009-.029]	24–32
D-602-0279	16	S	Coaxial	1.52–2.92 [.060-.115]	1.85–2.18 [.073-.086]	.64–1.91 [.025-.075]	.23–.74 [.009-.029]	24–32
D-602-0288	16	P	Twisted pair	—	—	.74–1.40 [.029-.055]	.23–.74 [.009-.029]	24–32
D-602-0289	16	S	Twisted pair	—	—	.74–1.40 [.029-.055]	.23–.74 [.009-.029]	24–32

*These SolderTacts contacts belong to the Raychem “Subminiature” series of contacts, which are designed for use in commercial connectors.

Tooling Selection Guide

SolderTacts Series	Part Numbers (D-602-)	Engineering Standard (Termination Instructions)	Convection (hot air) Heating AT-1319 Adapter	Repair Wand	IR1004 infrared Semiautomatic Heater Tool Set	Contact Insertion Tool	Contact Removal Tool	Special Tools
Submin	0278/0279	ES61170	AT-1319-12	AD-1481	Tool Set #9	*	AD-1447	AA-400-140
—	0288/0289	ES61414	—	—	(AT-1044-11)	—	—	(magnifier)

*Not applicable.

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SolderTacts Series: MIL-C-83723

Contact Military Specification*	Cable Diameter				Wire (AWG)	Raychem SolderTacts	Size	Polarity	Cable Type
	JOD	SOD	DOD	COD					
M39029/74-400	2.39–3.56 [.094-.140]	1.96–2.49 [.077-.098]	1.32–2.06 [.052-.081]	.28–.74 [.011-.029]	24–32	D-602-0094	12	P	Coaxial
M39029/73-397	2.39–3.56 [.094-.140]	1.96–2.49 [.077-.098]	1.32–2.06 [.052-.081]	.28–.74 [.011-.029]	24–32	D-602-0095	12	S	Coaxial
M39029/74-401	—	—	.74–1.45 [.029-.057]	.28–.74 [.011-.029]	24–32	D-602-0104	12	P	Twisted pair
M39029/73-398	—	—	.74–1.45 [.029-.057]	.28–.74 [.011-.029]	24–32	D-602-0105	12	S	Twisted pair
M39029/74-399	3.05–3.68 [.120-.145]	3.10–3.15 [.122-.124]	2.36–2.67 [.093-.105]	.28–.74 [.011-.029]	24–32	D-602-0106	12	P	Large coaxial
M39029/73-396	3.05–3.68 [.120-.145]	3.10–3.15 [.122-.124]	2.36–2.67 [.093-.105]	.28–.74 [.011-.029]	24–32	D-602-0107	12	S	Large coaxial

* These SolderTacts contacts are on qualified parts list for indicated specification.

Tooling Selection Guide

Raychem SolderTacts Part Number	Engineering Standard (Termination Instructions)	Convection (Hot Air) Heating AT-1319 Adapter	Repair Wand	IR1004 infrared Semiautomatic Heater Tool Set	Contact Insertion Tool	Contact Removal Tool	Special Tools
D-602-0094/0095	ES61128	AT-1319-19	AD-1494	AT-1044-67 (P)	AD-1527	AD-1527	AD-1496
D-602-0106/0107	ES61134	Rev. D	Rev. C	AT-1044-68 (S)	(M81969/14-04)	(M81969/14-04)	(twisted)
D-602-0104/0105	ES61129	—	—	—	—	—	—

SolderTacts Series: DOD-C-83527

Raychem SolderTacts Reference	Size	Polarity	Cable Type	Contact Military Specification
D-602-0185	16	socket	Coaxial	—
D-602-0094	12	pin	Coaxial	M39029/74
D-602-0093	12	socket	Coaxial	M39029/73
D-602-0106	12	pin	Coax (large)	M39029/74
D-602-0189	12	socket	Coax (large)	M39029/73

SolderTacts Series: DOD-C-83527 (data bus contacts)*

Raychem SolderTacts Reference	Size	Polarity	Cable Type	Contact Military Specification
D-602-0186	8	pin	Twisted pair	M39029/96
D-602-0187	8	socket	Twisted pair	M39029/95
DK-602-0186-2	8	pin	Sh. twisted pair	M39029/96
DK-602-0187-2	8	socket	Sh. twisted pair	M39029/95

* These SolderTacts contacts are on designed for shielded twisted pair cable per MIL-STD-1553B.

SolderTacts Shielded One-Piece Solder Contacts (Continued)

SolderTacts Series: Grommets

Performance

The performance of SolderTacts contacts is defined by the applicable Raychem specification control drawing (SCD) and Raychem Specification D-6002. Products on qualified product lists meet the requirements of the base specification.

Termination

Termination of SolderTacts contacts is defined in the appropriate Raychem Engineering Standard. To obtain a copy, contact Tyco Electronics.

Raychem SolderTacts Reference	Size	Polarity
D-600-0071	—	For shielded twisted pair
D-600-0116	For size 8 DOD-C-83527 series	—
D-600-0125	For size 8 MIL-C-38999 series, for twisted pair	—

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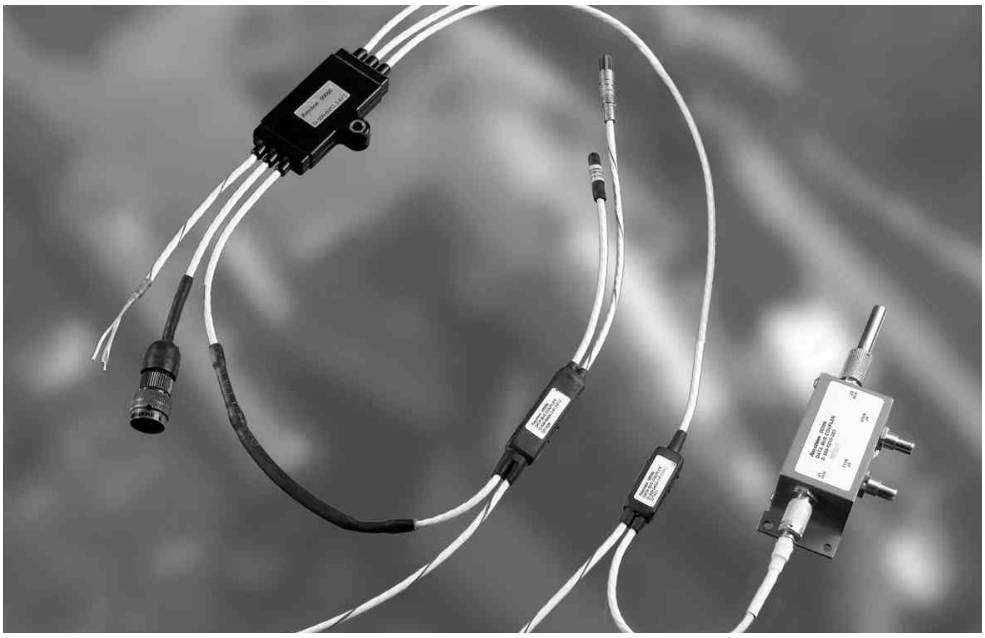
Introduction



The full line of Raychem data bus products offers a complete system of interconnection hardware for all MIL-STD-1553B multiplexing needs.

Available components include:

- Couplers (micros, boxes, flat packs)
- Data bus cables
- Triax connectors and contacts with strain relief
- One-piece triaxial contacts for MIL-C-38999 connectors (size 8 cavity)
- Bus and stub terminators
- Cable marker sleeves (TMS)
- Lightweight couplers (see pages 8-80 to 8-82)
- Space components (see pages 8-93 to 8-95)
- Harness design (Harn*Ware*)

All Raychem data bus components offer:

- High packaging density and weight savings
- Design flexibility
- High performance (to 150°C [302°F] rating)

Raychem MIL-STD-1553B data bus components are also specified in the Air Force drawings listed in Air Force Drawing 8340707.

Tyco Electronics also supplies complete Raychem data bus networks in accordance with customer harness drawings. Using factory-built harnesses eliminates unnecessary splices and connectors, reducing the cost and increasing the reliability of the networks. Factory-built harnesses are pre-tested and ready for installation.

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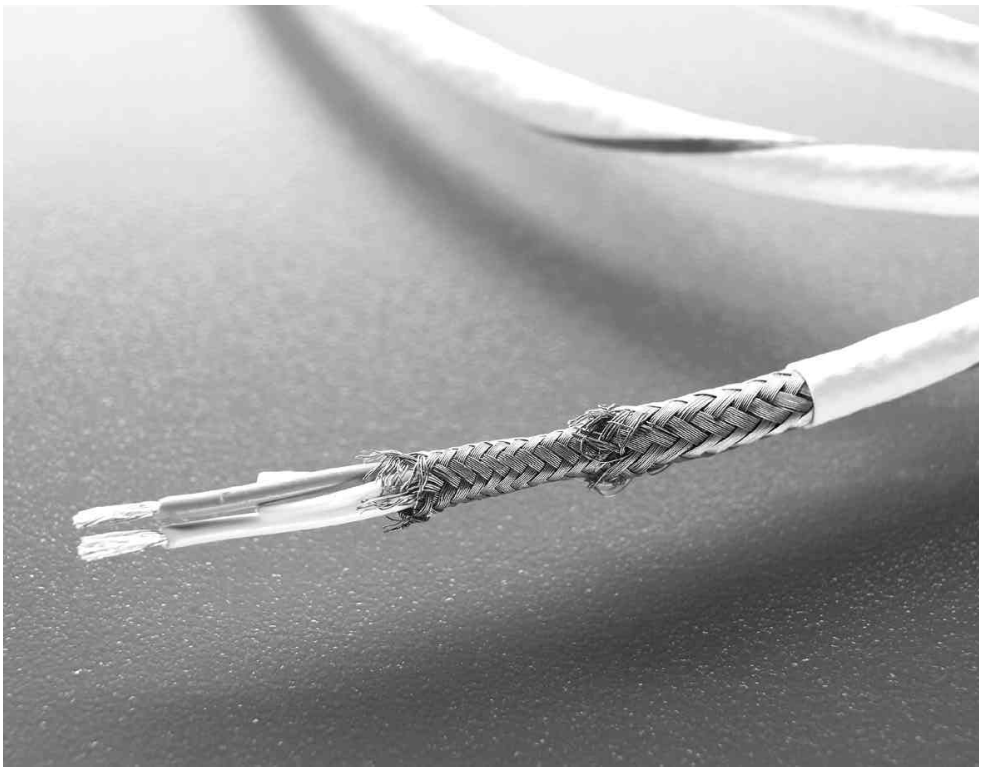
Cables

Product Facts

- Light weight
- Highly flexible
- Flame resistant
- Chemical resistant to all aircraft fluids
- Solder iron resistant
- Defined shielding levels



Applications

Tyco Electronics manufactures a line of Raychem SPEC 55 data bus cables that meet or exceed the performance requirements of MIL-STD-1553B.

SPEC 55 insulation is a high-temperature, radiation-crosslinked, modified ETFE material that can be used in wire constructions rated up to 200°C [392°F].

Note: Tyco Electronics will build harnesses with any customer specified cables and/or connectors.

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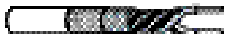
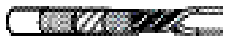
Cables (Continued)

Specifications/Approvals

Series	Military
SPEC 55 insulation	MIL-W-22759/32–/35 MIL-W-22759/41–/46

Product Selection

Cable Type		Part No.
24 AWG Single Optimized Shield		10612
24 AWG Double Optimized Shield		10613
24 AWG EMPHardened		10614
24 AWG Flat Shield, Unfilled		7724 H 0664

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In-Line Microcouplers: One- and Two-Stub

Product Facts

- Environmental sealing
- No connectors
- Very small size
- Light weight (1 stub: 10 g max.; 2 stubs: 15 g max.)
- In-line profile that makes wire bundle mounting possible
- 360° continuous low-impedance cable-shield terminations
- Reliable solder termination of all components
- Potted circuit elements for maximum durability and in-use reliability
- Ease of installation
- Altitude immersion resistance
- Optional eyelet configurations for bulkhead mounting
- Mean time between failures > 1,000,000 hours

Applications

The low-profile configuration of these couplers enables avionics system designers to plan for optimum coupler locations. Microcouplers are supplied with Raychem SPEC 55 data bus cables, including EMP-hardened versions. They are also available assembled with other components into a complete data bus harness.

Specifications/Approvals

Series	Military	Raychem
D-500-04	MIL-STD-1553B	D-6020

Available in:

Americas	■
Europe	■
Asia Pacific	■

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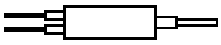
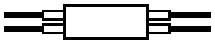
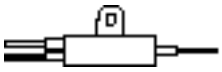
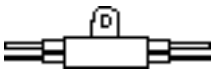
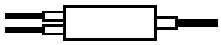
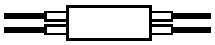
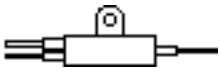
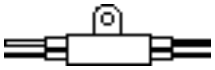
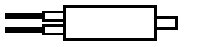
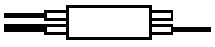
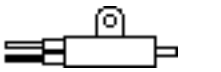
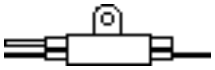
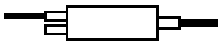
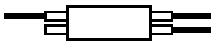
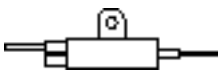
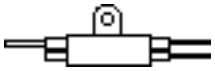
In-Line Microcouplers: One- and Two-Stub (Continued)

Product Selection

Single Stub		Double Stub	
D-500-0455-1-YYY-ZZZ		D-500-0455-2-YYY-ZZZ	
D-500-0465-1-YYY-ZZZ		D-500-0465-2-YYY-ZZZ	
D-500-0456-1-YYY-ZZZ		D-500-0456-2-YYY-ZZZ	
D-500-0466-1-YYY-ZZZ		D-500-0466-2-YYY-ZZZ	
D-500-0457-1-YYY-ZZZ		D-500-0457-2-YYY-ZZZ	
D-500-0467-1-YYY-ZZZ		D-500-0467-2-YYY-ZZZ	
D-500-0458-1-YYY-ZZZ		D-500-0458-2-YYY-ZZZ	
D-500-0468-1-YYY-ZZZ		D-500-0468-2-YYY-ZZZ	

Note:
1. Bus cable
2. Stub cable

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South America: 55-11-3611-1514
Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

In-Line Microcouplers: One- and Two-Stub (Continued)

Microcoupler Part Numbering System

D-500-04 W W-X-YYY-ZZZ

Standard Cable Length
012 = 12 in (1 ft)
078 = 78 in (6.5 ft)
079 = 79 in (2 m)
120 = 120 in (10 ft)
236 = 236 in (6 m)
240 = 240 in (20 ft)
360 = 360 in (30 ft)

Cable Type
612 = 1061224 AWG single optimized shield
613 = 1061324 AWG double optimized shield
614 = 1061424 AWG EMP hardened
H06 = 7724H0664 (24 AWG Flat Wire Unfilled)

Number of Stubs
1 or 2

Design
5 = Without internal terminator
6 = Same as 5 but with reverse bus
7 = With internal terminator
8 = Same as 7 but with reverse bus

Boot
5 = Without mounting eyelet
6 = With mounting eyelet

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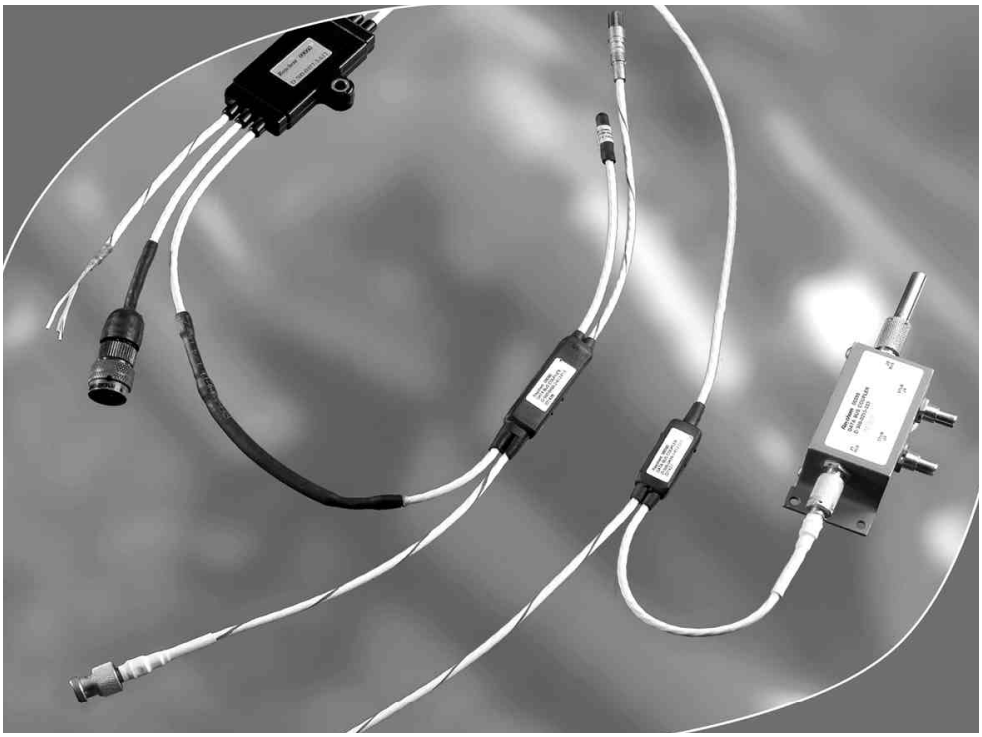
Ultra Lightweight In-Line Microcouplers 1- Through 6-Stub

Product Facts

- Environmental sealing
- No connectors
- Very small size
- Ultra Light weight (1 stub: 6.5 g max.; 2 stubs: 9.5 g max.)
- In-line profile that makes wire bundle mounting possible
- 360° continuous low-impedance cable-shield terminations
- Reliable solder termination of all components
- Potted circuit elements for maximum durability and in-use reliability
- Ease of installation
- Altitude immersion resistance
- Mean time between failures > 1,000,000 hours



Applications

Building on over 20 years of experience and continuous improvement in data bus, including pioneering in-line microcouplers, Tyco Electronics introduces a new family of ultra light-weight In-line Raychem Microcouplers, available in 1- through 6-stub configurations.

These couplers offer the same high performance and reliability as Raychem current microcouplers, but their weight is further reduced. They are available in configurations up to 6-stub, and minimize weight there is no option with a mounting eyelet.

Combined with Raychem 24 AWG data bus cables, these ultra light couplers allow designers to significantly reduce weight. An unfilled flat braid cable is available for additional weight savings.

They are also available assembled with other customer specified components into a complete factory-built and tested data bus harness.

Specifications/approvals

Series	Military	Raychem
D-500-L4xx	MIL-STD-1553B	D-6020 (same as current microcouplers)

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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Lightweight In-Line Couplers Part Numbering System

D-500-L4 5 W -X -YYY -ZZZ

Cable Length
012 = 12 in
078 = 78 in
079 = 79 in
120 = 120 in
236 = 236 in
240 = 240 in
360 = 360 in

Cable Type
612 = 10612 (24 AWG single optimized shield)
613 = 10613 (24 AWG double optimized shield)
614 = 10614 (24 AWG EMP hardened)
H06 = 7724H0664 (24 AWG flat shield, unfilled)
Lightest cable

Number of Stubs
1, 2, 3, 4, 5 or 6

Design
5 = Without internal terminator
7 = With internal terminator

Style
5 = Without eyelet

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Ultra Lightweight In-Line Microcouplers 1- Through 6-Stub (Continued)

Product Selection

D-500-L455-X-YYY-ZZZ

End View Left Side		End View Right Side
	1 stub	
	2 stub	
	3 stub	
	4 stub	
	5 stub	
	6 stub	

D-500-L456-X-YYY-ZZZ

End View Left Side		End View Right Side
	1 stub	
	2 stub	
	3 stub	
	4 stub	
	5 stub	
	6 stub	

D-500-L457-X-YYY-ZZZ

End View Left Side		End View Right Side
	1 stub	
	2 stub	
	3 stub	
	4 stub	
	5 stub	
	6 stub	

D-500-L458-X-YYY-ZZZ

End View Left Side		End View Right Side
	1 stub	
	2 stub	
	3 stub	
	4 stub	
	5 stub	
	6 stub	

Bus cable ○
Stub cable ●

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Box Couplers

Product Facts

- **Light, robust coupler modules with connector versatility**
- **Up to eight stub connectors can be arrayed on the "face" of the box coupler. Bus connectors can also be on the "face" or on the "side" of the box**
- **Designed with Raychem D-621 series corrosion-resistant threaded-type or bayonet-type connectors**

Applications

The multiport capability of these couplers (up to eight stubs) enables avionics system designers to interconnect black boxes with minimum wire runs. Box couplers are supplied with Raychem triaxial threaded or bayonet connectors.

Note: Tyco Electronics also designs and manufactures customized Raychem data bus box couplers.

Specifications/Approvals

Series	Military	Raychem
D-500-0255	MIL-STD-1553	D-6021

Available in:

Americas	■
Europe	■
Asia Pacific	■

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Singapore: 65-4866-151
UK: 44-1793-528171

Box Couplers (Continued)

Coupler Type	Part No.			
	Threaded	Bayonet A*	Bayonet B*	Bayonet C*
Face - 1 Stub	D-500-0255-511-1	D-500-0255-513-1	D-500-0255-515-1	D-500-0255-517-1
Face - 2 Stub	D-500-0255-521-1	D-500-0255-523-1	D-500-0255-525-1	D-500-0255-527-1
Face - 3 Stub	D-500-0255-531-1	D-500-0255-533-1	D-500-0255-535-1	D-500-0255-537-1
Face - 4 Stub	D-500-0255-541-1	D-500-0255-543-1	D-500-0255-545-1	D-500-0255-547-1
Face - 5 Stub	D-500-0255-551-1	D-500-0255-553-1	D-500-0255-555-1	D-500-0255-557-1
Face - 6 Stub	D-500-0255-561-1	D-500-0255-563-1	D-500-0255-565-1	D-500-0255-567-1
Face - 7 Stub	D-500-0255-571-1	D-500-0255-573-1	D-500-0255-575-1	D-500-0255-577-1
Face - 8 Stub	D-500-0255-581-1	D-500-0255-583-1	D-500-0255-585-1	D-500-0255-587-1
Side - 1 Stub	D-500-0255-512-1	D-500-0255-513-2	D-500-0255-515-2	D-500-0255-517-2
Side - 2 Stub	D-500-0255-522-1	D-500-0255-523-2	D-500-0255-525-2	D-500-0255-527-2
Side - 3 Stub	D-500-0255-532-1	D-500-0255-533-2	D-500-0255-535-2	D-500-0255-537-2
Side - 4 Stub	D-500-0255-542-1	D-500-0255-543-2	D-500-0255-545-2	D-500-0255-547-2
Side - 5 Stub	D-500-0255-552-1	D-500-0255-553-2	D-500-0255-555-2	D-500-0255-557-2
Side - 6 Stub	D-500-0255-562-1	D-500-0255-563-2	D-500-0255-565-2	D-500-0255-567-2
Side - 7 Stub	D-500-0255-572-1	D-500-0255-573-2	D-500-0255-575-2	D-500-0255-577-2
Side - 8 Stub	D-500-0255-582-1	D-500-0255-583-2	D-500-0255-585-2	D-500-0255-587-2

*The bayonet polarization listed is for the bus connector. All stub connectors are Bayonet D polarization. Polarizations are depicted as follows (jack view):

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Discrete Connectors

Product Facts

- Compliance with MIL-STD-1553B hardware requirements
- Light weight
- Removable pin or socket contacts
- Termination with Raychem MIL-STD-1553B data bus cables, including EMP-hardened versions
- Continuous 360° shield coverage
- Rugged constructions
- Termination time of 1 to 2 minutes
- Inspectable solder terminations
- Low-skill assembly
- Reworkable and repairable terminations
- Strain relief built into the design
- Low-voltage drop and high reliability because of precisely controlled solder terminations
- Threaded and bayonet coupling styles
- Low total installed cost
- 1000-hour salt spray resistance
- Lower-cost connectors, for benchtop and mock-up

Applications

Designed specifically for MIL-STD-1553B data bus applications, the D-621 connector is intended to be a perfect match for the Raychem airworthy data bus cable. Together they provide durable, reliable, and reworkable interconnection hardware for the MIL-STD-1553B market.

Specifications/Approvals

Series	Military	Raychem
DK-621	MIL-STD-1553B	D-6025

Available in:

Americas	■
Europe	■
Asia Pacific	■

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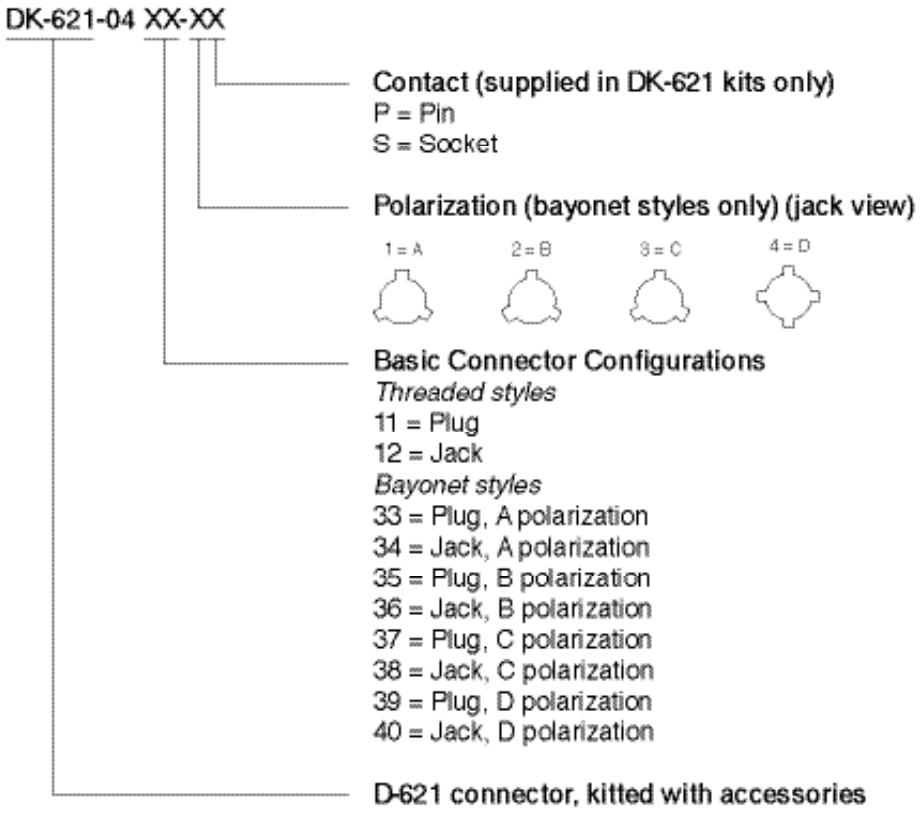
UK: 44-1793-528171

Discrete Connectors (Continued)

Connector Kit Part Numbering System



Example:

DK-621-0434-1P = D-621 connector, kitted with accessories, jack bayonet style with A polarization and pin contact.

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Accessories

Product Facts

- A single source for all harness components
- Products designed to work together

Applications

Tyco Electronics manufactures all the products needed to build a MIL-STD-1553B data bus network. In addition to the main components (couplers, connectors, contacts, and cables), Tyco Electronics supplies the accessory components that may be necessary to complete a data bus system.

These include:

- Bus and stub terminators (spliced-in and connectorized D-621 series).
- Cable splice kits.
- EMI/environment-resistant connector caps.
- Braid terminators and strain relief tubing (for rework applications).
- Cable marking materials.

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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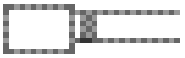
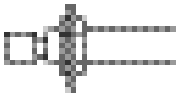
Accessories (Continued)

Product Selection



D-621 Plug



D-621 Jack

Splice-in

Bus and Stub Terminators

Spliced-in	12-inch Cable				
77-ohm 10612 cable	D-500-0463-612				
77-ohm 10613 cable	D-500-0463-613				
77-ohm 10614 cable	D-500-0463-614				
77-ohm 7724H0664 cable	D-500-0463-H06				
D-621 Series—Plug	**Threaded**	**Bayonet A**	**Bayonet B**	**Bayonet C**	**Bayonet D**
77-ohm pin contact	D-621-0413	D-621-0453	D-621-0454	D-621-0455	D-621-0456
77-ohm socket contact	D-621-0415	D-621-0469	D-621-0470	D-621-0471	D-621-0472
3000-ohm pin contact	D-621-0417	D-621-0457	D-621-0458	D-621-0459	D-621-0476
3000-ohm socket contact	D-621-0407	D-621-0473	D-621-0474	D-621-0475	D-621-0460
D-621 Series—Jack	**Threaded**	**Bayonet A**	**Bayonet B**	**Bayonet C**	**Bayonet D**
77-ohm pin contact	D-621-0418	D-621-0477	D-621-0478	D-621-0479	D-621-0480
77-ohm socket contact	D-621-0406	D-621-0461	D-621-0462	D-621-0463	D-621-0464
3000-ohm pin contact	D-621-0423	D-621-0481	D-621-0482	D-621-0483	D-621-0484
3000-ohm socket contact	D-621-0424	D-621-0465	D-621-0466	D-621-0467	D-621-0468
D-621 Series—L	**Lanyard 7”**	**—**	**—**	**—**	**—**

Connector Caps

D-621 Series	Threaded	Bayonet A	Bayonet B	Bayonet C	Bayonet D
Plug cap for jack connector Supplied with 7” Lanyard	D-600-0083	D-600-0068	D-600-0068	D-600-0068	D-600-0065

Cable Splice Kits

Cables	Flexible Crimp
All data bus cables	D-150-0708-5

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Terminator and Connector and Compatibility — Bayonet and Threaded Connectors

Panel Thickness	Connector	Contact	Terminator Reference	Mate with Standard Connector	Mate with Long ReachConnector
Bayonet Connectors					
Polarity A					
77 Ohm bus terminator	Plug	Pin	D-621-0453(-L)	DK-621-0434-1S	DK-621-0550-1S
	Plug	Socket	D-621-0469(-L)	DK-621-0434-1P	DK-621-0550-1P
	Jack	Pin	D-621-0477(-L)	DK-621-0433-1S	—
	Jack	Socket	D-621-0461(-L)	DK-621-0433-1P	—
3K Ohm stub terminator	Plug	Pin	D-621-0457(-L)	DK-621-0434-1S	DK-621-0550-1S
	Plug	Socket	D-621-0473(-L)	DK-621-0434-1P	DK-621-0550-1P
	Jack	Pin	D-621-0481(-L)	DK-621-0433-1S	—
	Jack	Socket	D-621-0465(-L)	DK-621-0433-1P	—
Polarity B					
77 Ohm bus terminator	Plug	Pin	D-621-0454-(-L)	DK-621-0436-2S	DK-621-0548-2S
	Plug	Socket	D-621-0470-(-L)	DK-621-0436-2P	DK-621-0548-2P
	Jack	Pin	D-621-0478-(-L)	DK-621-0435-2S	—
	Jack	Socket	D-621-0462-(-L)	DK-621-0435-2P	—
3K Ohm stub terminator	Plug	Pin	D-621-0458-(-L)	DK-621-0436-2S	DK-621-0548-2S
	Plug	Socket	D-621-0474-(-L)	DK-621-0436-2P	DK-621-0548-2P
	Jack	Pin	D-621-0482-(-L)	DK-621-0435-2S	—
	Jack	Socket	D-621-0466-(-L)	DK-621-0435-2P	—
Polarity C					
77 Ohm bus terminator	Plug	Pin	D-621-0455(-L)	DK-621-0438-3S	DK-621-0546-3S
	Plug	Socket	D-621-0471(-L)	DK-621-0438-3P	DK-621-0546-3P
	Jack	Pin	D-621-0479(-L)	DK-621-0437-3S	—
	Jack	Socket	D-621-0463(-L)	DK-621-0437-3P	—
3K Ohm stub terminator	Plug	Pin	D-621-0459(-L)	DK-621-0438-3S	DK-621-0546-3S
	Plug	Socket	D-621-0475(-L)	DK-621-0438-3P	DK-621-0546-3P
	Jack	Pin	D-621-0483(-L)	DK-621-0437-3S	—
	Jack	Socket	D-621-0467(-L)	DK-621-0437-3P	—
Polarity D					
77 Ohm bus terminator	Plug	Pin	D-621-0456(-L)	DK-621-0440-4S	DK-621-0551-4S
	Plug	Socket	D-621-0472(-L)	DK-621-0440-4P	DK-621-0551-4P
	Jack	Pin	D-621-0480(-L)	DK-621-0439-4S	—
	Jack	Socket	D-621-0464(-L)	DK-621-0439-4P	—
3K Ohm stub terminator	Plug	Pin	D-621-0460(-L)	DK-621-0440-4S	DK-621-0551-4S
	Plug	Socket	D-621-0476(-L)	DK-621-0440-4P	DK-621-0551-4P
	Jack	Pin	D-621-0468(-L)	DK-621-0439-4S	—
	Jack	Socket	D-621-0484(-L)	DK-621-0439-4P	—
Threaded Connectors					
77 Ohm bus terminator	Plug	Pin	D-621-0413(-L)	DK-621-0412-S	DK-621-0512-S
	Plug	Socket	D-621-0415(-L)	DK-621-0412-P	DK-621-0512-P
	Jack	Pin	D-621-0418(-L)	DK-621-0411-S	—
	Jack	Socket	D-621-0406(-L)	DK-621-0411-P	—
3K Ohm stub terminator	Plug	Pin	D-621-0417(-L)	DK-621-0412-S	DK-621-0512-S
	Plug	Socket	D-621-0407(-L)	DK-621-0412-P	DK-621-0512-P
	Jack	Pin	D-621-0423(-L)	DK-621-0411-S	—
	Jack	Socket	D-621-0424(-L)	DK-621-0411-P	—

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Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

Accessories (Continued)

Triaxial Connectors and Terminator Compatibility — Bayonet and Threaded Connectors

Panel Thickness	Connector	Contact	Connector Reference	Mate with		
				Connector	77 Ohm Bus Terminator	3K Ohm Stub Terminator
Bayonet Connectors						
Polarity A						
	Plug	Pin	DK-621-0433-1P	DK-621-0434-1S	D-621-0461(-L)	D-621-0465 (-L)
	Plug	Socket	DK-621-0433-1S	DK-621-0434-1P	D-621-0477(-L)	D-621-0481(-L)
Standard	Jack	Pin	DK-621-0434-1P	DK-621-0433-1S	D-621-0461(-L)	D-621-0473(-L)
2.4mm max.	Jack	Socket	DK-621-0434-1S	DK-621-0433-1P	D-621-0453(-L)	D-621-0457(-L)
Long Reach	Jack	Pin	DK-621-0550-1P	DK-621-0433-1S	D-621-0469(-L)	D-621-0473(-L)
12.5mm max.	Jack	Socket	DK-621-0550-1S	DK-621-0433-1P	D-621-0453(-L)	D-621-0457(-L)
Polarity B						
	Plug	Pin	DK-621-0435-2P	DK-621-0436-2S	D-621-0462(-L)	D-621-0474 (-L)
	Plug	Socket	DK-621-0435-2S	DK-621-0436-2P	D-621-0478(-L)	D-621-0458(-L)
Standard	Jack	Pin	DK-621-0436-2P	DK-621-0435-2S	D-621-0470(-L)	D-621-0474(-L)
2.4mm max.	Jack	Socket	DK-621-0436-2S	DK-621-0435-2P	D-621-0454(-L)	D-621-0458(-L)
Long Reach	Jack	Pin	DK-621-0448-2P	DK-621-0435-2S	D-621-0470(-L)	D-621-0467(-L)
12.5mm max.	Jack	Socket	DK-621-0448-2S	DK-621-0435-2P	D-621-0454(-L)	D-621-0483(-L)
Polarity C						
	Plug	Pin	DK-621-0437-3P	DK-621-0438-3S	D-621-0463(-L)	D-621-0467(-L)
	Plug	Socket	DK-621-0437-3S	DK-621-0438-3P	D-621-0479(-L)	D-621-0483(-L)
Standard	Jack	Pin	DK-621-0438-3P	DK-621-0437-3S	D-621-0471(-L)	D-621-0475(-L)
2.4mm max.	Jack	Socket	DK-621-0438-3S	DK-621-0437-3P	D-621-0455(-L)	D-621-0459(-L)
Long Reach	Jack	Pin	DK-621-0446-3P	DK-621-0437-3S	D-621-0471(-L)	D-621-0475(-L)
12.5mm max.	Jack	Socket	DK-621-0446-3S	DK-621-0437-3P	D-621-0455(-L)	D-621-0459(-L)
Polarity D						
	Plug	Pin	DK-621-0439-4P	DK-621-0440-4S	D-621-0464(-L)	D-621-0468(-L)
	Plug	Socket	DK-621-0439-4S	DK-621-0440-4P	D-621-0480(-L)	D-621-0484(-L)
Standard	Jack	Pin	DK-621-0440-4P	DK-621-0439-4S	D-621-0472(-L)	D-621-0476(-L)
2.4mm max.	Jack	Socket	DK-621-0440-4S	DK-621-0439-4P	D-621-0456(-L)	D-621-0460(-L)
Long Reach	Jack	Pin	DK-621-0551-4P	DK-621-0439-4S	D-621-0472(-L)	D-621-0476(-L)
12.5mm max.	Jack	Socket	DK-621-0551-4S	DK-621-0439-4P	D-621-0456(-L)	D-621-0460(-L)
Threaded Connectors						
	Plug	Pin	DK-621-0411-P	DK-621-0412-S	D-621-0406(-L)	D-621-0424(-L)
	Plug	Socket	DK-621-0411-S	DK-621-0412-P	D-621-0418(-L)	D-621-0423(-L)
Standard	Jack	Pin	DK-621-0412-P	DK-621-0411-S	D-621-0415(-L)	D-621-0407(-L)
2.4mm max.	Jack	Socket	DK-621-0412-S	DK-621-0411-P	D-621-0413(-L)	D-621-0417(-L)
Long Reach	Jack	Pin	DK-621-0412-P	DK-621-0411-S	D-621-0415(-L)	D-621-0407(-L)
12.5mm max.	Jack	Socket	DK-621-0412-S	DK-621-0411-P	D-621-0413(-L)	D-621-0417(-L)

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Accessories (Continued)

Triaxial Connectors and Terminator Compatibility — to European norme 3716

Panel Thickness	Connector	Contact	Connector Reference	Mate with		
				Connector	77 Ohm Bus Terminator	3K Ohm Stub Terminator
Triaxial Connectors						
	Plug	Pin	DK-3716-F101-TP	DK-621-E102-TS	D-621-E077-S	D-621-E03K-S
	Plug	Socket	DK-3716-F101-TS	DK-621-E102-TP	D-621-E077-P	D-621-E03K-P
	Plug	Pin	DK-3716-F201-TP	DK-621-E202-TS	D-621-E077-S	D-621-E03K-S
	Plug	Socket	DK-3716-F201-TS	DK-621-E202-TP	D-621-E077-P	D-621-E03K-P
	Jack	Pin	DK-3716-E102-TP	DK-621-F101-TS	D-621-F077-S	D-621-F03K-S
Standard	Jack	Socket	DK-3716-E102-TS	DK-621-F101-TP	D-621-F077-P	D-621-F03K-P
2.4mm max.	Jack	Pin	DK-3716-E202-TP	DK-621-F201-TS	D-621-F077-S	D-621-F03K-S
	Jack	Socket	DK-3716-E202-TS	DK-621-F201-TP	D-621-F077-P	D-621-F03K-P
	Jack	Pin	DK-3716-E112-TP	DK-621-F101-TS	D-621-F077-S	D-621-F03K-S
Long Reach	Jack	Socket	DK-3716-E112-TS	DK-621-F101-TP	D-621-F077-P	D-621-F03K-P
12.5mm max.	Jack	Pin	DK-3716-E212-TP	DK-621-F201-TS	D-621-F077-S	D-621-F03K-S
	Jack	Socket	DK-3716-E212-TS	DK-621-F201-TP	D-621-F077-P	D-621-F03K-P

Panel Thickness	Connector	Contact	Terminator Reference	Mate with	
				Standard Connector	Long ReachConnector
Terminators					
	Plug	Pin	DK-3716-F077-P	DK-3716-E#02-TS	DK-3716-E#12K-TS
77 Ohm bus	Plug	Socket	DK-3716-F077-S	DK-3716-E#02-TP	DK-3716-E#12K-TP
terminator	Jack	Pin	DK-3716-F077-P	DK-3716-E#01-TS	—
	Jack	Socket	DK-3716-F077-S	DK-3716-E#01-TP	—
	Plug	Pin	DK-3716-E03K-P	DK-3716-E#02-TS	DK-3716-E#12K-TS
3K Ohm stub	Plug	Socket	DK-3716-E03K-S	DK-3716-E#02-TP	DK-3716-E#12K-TP
terminator	Jack	Pin	DK-3716-E03K-P	DK-3716-E#01-TS	—
	Jack	Socket	DK-3716-E03K-S	DK-3716-E#01-TP	—

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Triaxial Size 8 Contacts

Product Facts

- One-step termination
- Termination time of 1 to 2 minutes
- No requirements for special termination tools
- No requirements for special skills
- Reworkable and repairable terminations
- Strain relief
- Continuous 360° shield coverage
- Triaxial mating face for least susceptibility to damage
- Rugged construction, because only two parts are being soldered together
- Inspectable solder terminations
- Low voltage drop and high reliability due to precisely controlled solder termination

Applications

Contacts provide full shield coverage with a simple, quick, and reliable termination system. 24 AWG twisted-pair data bus cables are terminated with triaxial SolderTacts contacts, which fit size 8 cavities of MIL-C-38999, Series 1, 3, or 4 connectors.

Raychem size 8 triaxial data bus contacts for MIL-C-38999 connectors have interfaces that comply with MIL-C-39029/90 and /91 to provide ease of termination, and intermateability with more cumbersome crimp contacts.

These contacts provide a fast and convenient method of implementing MIL-STD-1553B connections in MIL-STD-1760 applications.

Specifications/Approvals

Series	Raychem
Size 8	D-6002

Product Selection

Cable Type	Pin	Socket
10612	DK-602-0156-N-1	DK-602-0157-N-1
10613	DK-602-0156-N-2	DK-602-0157-N-2
10614	DK-602-0156-N-3	DK-602-0157-N-3

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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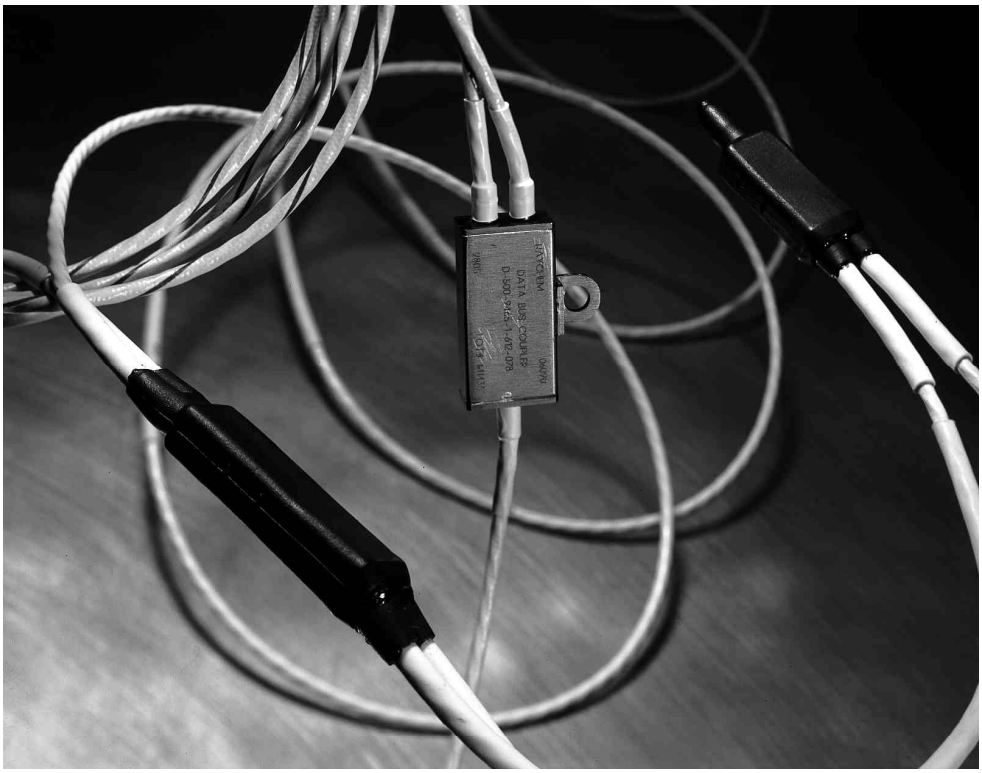
Space-Grade Data Bus Components

Product Facts

- Complete line of space-qualified MIL-STD-1553B components
- Low outgassing levels that meet NASA requirements
- Light weight
- Rugged construction



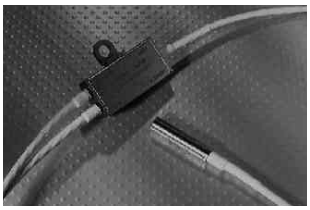


Figure 1. In-line couplers and terminators

Figure 2. Threaded triaxial connectors

Figure 3. Bayonet triaxial connectors

Figure 4. Splice kit

Applications

Tyco Electronics full line of Raychem data bus products includes space-grade couplers, terminators, triaxial connectors, and SolderShield splices. These space-grade components meet the low outgassing requirements of NASA specification SP-R-0022A and can be used in outer-space applications.

Raychem space-grade components are designed in a variety of configurations and are currently available either as discrete items or as Raychem- assembled harnesses. Using factory-built harnesses eliminates unnecessary splices and connectors, reducing the cost and increasing the reliability of the networks.

Specification control drawings describe the design features and performance characteristics of Raychem space-grade couplers, terminators, connectors, and splices. The space-grade data bus couplers, terminators, and connectors have tin/nickel-plated metallic parts and baked silicone rubber components. For strain relief they include low-outgassing tubing. Unlike parts intended for aircraft applications, these components do not have polymeric environmental covers.

The table on the next page lists Raychem standard space-grade data bus components with their part numbers and descriptions. New components will become available per customer request.

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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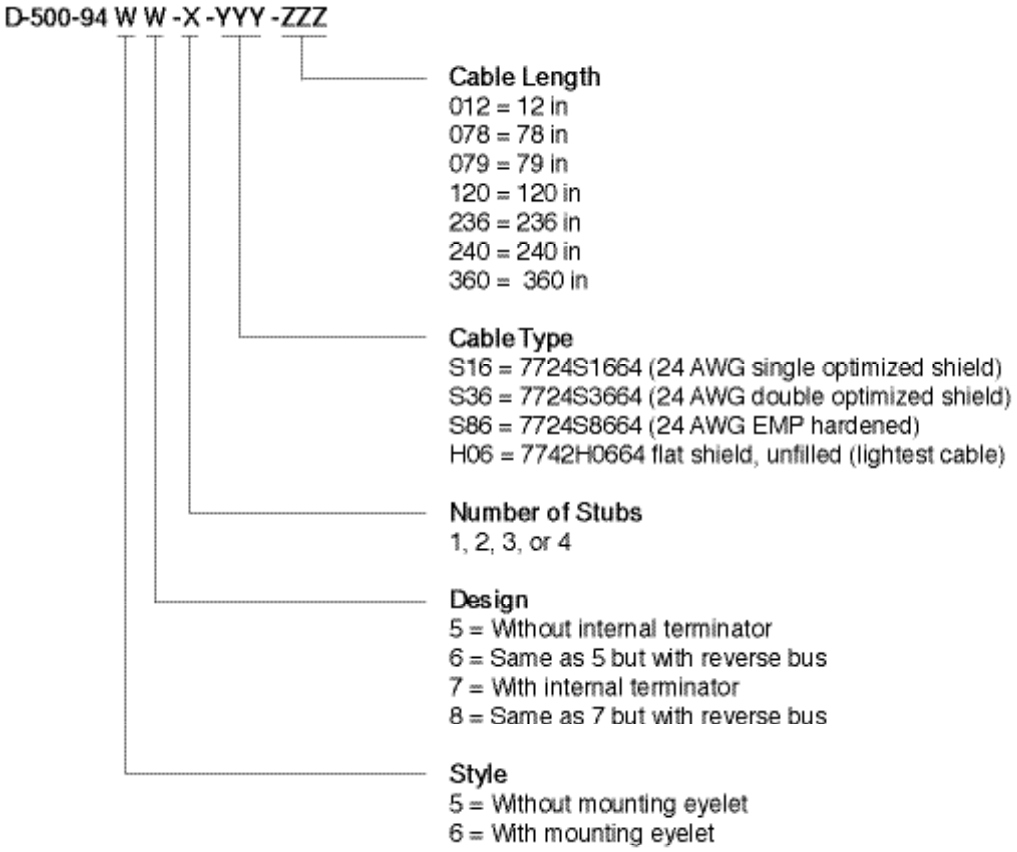
Space-Grade Data Bus Components (Continued)

Specifications/Approvals

Series	Raychem
Space-grade data bus components	D-6022

Space-Grade In-Line Coupler Part Numbering System



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Space-Grade Data Bus Components (Continued)

Space-Grade Connectors Part Numbering System

DK-621 -09 XX -X X

Contact (installed, DK-621 kits only)
P = Pin*
S = Socket*
*May be ordered separately as D-602-0126 (pin) and D-602-0127 (socket)

Polarization (bayonet styles only) (jack view)

Basic Connector Configurations
Threaded styles:
11 = Plug
12 = Jack

Bayonet styles:
33 = Plug, A polarization
33 = Jack, A polarization
35 = Plug, B polarization
36 = Jack, B polarization
37 = Plug, C polarization
38 = Jack, C polarization
39 = Plug, D polarization
40 = Jack, D polarization

D-621 Connector, Kitted with Accessories

Space-Grade Terminators Part Numbering System

D-500-9463- ZZZ

Cable Type
612 = 10612 (24 AWG single optimized shield)
613 = 10613 (24 AWG double optimized shield)
614 = 10614 (24 AWG EMP hardened)
H06 = 7724H0664 flat shield, unfilled (lightest cable)

Space-Grade Splice Kit = D-150-9708-5

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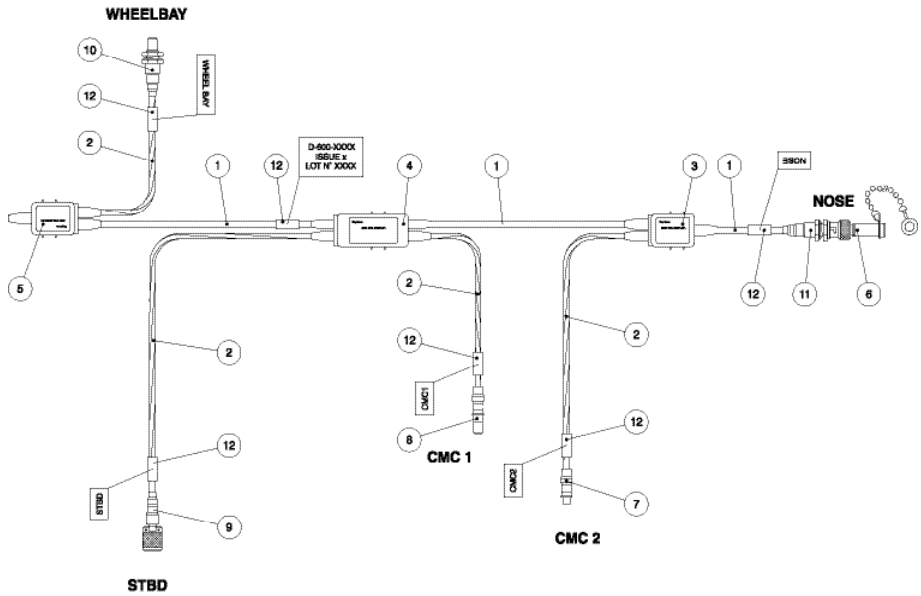
Customer-Specified Harness Assemblies and Harn*Ware* Harness Design Software

Tyco Electronics supplies complete Raychem data bus networks in accordance with customer harness drawings, with any customer-specified cables and/or connectors. Using factory-built harnesses eliminates unnecessary splices and connectors, reducing the cost and increasing the reliability of the networks. Factory-built harnesses are pre-tested and ready for installation.

Harn*Ware* Harness Design Software allows designers to draw a data bus harness in a matter of minutes, while selecting Raychem or others' components; a bill of materials is automatically generated.

Sample Drawing



Parts List

Item	Description	Part No.	Spec/Remarks	Qty	Unit
1	Data bus Cable	10613-9	Raychem	5.3	M
2	Data bus Cable	10613-96	Raychem	7	M
3	Data bus Coupler	D-500-0455-1	Raychem	1	Pc
4	Data bus Coupler	D-500-0455-2	Raychem	1	Pc
5	Data bus Coupler	D-500-0457-1	Raychem	1	Pc
6	Data bus Terminator	D-621-0469-L	Raychem	1	Pc
7	Data bus Contact	DK-602-0156-N-2	Raychem	1	Pc
8	Data bus Contact	DK-602-0157-N-2	Raychem	1	Pc
9	Data bus Connector	DK-621-0411-P	Raychem	1	Pc
10	Data bus Connector	DK-621-0412-P	Raychem	1	Pc
11	Data bus Connector	DK-621-0434-1P	Raychem	1	Pc
12	Marker Sleeve	TMS-SCE-3/16-2.0-9	Raychem	6	Pc

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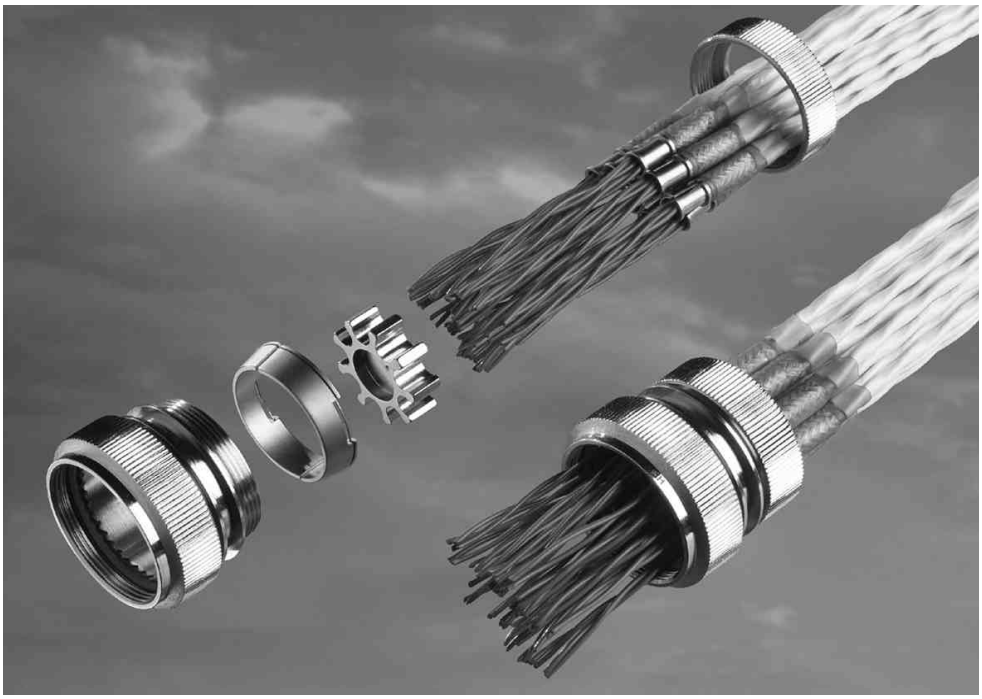
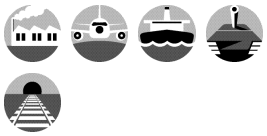
UK: 44-1793-528171

Introduction

Product Facts

- Superior EMC/EMI Shielding Performance
- Simple installation
- Easy reentry
- Simplified maintenance and repair
- Excellent mechanical and environmental resistance
- Efficient strain relief
- Flexibility
- Versatility





Available in:

Americas	■
Europe	■
Asia Pacific	■

Applications

Tyco Electronics, a longtime leader in harnessing technology, has written a new chapter in EMC shielding with the introduction of the Raychem HexaShield EMC adapter.

Designed to provide EMC protection solutions for both commercial and military applications, HexaShield adapters represent a significant improvement over pigtail termination methods. By providing 360-degree EMC shielding on the termination area of each individual cable, HexaShield adapters provide outstanding shielding effectiveness.

HexaShield adapters are simple to install, easy to maintain, and dependably resistant to mechanical and environmental stresses.

Principal points and features

- Easy reentry: To insert or remove ferrules from the HexaShield adapter, simply loosen the back nut.
- Superior protection: No degradation of shielding performance.
- Up to four shielded cables accommodated by each ferrule.
- Mechanical and environmental protection equal to backshells complying with MIL-C-85049 Category 3B.
- Strain relief on each individual cable.
- Weight reduction, by possibly eliminating the need for overall shielding.
- Compact size - not exceeding outer diameter of connector.
- Available in straight, 45° and 90° angles, as well as swept and long bodies.

Simple assembly and installation

1. Solder cable or wire shield to a ferrule with a Raychem heat-shrinkable SolderShield terminator.
2. Clip ferrule into one of the grounding star cavities.
3. Secure the back nut of the HexaShield adapter so that the conic ring assembly automatically compresses the ferrules.

8

Electrical Interconnect Products

Designed to corresponding connector specifications.

Two Platings Available	Raychem Product Specifications
Electroless nickel (MIL-DTL-26074)	RB-110 and RB-114
Olive drab cadmium (QQ-P-416 Type II Class 3)	—

*Contact Tyco Electronics for additional platings.

Installation Procedures

Installation procedure for HET-A-02X and HET-A-04X (RPIP-696-00)	Installation procedure for HET-03X (RPIP-696-03)	General procedure for cylindrical connectors, right-angle body (RPIP-696-07)
General procedure for ARINC 600 Size II connectors (RPIP-696-01)	General procedure for cylindrical connectors, straight body (RPIP-696-04)	—
General procedure for ARINC 600 Size III connectors (RPIP-696-02)	—	—

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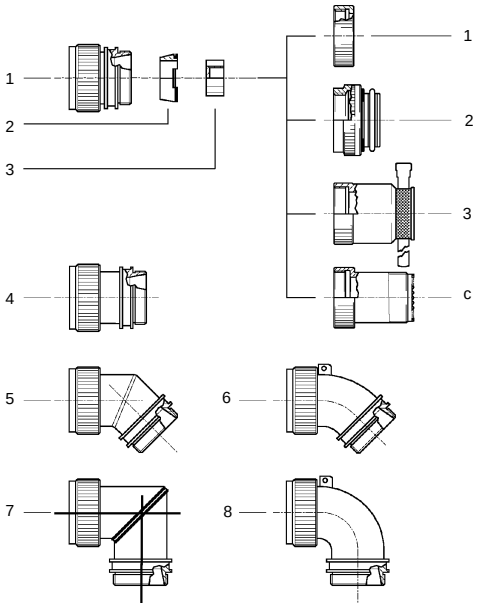
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

Hexashield Adapters for Circular Connectors: Straight, 45°and 90° Assemblies

Item	Description
1	Straight adapter assembly
2	Conic ring assembly
3	Star Plain (Standard) Drilled (Option) Split (Option) _
4	Straight adapter assembly - “L” version - nominally 0.5" [12.7] longer body
5	45° adapter assembly - welded
6	45° adapter assembly - swept
7	90° adapter assembly - welded
8	90° adapter assembly - swept Standard products shown. Variants available on request. Split star assemblies are shown on relevant S.C.D’s where applicable.

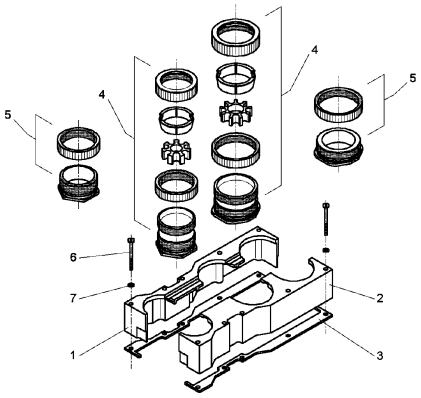
Item	HexaShield Version
-1	Back Nut
-2	Tinel adapter assembly Tinel-Lock ring for single braid
-3	Bandstrap adapter assembly
-C	Conduit adapter



HexaShield Adapters for ARINC 404/600 Connectors: Sizes 1, 2, 3 and 4 Assemblies

Item	Description
1	Left side support
2	Right side support
3	Retention bars
4	Body assemblies Body Holding nut Conic ring assembly Star _ Back nut
5	Cavity plug assemblies Plug Holding nut
6	Pan head screws - 4-40 UNC
7	Spring washers

ARINC 600 Size 2 shown
Stars are available as plain, drilled or split.
See relevant S.C.D’s for further information



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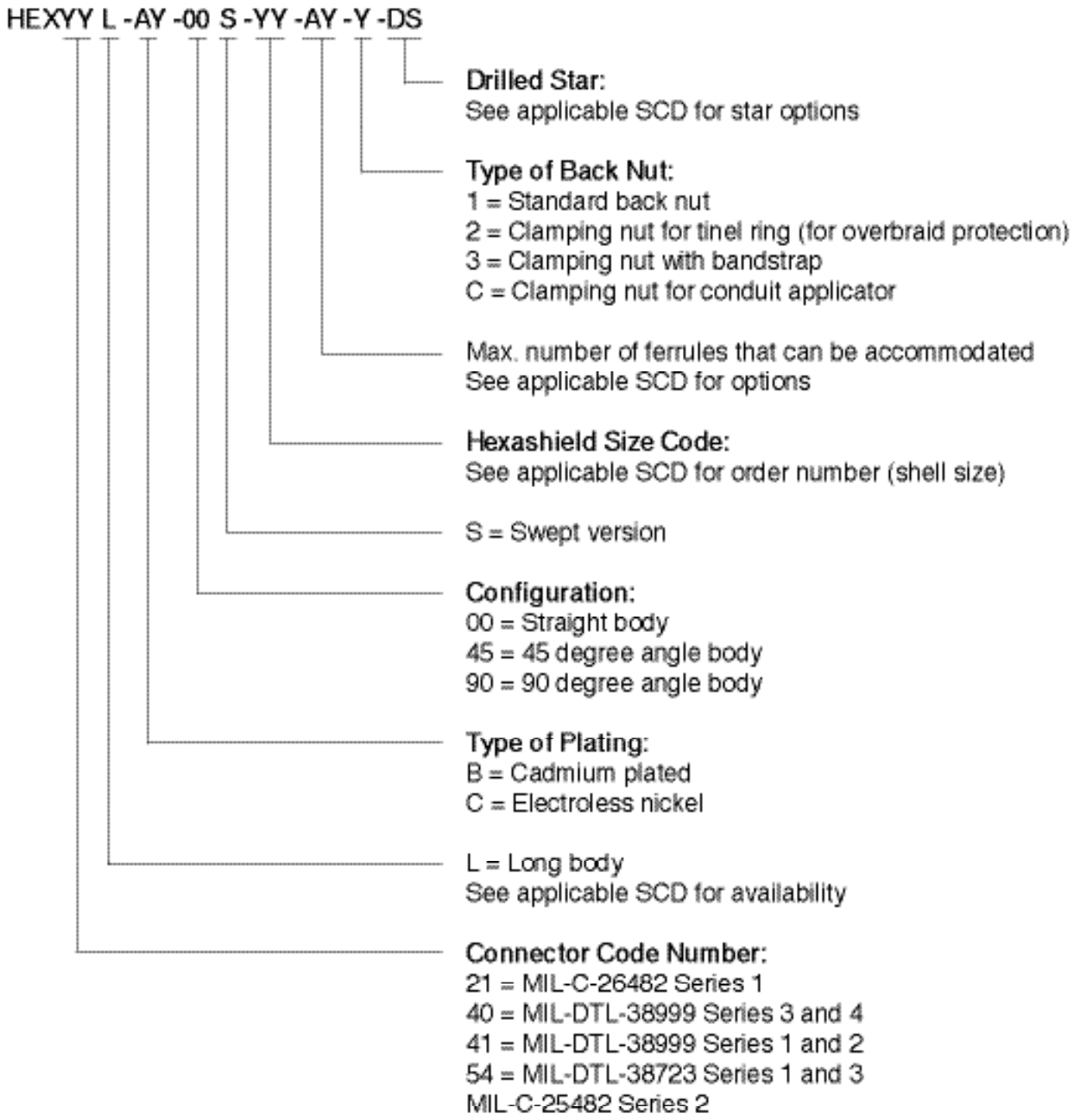
Ordering Information

Part Numbering for Standard Products

HexaShield Adapter for Circular Connectors



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Ordering Information (Continued)

HexaShield Adapter for Collins Connectors

HEXDB-AC-00-A9-1

- 00 = Straight body
- 90 = Right-angle body

HexaShield Adapter for ARINC 600 Connectors

HEXA6-AY-00-YY-AY-Y

- **Clamping nut version:**
  - 1 = Clamping nut alone
  - 2 = Clamping nut for tinel ring
- **Number of ferrules:**
  - 18 for ARINC 600 size II (A and B cavities)
  - 25 for ARINC 600 size II (A, B and C cavities)
  - 18 for ARINC 600 size III (A and B cavities)
  - See applicable SCD for options
- **ARINC Connector Size:**
  - 02 = ARINC 600 size II
  - 03 = ARINC 600 size III
- **Configuration:**
  - 00 = Straight body
  - 90 = Right-angle body
- **Plating:**
  - B = Cadmium plated
  - C = Electroless nickel

Drilled Stars are standard on ARINC 600 adapters.

Part Numbering of Ferrule Kits*

HET-A-02X for small-size cable with SolderShield terminator
HET-A-03X for connection of unshielded cables ferrules with heat-shrinkable tubing (no shield)
HET-A-04X for large-size cables with SolderShield terminator

- **Type of Plating:**
  - B = Cadmium plated
  - C = Electroless nickel

HEX07-AX ferrule - solid blank for use when a HET-A is not needed

- **Type of Plating:**
  - B = Cadmium plated
  - C = Electroless nickel

*Not all part numbers are standard; your local Tyco Electronics representative will assist you in selecting the appropriate standard product

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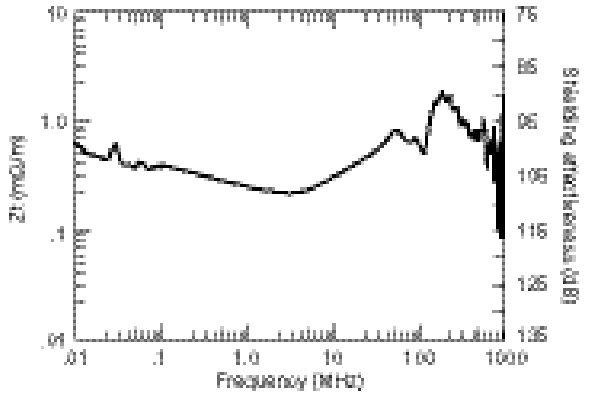
EMC Performance

Product Facts

- **Outperforms traditional pigtail termination, especially in HIRF performance**
- **Withstands 10-kA peak current lightning transients of SAE AE4L-87-3**

Transfer Impedance



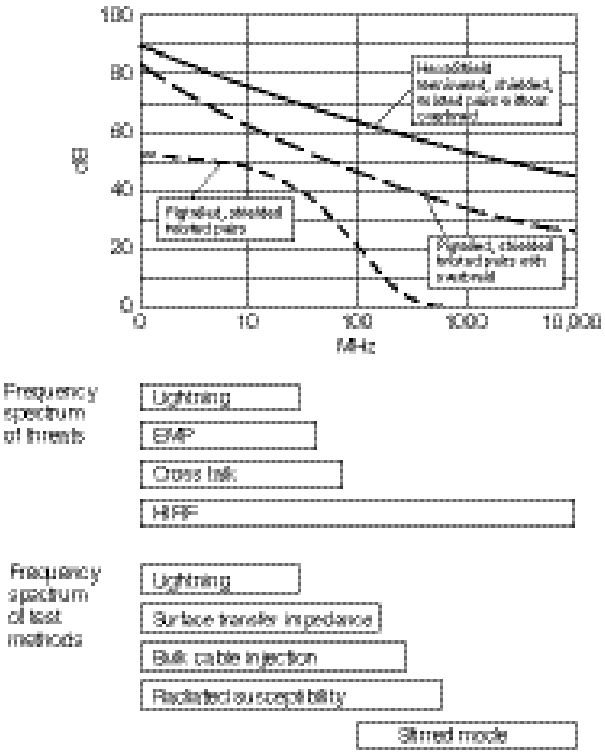
HexaShield size: 23

Cable: Raychem 5024H8424 (one cable installed)

Test method: CEI 96-1

Protection Level

Generalized system performance (Actual system performance in any one test method may differ.)



8 Electrical Interconnect Products

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EMC Performance (Continued)

Typical HexaShield Applications

Civilian and military aircraft
Avionics
Fighter aircraft
Missiles and launch support systems
Armored and military support vehicles
Navy ships (total shipboard hardening)
Military communications
Engines (FADEC harness hardening)

HexaShield Product Range

Accommodates the following connector types*:
MIL-C-26482 Series 1
MIL-DTL-38999 Series 1, 2, 3, and 4
MIL-C-26482 Series 2
MIL-DTL-83723 Series 1 and 3
DBAD
ARINC 600
ARINC 404

*Please contact Tyco Electronics for other connector types and special requests.

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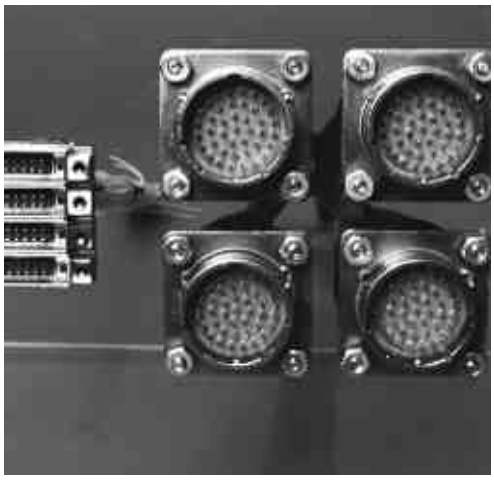
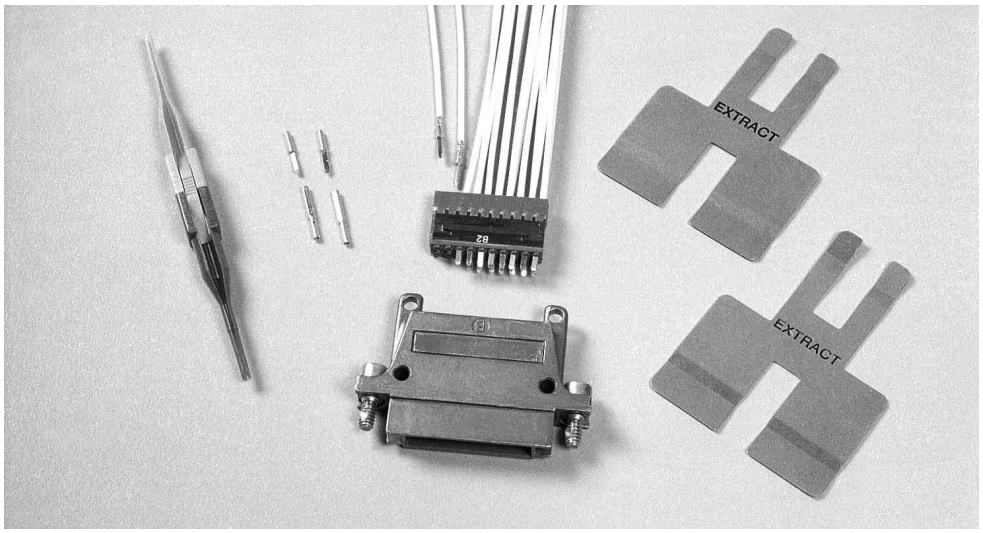
Introduction

Product Facts

- Low-profile rectangular design for high packaging density
- Environmental sealing for aerospace applications
- Modular components for design versatility and logistics savings
- Lightweight materials for weight savings
- Quick-disconnect mating hardware





System

The Raychem MTC product line is a complete modular connector system consisting of lightweight, environmentally sealed miniature rectangular connectors (shell housings with removable inserts) and individually removable rear-release contacts.

Components

MTC connectors are now available with quick-disconnect mating hardware, EME shielding accessories, and modular inserts that can accommodate a mix of signal and power crimp contacts and coaxial contacts. The need for special termination tooling has been minimized, while the ease of manufacturing and maintenance has been improved.

Configurations

MTC rectangular connectors using jack screws or quick-disconnect hardware can be stacked or panel-mounted next to each other without any provision for grip space, a feature that can save significant panel area.

MTC connectors are available in 1-inch and 2-inch configurations. Modular removable inserts with size 22 and/or size 16 contact cavities can be combined into the 1-inch and 2-inch MTC housings.

Inserts

MTC inserts are available in 20-cavity and 5-cavity versions. The 20-cavity insert accepts size 20-22 (24 AWG to 20 AWG wire) crimp contacts. The 5-cavity insert accepts size 16–14 crimp contacts. Insertion/extraction of the contacts is rear release.

Note:
Other configurations are available in the MTC family (size 12 contacts; 50 mil spacing for double density; accessories). Please contact Tyco Electronics.

Available in:	
Americas	■
Europe	■
Asia Pacific	■

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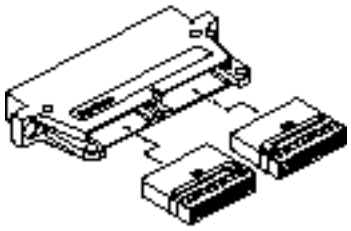
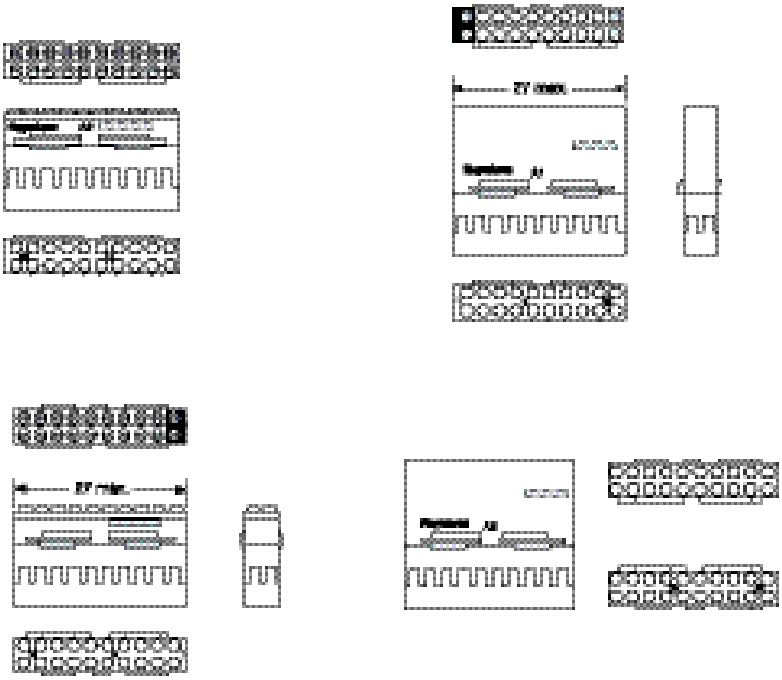
20-Cavity Inserts



2-inch shell with inserts



MTCP-122-20 inserts are used with MTC100 1-inch and 2-inch shells.
The 1-inch shell takes:

- One MTCP-122-20P (pin contact) **or**
- One MTCP-122-20S (socket contact)

The 2-inch shell takes:

- One MTCP-122-20P1 and one MTCP-122-20P2 (pin contact) **or**
- One MTCP-122-20S1 and one MTCP-122-20S2 (socket contact)

2 x 20 Cavity Inserts (Size 20–22)—2-Inch Shell

Pin Insert	Socket Insert
MTCP-122-20P1	MTCP-122-20S1
MTCP-122-20P2	MTCP-122-20S2

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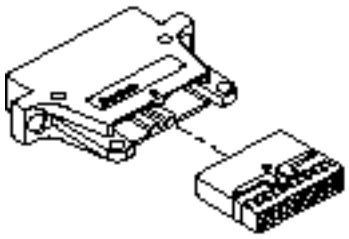
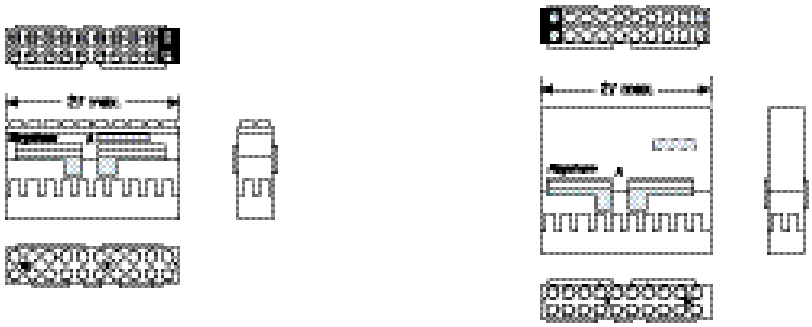
20-Cavity Inserts (Continued)

1 x 20 Cavity Inserts (Size 20–22)—1-Inch Shell



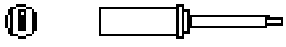
1-inch shell with insert



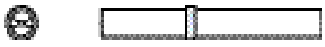
Pin Insert	Socket Insert
MTCP-122-20P	MTCP-122-20S

Contacts for 20-Cavity Inserts
The contacts for 20-cavity inserts must be ordered separately. They are:
■ CTA-0166—pin contact
■ CTA-0165—socket contact

Contacts accept 24 AWGto 20 AWGwires.



Pin Contact
CTA-0166



Socket Contact
CTA-0165

Tools		Tools	
Positioner for pin contact	CE-1605900	Positioner for socket contact	CE-1606000
Installation process	ES-61413	Installation process	ES-61413
Contact removal tool (plastic)	CTA-1160	Contact removal tool (plastic)	CTA-1160
Extraction tool for MTCPinserts	CTA-0161	Extraction tool for MTCPinserts	CTA-0161

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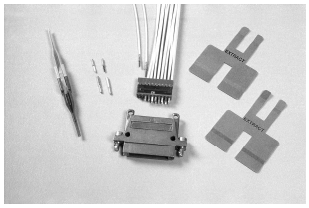
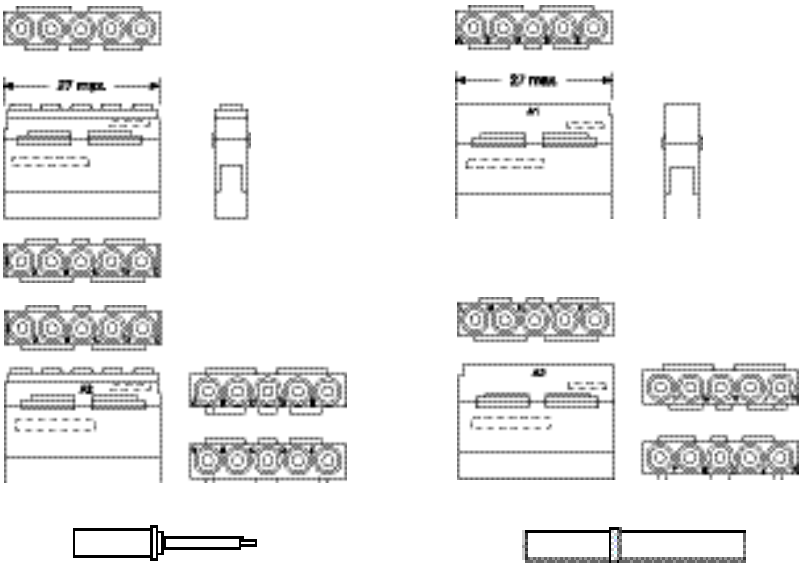
5-Cavity Inserts

5-Cavity Inserts (Size 16)





MTCP-116-05 inserts are used with MTC100 1-inch and 2-inch shells. The 1-inch shell takes:

- One MTCP-116-05-P1 (pin contact) **or**
- One MTCP-116-05-S1 (socket contact)

The 2-inch shell takes:

- One MTCP-116-05P1 and one MTC-116-05P2 (pin contact) **or**
- One MTCP-116-05-S1 and one MTCP-116-05-S2 (socket contact)

5-Cavity Inserts (Size 16)	
Pin Insert	**Socket Insert**
MTCP-116-05P1	MTCP-116-05S1
MTCP-116-05P2	MTCP-116-05S2

Contacts for 5-Cavity Inserts

The contacts for 5-cavity inserts must be ordered separately. They include:	
■ CTA-0079 - pin contact (MS 27493-16) (MIL-C-39029/58 intermateable)	
■ CTA-0078 - socket contact (MS 27491-16) (MIL-C-39029/57 intermateable)	
■ D-602-0140 - coaxial pin contact (MIL-C-39029/76 intermateable)	
■ D-602-0171 - coaxial socket contact (MIL-C-39029/78 intermateable)	
Other contacts designed for M38999 Series II connectors can be used.	
Pin Contact	**Socket Contact**
D-602-0140 (coaxial)	D-602-0171 (coaxial)
CTA-0079 (power)	CTA-0078 (power)

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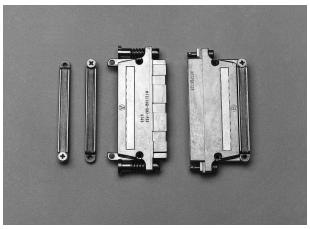
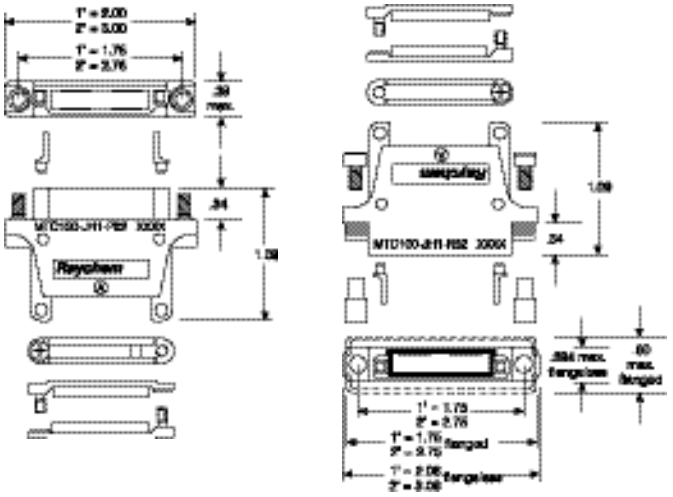
Hybrid Inserts



Plug **Receptacle**



Hybrids

Hybrid insert combinations of size 22 and size 16 contact cavities are also possible.
2-Inch Shell—Hybrid Assembly
Power and signal

Shells

MTC connector housing shells are available with nickel plating (48-hr salt spray performance) or cadmium over nickel plating (500-hr salt spray performance).

MTC connector housings are offered with quick-disconnect or jack-screw mating hardware. Each connector shell is polarized and has 64 user-defined keying combinations. Lightweight, low-profile EME backshells are also available for increased shielding effectiveness of the connector.

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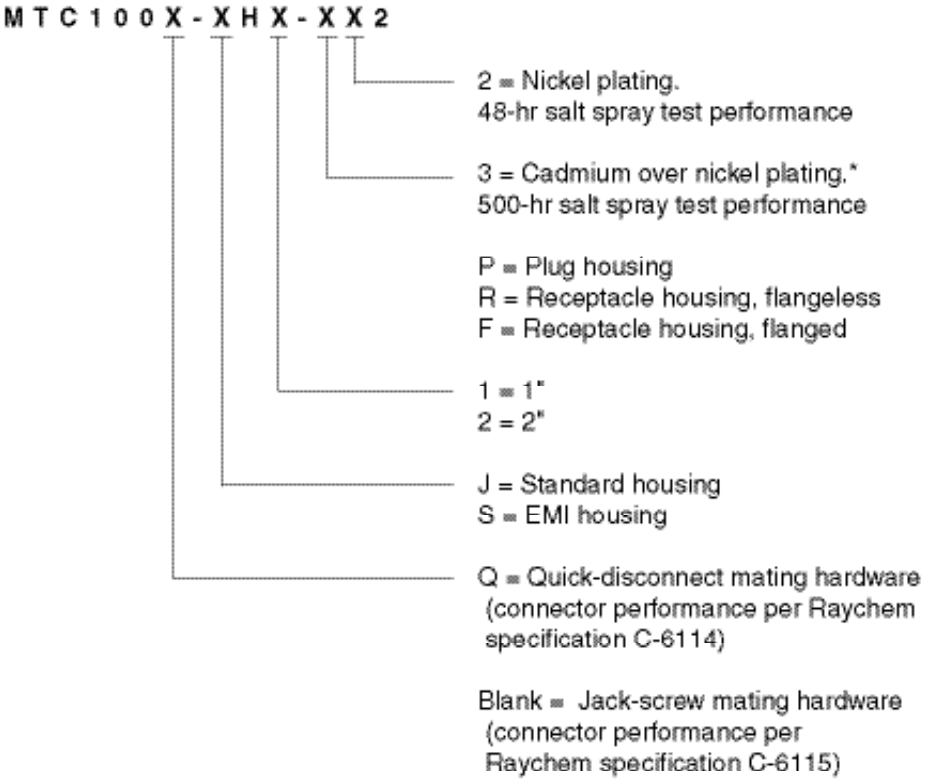
MTC Shells Ordering Information



*Some combinations of shells, mating hardware and EMEshielding accessories are not available. Contact Tyco Electronics for product information.

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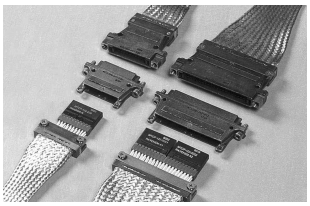
Accessories



Low-Profile EME Backshells

Lightweight rectangular EME backshells connect the overall bundle shield to the MTC connector housing. Individual cable shields can also be terminated to the backshell braid by using Raychem SolderSleeve devices.

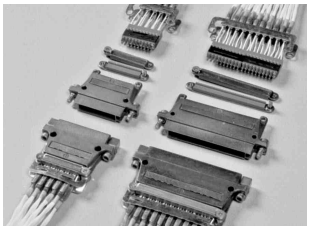
The backshell is mounted on the MTC housing via the cable clamp screws.

MTC backshell features include a low profile, light weight, and Level II EME performance.

EME Backshell Adapters

CHA-0275 2-inch adapter (plug or receptacle)

CHA-0276 1-inch adapter (plug or receptacle)



MTC Shield-Grounding BusBars

Raychem MTC shield-grounding busbars allow for simple, cost-effective termination of cable shielding to MTC aluminum housings.

Two-inch shield-grounding busbars terminate up to 20 shielded twisted pairs on a 2-inch MTC connector. The individual shields are terminated to “fingers” on the busbar with Raychem SolderSleeve devices.

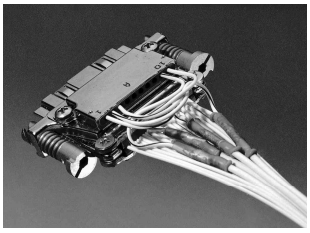
The busbar is mounted on the MTC housing via cable clamp screws.

MTC busbar features include a simple termination, cost effectiveness, light weight, and Level I EME performance.

Shield-Grounding Busbars

CTA-0022 1-inch busbar (with 5 SolderSleeve terminators)

CTA-0023 2-inch busbar (with 10 SolderSleeve terminators)



EME Shielding Accessories for MTC Connectors

Grounding Block
Allows for cable shield termination grounding on the MTC shell housing via crimp-removable contacts. This grounding scheme allows individual cables to be removed from the connector without cutting a ganged ground connection. Sufficient ground contacts are available to handle shielded twisted-pair cables.

Grounding Block

CHA-0301 1-inch grounding block receptacle shell

CHA-0302 2-inch grounding block receptacle shell

CHA-0303 1-inch grounding block plug shell

CHA-0304 2-inch grounding block plug shell

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Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Japan: 81-44-900-5102
Singapore: 65-4866-151
UK: 44-1793-528171

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Dimensions are in millimeters and inches unless otherwise specified. Values in brackets are U.S. equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

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