

SMA.com

DC - 6 GHz

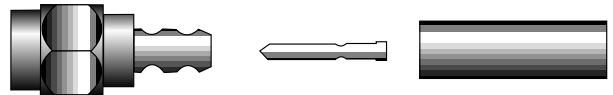
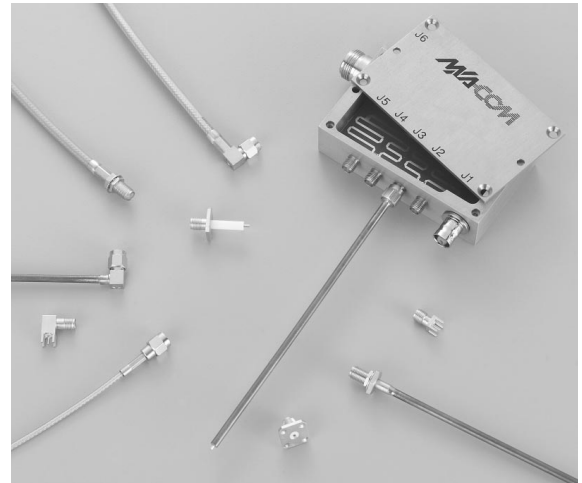
- Intermodulation sensitive designs
- Non-ferrous brass construction
- Corrosion resistant, non-magnetic White Bronze™ plating
- Fully crimpable, 3-piece flexible cable designs

M/A-COM introduces the SMA.com series of subminiature RF connectors. SMA.com series are designed to satisfy the growing demand for reliable, intermodulation sensitive performance in wireless communications. The SMA.com series offers all the advantages of, and is interchangeable with, our standard range of stainless steel SMA connectors but have been designed utilizing non-ferrous brass materials and our unique White Bronze™ plating.

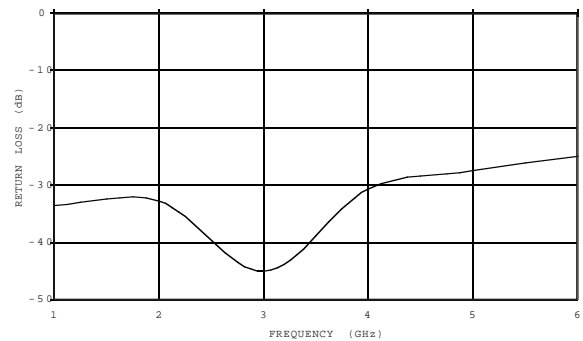
The SMA.com series meets the performance, quality and ease of use requirements of the commercial marketplace. Our broad range of connectors utilize fully crimpable 3-piece flexible cable designs with mechanically captivated center contacts for improved shielding. Thick wall plug interfaces ensure that mechanical integrity is maintained when connectors are mated at the specified torque value. Extended length ferrules increase cable retention and provide added strain relief characteristics, thereby eliminating the need for a supplementary shrink boot. Rated for a minimum of 100 mating cycles, SMA.com guarantees a mechanically robust threaded coupling connection even in the most demanding applications. Standard plating of SMA.com is White Bronze™, a unique finish developed by M/A-COM to address the performance needs of the telecommunications market. Highly resistant to corrosion and wear, White Bronze™ contains no ferrous materials and, as a result, displays excellent intermodulation characteristics.

To satisfy a broad range of commercial applications, SMA.com connectors are available in a variety of standard configurations, including: straight and right angle cable plug, bulkhead cable jack, two and four hole flange panel mount jack, and both straight and right angle PCB jack. Additionally, between and in-series adapters and cable assemblies can be supplied to meet your specific packaging needs for integrating or testing component and subsystem parameters.

Appropriate for a broad range of applications, SMA.com is especially suited for applications in cellular infrastructure where Intermodulation Products (IMP) must be minimized. By limiting non-linearities within the connector, SMA.com reduces IMP and provides carriers increased channel capacity and efficiency.



Typical SMA.com Design



Typical Return Loss SMA.com Jack to Plug

M/A-COM maintains an SPC controlled and ISO certified global manufacturing environment to ensure unsurpassed quality. Call your local M/A-COM sales office, global Applications Engineering team, or authorized distributor for more information or samples of the SMA.com connector series, and allow us to provide you with a competitive advantage in design, manufacturing, and installation.

Specifications Subject to Change Without Notice.

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Requirement

Detail

General

Materials

Housing: Brass (per ASTM-B-16, Half Hard or CZ121 per BS 2874)
 Center Contact: BeCu (per ASTM-B-196 or ASTM-B-197) & Brass (per ASTM-B-16, Half Hard or CZ121 per BS 2874)
 Dielectric: PTFE Fluorocarbon
 Gasket (O-ring): Silicone rubber (per ZZ-R-765)

Finish

Housing: White Bronze™ (suffix -36) or Gold (suffix -09)
 Center Contact: Gold over Copper

Electrical

Frequency Range: DC - 6GHz
 Nominal Impedance: 50 Ohms
 VSWR: 1.20:1 Max (-21dB Min. Return Loss) Straight Connectors Only
 RF Transmission Loss: .05x \sqrt{f} (GHz)
 Insulation Resistance: 10,000 Megohms Min. @ 500 Volts
 Contact Resistance:
 Center Contact: 3.0 Milliohms Max.
 Outer Contact: 2.0 Milliohms Max.
 Outer Contact to Cable: 0.5 Milliohms Max.
 Dielectric Withstanding Voltage: 500 Volts RMS
 Corona Extinction Voltage at 70,000 FT: 190 Volts Min. per MIL-PRF-39012
 RF High Potential at 5MHz: 500 Volts RMS @ Sea Level
 RF Leakage Interface Only: [-90- f(GHz)] dB (Fully Mated) @ 2-3 GHz

Mechanical

Force to Engage: The torque required to engage/disengage shall not exceed 2 in lbs. (0.23Nm). The longitudinal force is not applicable.
 Recommended Mating Torque: 3-5 in.lbs. (0.34-0.57Nm)
 Center Contact Retention: 6 Pounds (2.70 Kg) Min. (typical)
 Durability: 100 Cycles Min
 Mating Characteristics
 (Jack Connector) (MIL-STD-348)
 Center Contact Socket: Oversize Test Pin: .0375 + .0001 Inch Dia.
 Test Pin Finish: 16 Micro Inches
 Number of Insertions: 3
 Insertion Force: Test Pin: .0370 + .0001 Inch Dia.
 Test Pin Finish: 16 Micro Inches
 Insertion Force: 3 Pounds Max./1.35 Kg Max
 Withdrawal Force: Test Pin: .0355 - .0001 Inch Dia.
 Test Pin Finish: 16 Micro Inches
 Withdrawal: 1 Ounce Min./28.0 g Min.

Environmental

Vibration: Specification MIL-STD-202, method 204, test condition D
 Shock: Specification MIL-STD-202, method 213, test condition I
 Thermal Shock: Specification MIL-STD-202, method 107, test condition B
 Corrosion (Salt Spray): Specification MIL-STD-202, method 101, test condition B
 Moisture Resistance: Specification MIL-STD-202, method 106
 Temperature Rating: -65°C to +165°C

Cable Retention

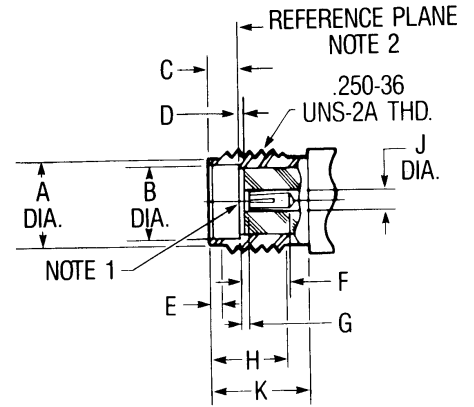
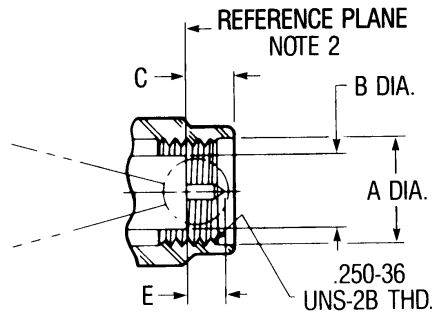
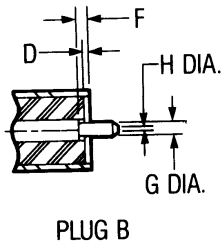
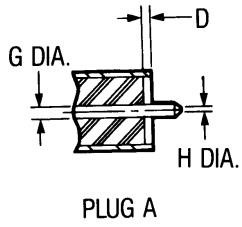
Cable Type	RG 174, 179, 187, 188, 316	RD316	RG 55	RG 142, 223, 400
Lbs (Kg) Min	20 (9.0)	25 (11.3)	40 (18.1)	45 (20.4)

M/A-COM has design control and all data contained herein is subject to change without notice.

Note: Unless otherwise specified, all dimensions are mm/in.

Specifications Subject to Change Without Notice.

Interface Specifications



Plug

Letter	Millimeters (Inches) ³	
	Minimum	Maximum
A	6.35 (.250)	—
B	—	4.59 (.1808)
C	—	3.43 (.135)
D	.000 (0.00)	0.25 (.010)
E	—	2.54 (.100)
F	.000 (0.00)	0.25 (.010)
G	0.90 (.0355)	0.94 (.0370)
H	.000 (0.00)	0.38 (.015)

Jack

Letter	Millimeters (Inches) ³	
	Minimum	Maximum
A	5.28 (.208)	5.49 (.216)
B	4.60 (.1810)	—
C	1.91 (.075)	1.98 (0.78)
D	.000 (0.00)	0.25 (.010)
E	0.38 (.015)	1.43 (0.45)
F	2.92 (.115)	—
G	.000 (0.00)	0.25 (0.10)
H	4.32 (.170)	—
J	.124 (0.49)	1.30 (.051)
K	5.54 (.218)	—

1. ID to meet VSWR and contact resistance when mated with .036 +.0010/-0005 (0.51mm) dia. pin.
2. When fully engaged, the two reference planes must coincide with metal to metal contact.
3. Metric equivalents (to the nearest 0.01mm) are given for general information only.

Note: Unless otherwise specified, all dimensions are mm/in.

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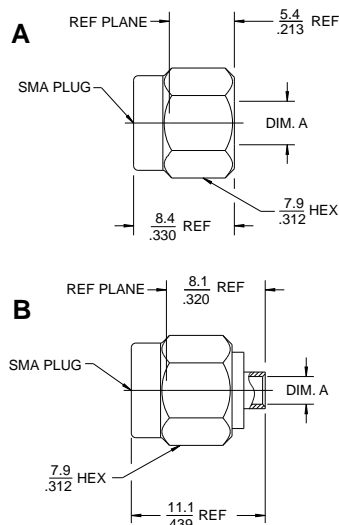
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Straight Cable Plugs

.085 and .141 Dia. · Direct Solder Attachment



A

Cable	RG402/U(.141)
Part Number	2201-7941-09 without center contact
Dim. A or Min	mm (Inches)
Cable Entry	3.63 (.143)

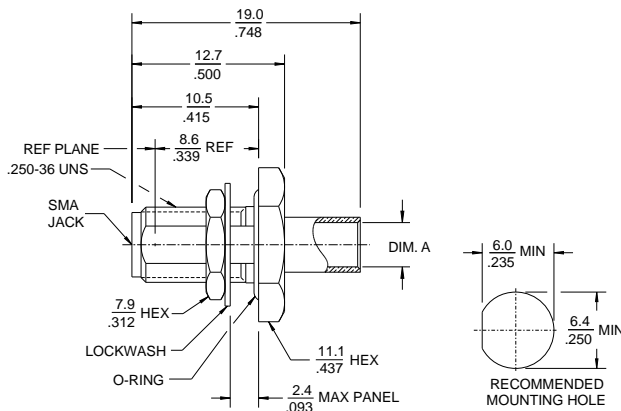
B

Cable	RG402/U(.141)	RG405/U(.085)
Part Number	2201-5003-09 with center contact	2201-7985-09 with center contact
Dim. A or Min	mm (Inches)	mm (Inches)
Cable Entry	3.66 (.144)	2.26 (.089)

Finish: Gold Plate
Refer to recommended assembly tool kit on page 8.
Direct solder attachment connectors will allow use of industry standard conformable cables.

Bulkhead Cable Jack

.085 and .141 Dia. · Direct Solder Attachment

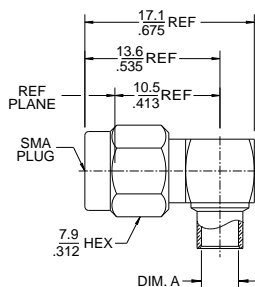


Cable	RG402/U(.141)	RG405/U(.085)
Part Number	2204-7941-09	2204-7985-09
Dim. A or Min	mm (Inches)	mm (Inches)
Cable Entry	3.66 (.144)	2.26 (.089)

Finish: Gold Plate
Refer to recommended assembly tool kit on page 8.
Direct solder attachment connectors will allow use of industry standard conformable cables.

Right Angle Plug

.085 and .141 Dia. · Direct Solder Attachment



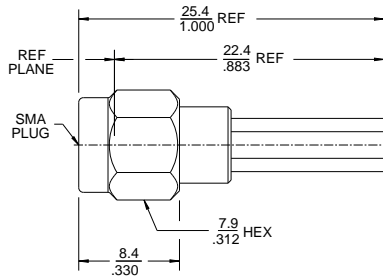
Cable	RG402/U(.141)	RG405/U(.085)
Part Number	2207-7941-09	2207-7985-09
Dim. A or Min	mm (Inches)	mm (Inches)
Cable Entry	3.66 (.144)	2.26 (.089)

Finish: Gold Plate
Refer to recommended assembly tool kit on page 8.
Direct solder attachment connectors will allow use of industry standard conformable cables.

Note: Unless otherwise specified, all dimensions are mm/in.

Specifications Subject to Change Without Notice.

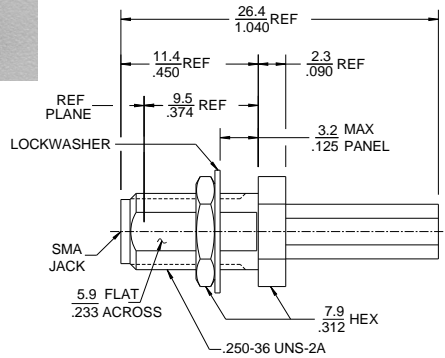
Straight Cable Plugs



Cable	RG55/U, 142, 223 400	RG174/U 179, 187 188, 316	RD316 Double Braid
Part Number	2231-7341-36	2231-7388-36	2231-7316-36
Min Cable	mm (Inches)	mm (Inches)	mm (Inches)
Entry	3.1 (.121)	1.67 (.066)	1.67 (.066)

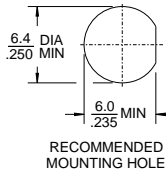
Finish: White Bronze. For optional gold plate, change the p/n suffix from -36 to -09. Refer to econo-crimp tool on page 8.

Bulkhead Cable Jacks

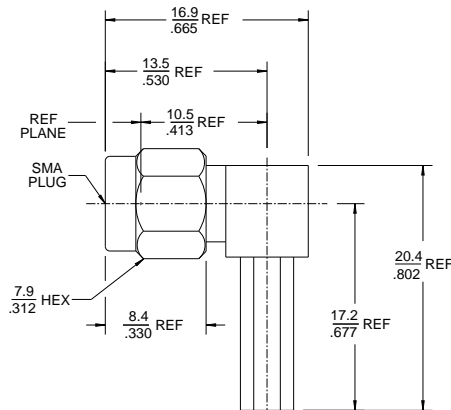


Cable	RG55/U, 142, 223 400	RG174/U 179, 187 188, 316	RD316 Double Braid
Part Number	2234-7341-36	2234-7388-36	2234-7316-36
Min Cable	mm (Inches)	mm (Inches)	mm (Inches)
Entry	3.1 (.121)	1.67 (.066)	1.67 (.066)

Finish: White Bronze. For optional gold plate, change the p/n suffix from -36 to -09. Refer to econo-crimp tool on page 8.



Right Angle Cable Plugs



Cable	RG55/U, 142, 223 400	RG174/U 179, 187 188, 316	RD316 Double Braid
Part Number	2237-7341-36	2237-7388-36	2237-7316-36
Min Cable	mm (Inches)	mm (Inches)	mm (Inches)
Entry	3.1 (.121)	1.67 (.066)	1.67 (.066)

Finish: White Bronze. For optional gold plate, change the p/n suffix from -36 to -09. Refer to econo-crimp tool on page 8.

Note: Unless otherwise specified, all dimensions are mm/in.

Specifications Subject to Change Without Notice.

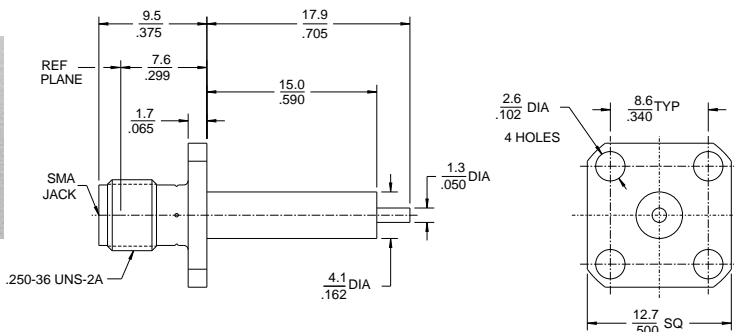
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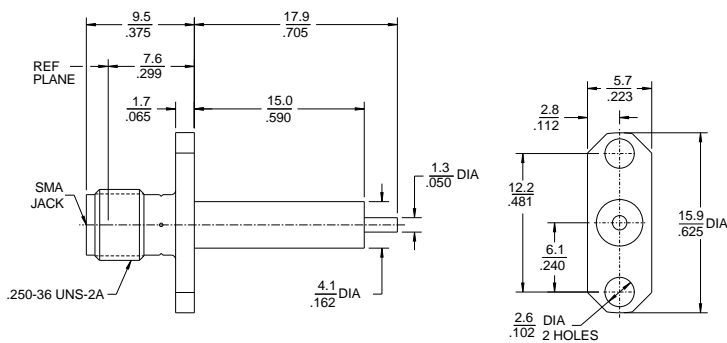
4-Hole Flange Mount Jack Receptacle Straight Terminal



Part Number	2252-1901-36
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Finish: White Bronze. For optional gold plate, change the p/n suffix from -36 to -09.

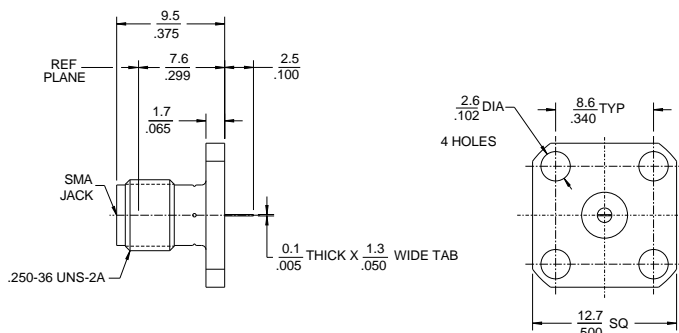
2-Hole Flange Mount Jack Receptacle Straight Terminal



Part Number	2252-1392-36
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Finish: White Bronze. For optional gold plate, change the p/n suffix from -36 to -09.

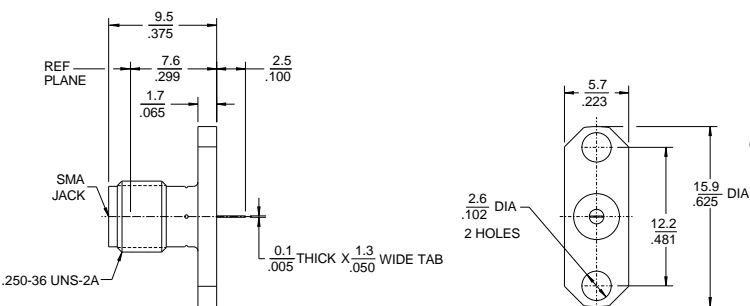
4-Hole Flange Mount Jack Receptacle Tab Terminal



Part Number	2252-1818-36
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Finish: White Bronze. For optional gold plate, change the p/n suffix from -36 to -09.

2-Hole Flange Mount Jack Receptacle Tab Terminal



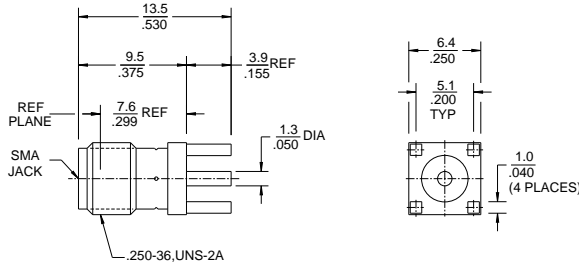
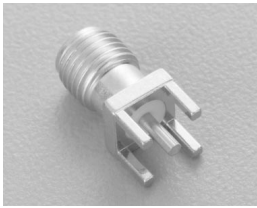
Part Number	2252-1858-36
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Finish: White Bronze. For optional gold plate, change the p/n suffix from -36 to -09.

Note: Unless otherwise specified, all dimensions are mm/in.

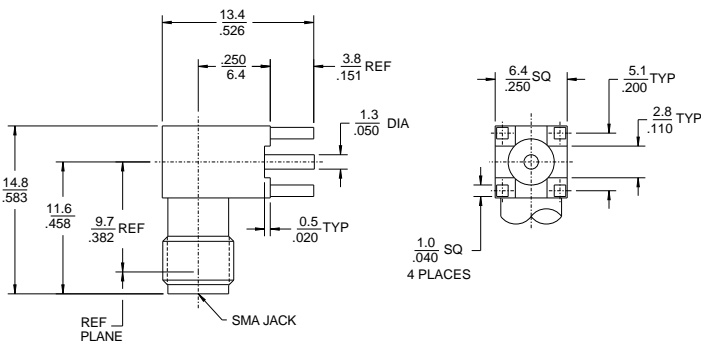
Specifications Subject to Change Without Notice.

Printed Circuit Board Straight Jack



Part Number	2262-0000-09
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Printed Circuit Board Right Angle Jack



Part Number	2264-0000-09
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Solder Assembly Kits
SMA.com Connectors
Kit Part Number 2098-5066-54
Model Number T-200



Description	Part Number	Model Number
Assy Procedure Manual	9098-5105-54	—
Center Contact Holder	2098-5221-10	T-4578
Dielectric Insert Tool	2098-5215-02	T-4551
Dielectric Insert Tool	2098-5214-02	T-4554
Dielectric Recess Tool	2098-5217-54	T-4582
Fixture Sub-Assembly	2098-5206-54	T-4567
Inserts - .085 (2)	2098-5208-54	T-4700-2
Inserts - .141 (2)	2098-5207-54	T-4700-1
Locator Tool	2098-5209-02	T-4575
Locator Tool	2098-5210-02	T-4569
Locator Tool	2098-5213-02	T-948
Locator Tool	2098-5218-02	T-2367
Retainer Ring Pliers	2098-5216-54	T-5702
Solder Gauge .010	2098-5516-02	T-4562-5
Solder Gauge .015	2098-5211-02	T-4562-1
Solder Gauge .018	2098-5211-02	T-4562-2

Econo-Crimp Tools



For quick and efficient cable to connector attachment. Three popular hex die sizes are available to crimp the outer cable conductor to connector housings.

The kit contains:

Description	Part Number
Crimp Tool	2598-5006-54
Hex Die - A, B, C	2598-5007-54

All tools may be purchased separately.
For the assembly of SMA.com connectors, Accessory Kit part number 2098-5067-54 is required.

Hex Die Part Number	Die	Hex Size ±.003	For Use With RG/U Cable
2598-5007-54	A	.105	1788 & 196A
	B	.213	55B, 58C, 141A, 142B, 223 303 & 400
	C	.128	174, 174B, 179, 187A, 188A & 316

Production Torque Wrench

Connector-to-Connector (Front End) Assembly



Hex Size mm(Inches)	Used for Connector Type	Part Number	Preset Torque
7.9 (5/16)	SMA.com	2598-5443-54	5 In.Lbs.

Note: Unless otherwise specified, all dimensions are mm/in.

Specifications Subject to Change Without Notice.

White Bronze™ Plating

M/A-COM's unique Copper, Tin, Zinc alloy finish is a robust plating which is suitable for applications requiring excellent levels of electrical performance and offers the following attributes:

- High Corrosion Resistance
- Low Porosity
- Non-magnetic Finish
- Wear and Scratch Resistant
- Low RF Losses
- Excellent for Intermodulation Sensitive Applications

Application Note ID1014 entitled "White Bronze™" is available from your local M/A-COM Sales Office, authorized distributor or directly through our Global Applications Engineering Group.

Intermodulation

Dissimilar metals, finishes and discontinuities within a coaxline structure give rise to intermodulation distortion (IMD). This is of particular concern in applications such as cellular base stations and antennas which require low levels of intermodulation.

SMA.com series connectors were designed with this phenomena in mind and, as such, contain no ferrous or magnetic materials and utilize low porosity White Bronze™ plating.

Application Note ID1018 entitled "Intermodulation in RF Coaxial Connectors" is available from your local M/A-COM Sales Office, authorized distributor or directly through our Global Applications Engineering Group.

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