

■ Connectivity....for  
Business-Critical Continuity

## ***UMC Ultra Miniature Connectors***

***Product Catalog***



**JOHNSON®**

  
**EMERSON™**  
Network Power

*Emerson's UMC Ultraminiature Coaxial Connectors and Cable Assemblies are the answer for quality, snap-on connections built to meet your cost and performance targets.*

*The UMC cable plugs and jack receptacles offer 2.0mm and 2.5mm maximum mated height options with DC to 6 GHz electrical performance.*

*All parts are RoHS compliant and mate with the Hirose U.FL series connectors.*

## Applications

1. Wireless LAN, Mini-PCI, and Hand-Held RF Devices
2. GSM, GPRS & CDMA Mobile Phones
3. PDA & Notebook Computer
4. GPS
5. Bluetooth
6. Microwave radio and measurement

## Features

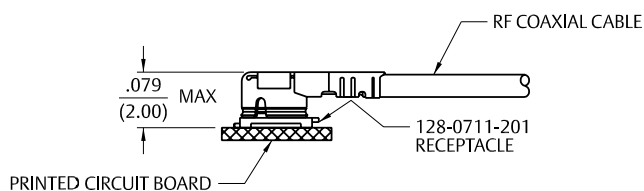
1. Excellent cost to performance ratio.
2. Ultra-low profile connections (2.0mm & 2.5mm max. mated height).
3. R/A plug to R/A plug cable assemblies on .81mm, 1.13mm, 1.32mm and 1.37mm cables.
4. UMC cables available in a variety of standard off-the-shelf lengths (from 50mm to 500mm).
5. Between-series cables available with std. & rev. polarity SMA plugs and Blukhead jacks or MMCX plugs on one end of the cable and the UMC plug on the other end.
6. Surface-mount jack receptacles available on tape and reel (2,500 per reel).
7. In-series UMC adapters available to support testing requirements.
8. All cabled plugs and jack receptacles are supplied with gold plated contacts and bodies.
9. UMC connectors mate with Hirose U.FL series connectors.

## Table of Contents

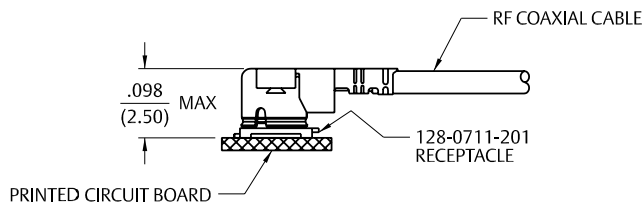
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## Product Specifications

|                       |                                            |
|-----------------------|--------------------------------------------|
| Impedance             | 50 $\Omega$ (Nominal)                      |
| Temperature Range     | -40°C to +90°C                             |
| Frequency Rating      | 0-6 GHz                                    |
| VSWR                  | 1.30 max (0-6 GHz)                         |
| Contact Resistance    | 20 m $\Omega$ max. (Center)                |
|                       | 20 m $\Omega$ max. (Outer, for plug)       |
|                       | 10 m $\Omega$ max. (Outer, for receptacle) |
| Withstanding Voltage  | 200 V AC                                   |
| Insulation Resistance | 500 M $\Omega$ min.                        |
| Durability            | 30 cycles                                  |
| Holding Force (min.)  | 0.15 N (Female contact)                    |



**LP Plug  
(Low Profile Plug)**



**MP Plug  
(Medium Profile Plug)**

# Ultra Miniature Connectors Cable Assembly

Connectivity....for  
Business-Critical Continuity

## UMC Right Angle Cable Plug to UMC Right Angle Cable Plug



| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|--------------|---------------------------|--------------|-------------|-------------------|-------------|
| 415-0084-050 | 0.81 mm                   | 50 mm        | UMC LP PLUG | 2.0 mm            | UMC LP PLUG |
| 415-0084-100 | 0.81 mm                   | 100 mm       | UMC LP PLUG | 2.0 mm            | UMC LP PLUG |
| 415-0084-150 | 0.81 mm                   | 150 mm       | UMC LP PLUG | 2.0 mm            | UMC LP PLUG |
| 415-0084-200 | 0.81 mm                   | 200 mm       | UMC LP PLUG | 2.0 mm            | UMC LP PLUG |
| 415-0084-250 | 0.81 mm                   | 250 mm       | UMC LP PLUG | 2.0 mm            | UMC LP PLUG |
| 415-0084-300 | 0.81 mm                   | 300 mm       | UMC LP PLUG | 2.0 mm            | UMC LP PLUG |
| 415-0084-500 | 0.81 mm                   | 500 mm       | UMC LP PLUG | 2.0 mm            | UMC LP PLUG |

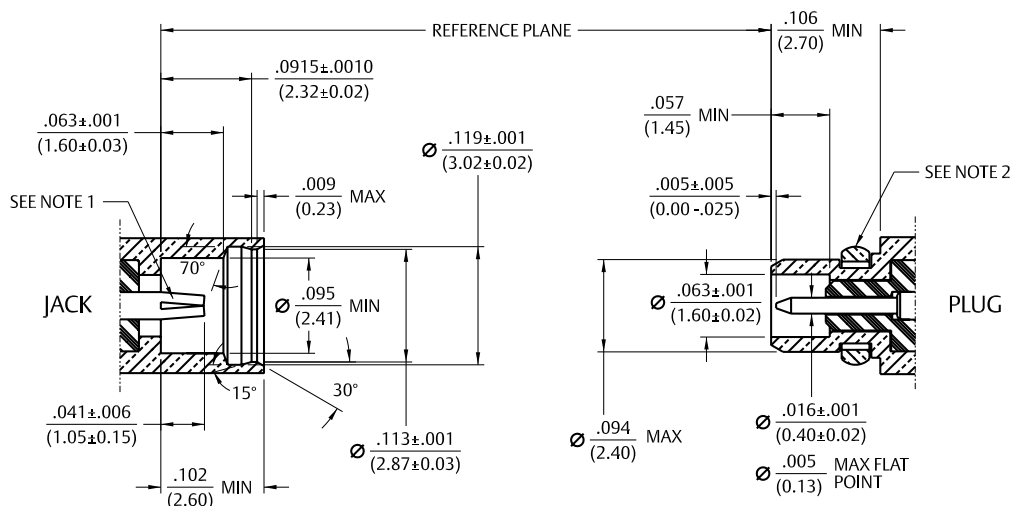
## UMC Right Angle Cable Plug to UMC Right Angle Cable Plug



| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|--------------|---------------------------|--------------|-------------|-------------------|-------------|
| 415-0085-050 | 0.81 mm                   | 50 mm        | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0085-100 | 0.81 mm                   | 100 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0085-150 | 0.81 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0085-200 | 0.81 mm                   | 200 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0085-250 | 0.81 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0085-300 | 0.81 mm                   | 300 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0085-500 | 0.81 mm                   | 500 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0086-050 | 1.13 mm                   | 50 mm        | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0086-100 | 1.13 mm                   | 100 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0086-150 | 1.13 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0086-200 | 1.13 mm                   | 200 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0086-250 | 1.13 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0086-300 | 1.13 mm                   | 300 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0086-500 | 1.13 mm                   | 500 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0087-050 | 1.32 mm                   | 50 mm        | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0087-100 | 1.32 mm                   | 100 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0087-150 | 1.32 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0087-200 | 1.32 mm                   | 200 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0087-250 | 1.32 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0087-300 | 1.32 mm                   | 300 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0087-500 | 1.32 mm                   | 500 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0088-050 | 1.37 mm                   | 50 mm        | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0088-100 | 1.37 mm                   | 100 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0088-150 | 1.37 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0088-200 | 1.37 mm                   | 200 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0088-250 | 1.37 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0088-300 | 1.37 mm                   | 300 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |
| 415-0088-500 | 1.37 mm                   | 500 mm       | UMC MP PLUG | 2.5 mm            | UMC MP PLUG |

## NOTES

1. ID OF CONTACT TO MEET VSWR MATING CHARACTERISTICS AND CONNECTOR DURABILITY WHEN MATED WITH A DIA, .016±.001 MALE CONTACT.
2. MUST MEET THE FORCE TO ENGAGE AND DISENGAGE WHEN MATED WITH PART.



## Low Profile



### UMC Right Angle Cable Plug to MMCX Right Angle Crimp Plug

| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B  |
|--------------|---------------------------|--------------|-------------|--------|--------------|
| 415-0101-150 | 0.81 mm                   | 150 mm       | UMC LP PLUG | 2.0 mm | MMCX RA PLUG |
| 415-0101-250 | 0.81 mm                   | 250 mm       | UMC LP PLUG | 2.0 mm | MMCX RA PLUG |

## Medium Profile



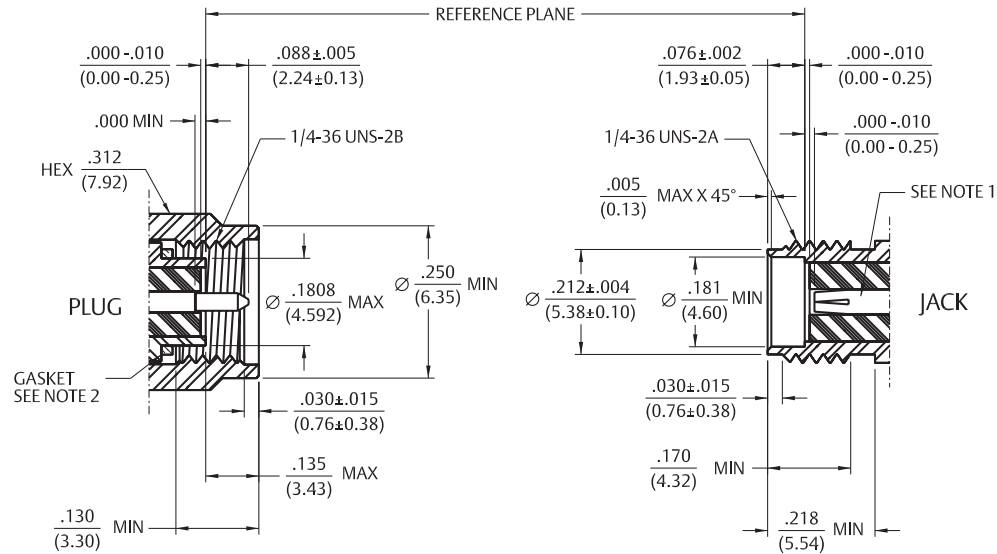
### UMC Right Angle Cable Plug to MMCX Right Angle Crimp Plug

| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B  |
|--------------|---------------------------|--------------|-------------|--------|--------------|
| 415-0102-150 | 0.81 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | MMCX RA PLUG |
| 415-0102-250 | 0.81 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | MMCX RA PLUG |
| 415-0103-150 | 1.37 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | MMCX RA PLUG |
| 415-0103-250 | 1.37 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | MMCX RA PLUG |



## NOTES

1. ID TO MEET VSWR, CONTACT RESISTANCE AND INSERTION WITHDRAWL FORCES WHEN MATED WITH A DIA., .0355 - .0370 PIN.
2. GASKET IS NOT SUPPLIED WITH BRASS CONNECTORS.



## Low Profile



### UMC Right Angle Cable Plug to SMA Straight Crimp Plug

| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B         |
|--------------|---------------------------|--------------|-------------|--------|---------------------|
| 415-0089-150 | 0.81 mm                   | 150 mm       | UMC LP PLUG | 2.0 mm | SMA STR. CRIMP PLUG |
| 415-0089-250 | 0.81 mm                   | 250 mm       | UMC LP PLUG | 2.0 mm | SMA STR. CRIMP PLUG |

## Medium Profile



### UMC Right Angle Cable Plug to SMA Straight Crimp Plug

| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B         |
|--------------|---------------------------|--------------|-------------|--------|---------------------|
| 415-0090-150 | 0.81 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CRIMP PLUG |
| 415-0090-250 | 0.81 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CRIMP PLUG |
| 415-0091-150 | 1.37 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CRIMP PLUG |
| 415-0091-250 | 1.37 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CRIMP PLUG |

## Low Profile



### UMC Right Angle Cable Plug to SMA Straight Crimp Bulkhead Jack

| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B             |
|--------------|---------------------------|--------------|-------------|--------|-------------------------|
| 415-0095-150 | 0.81 mm                   | 150 mm       | UMC LP PLUG | 2.0 mm | SMA STR. CR. BKHD. JACK |
| 415-0095-250 | 0.81 mm                   | 250 mm       | UMC LP PLUG | 2.0 mm | SMA STR. CR. BKHD. JACK |

## Medium Profile



### UMC Right Angle Cable Plug to SMA Straight Crimp Bulkhead Jack

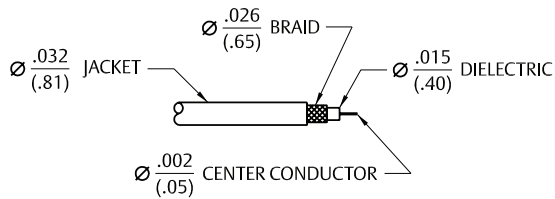
| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B             |
|--------------|---------------------------|--------------|-------------|--------|-------------------------|
| 415-0096-150 | 0.81 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CR. BKHD. JACK |
| 415-0096-250 | 0.81 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CR. BKHD. JACK |
| 415-0097-150 | 1.37 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CR. BKHD. JACK |
| 415-0097-250 | 1.37 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | SMA STR. CR. BKHD. JACK |



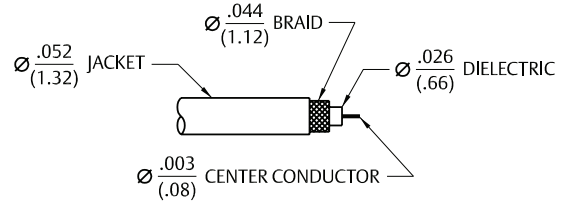
# Ultra Miniature Connectors SMA Bare Ends Assembly

Connectivity....for  
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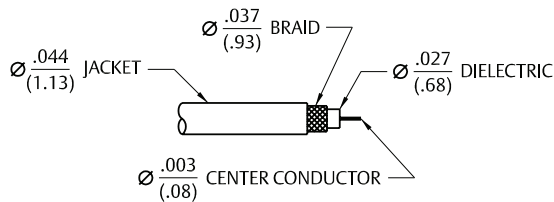
## 0.81 mm Coaxial Cable



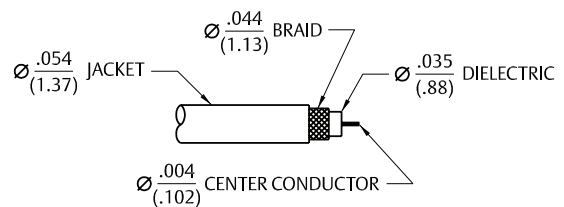
## 1.32 mm Coaxial Cable



## 1.13 mm Coaxial Cable



## 1.37 mm Coaxial Cable



## Low Profile UMC Right Angle Cable Plug to Bare End



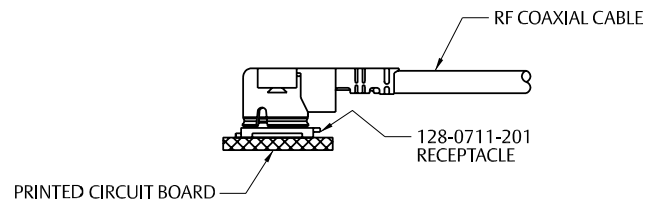
| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B |
|--------------|---------------------------|--------------|-------------|--------|-------------|
| 415-0104-150 | .81 mm                    | 150 mm       | UMC LP PLUG | 2.0 mm | BARE END    |
| 415-0104-250 | .81 mm                    | 250 mm       | UMC LP PLUG | 2.0 mm | BARE END    |

## Medium Profile UMC Right Angle Cable Plug to Bare End



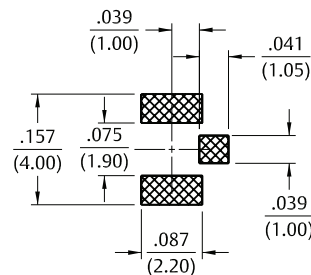
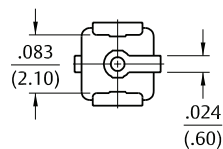
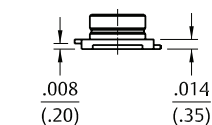
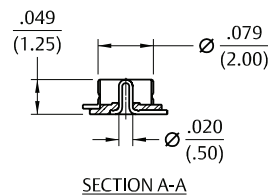
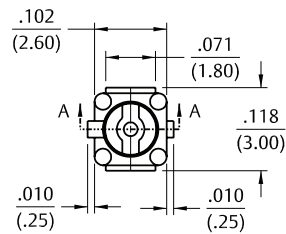
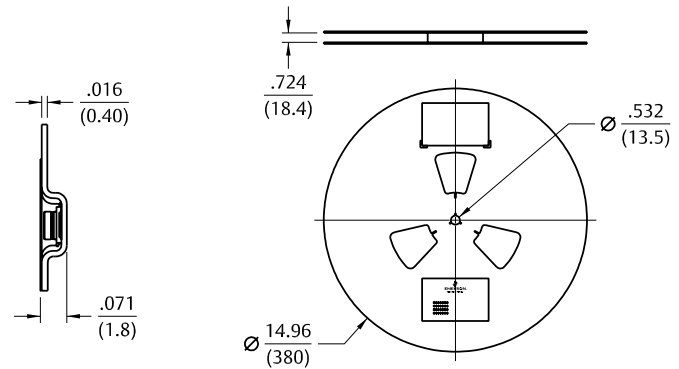
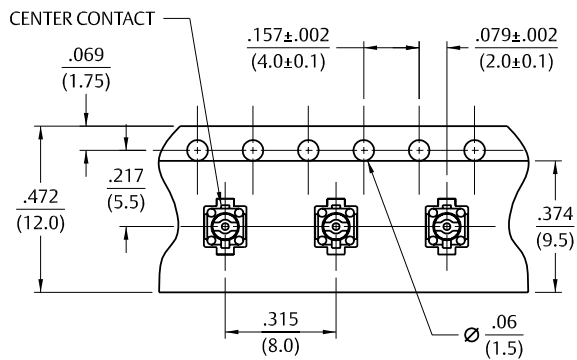
| Part No.     | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Height | Connector B |
|--------------|---------------------------|--------------|-------------|--------|-------------|
| 415-0105-150 | .81 mm                    | 150 mm       | UMC MP PLUG | 2.5 mm | BARE END    |
| 415-0105-250 | .81 mm                    | 250 mm       | UMC MP PLUG | 2.5 mm | BARE END    |
| 415-0106-150 | 1.13 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | BARE END    |
| 415-0106-250 | 1.13 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | BARE END    |
| 415-0107-150 | 1.32 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | BARE END    |
| 415-0107-250 | 1.32 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | BARE END    |
| 415-0108-150 | 1.37 mm                   | 150 mm       | UMC MP PLUG | 2.5 mm | BARE END    |
| 415-0108-250 | 1.37 mm                   | 250 mm       | UMC MP PLUG | 2.5 mm | BARE END    |

## Straight Jack Receptacle - Surface Mount



| Part No.     | Tape & Reel |
|--------------|-------------|
| 128-0711-201 | 2,500/REEL  |

## Tape and Reel



RECOMMENDED PCB PATTERN

## SMA Conversion Adapter for Mating UMC Plugs (SMA Plug to UMC Jack)



Part No.

134-1019-361

Fig. 1

## UMC Separation Key

FOR EXTRACTION  
FROM A COUPLED CONDITION.



Part No.

128-0000-901

## SMA Conversion Adapter for Surface Mt. Jack Receptacle 128-0711-201 (SMA Jack to UMC Plug)



Part No.

134-1019-371

Fig. 2

## Inspection Tool for Cable Assy.



Part No.

134-1019-381

Fig. 3

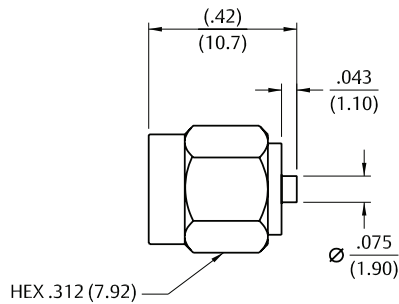


Fig. 1

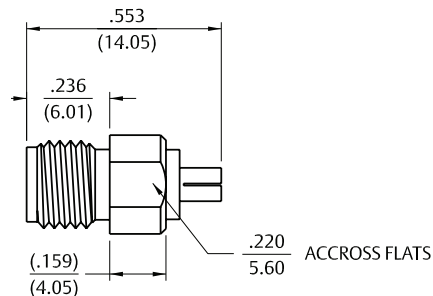


Fig. 2

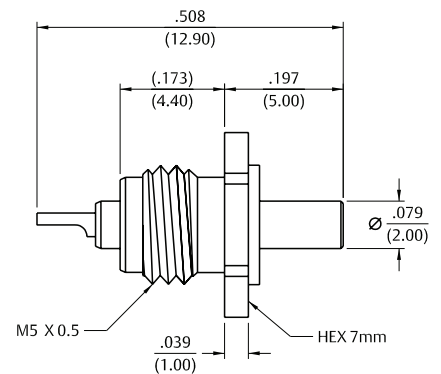


Fig. 3

### JOHNSON P/N

128-0711-201  
415-0084-050  
415-0084-100  
415-0084-150  
415-0084-200  
415-0084-250  
415-0084-300  
415-0084-500  
415-0085-050  
415-0085-100  
415-0085-150  
415-0085-200  
415-0085-250  
415-0085-300  
415-0085-300  
415-0086-050  
415-0086-100  
415-0086-150  
415-0086-200  
415-0086-250  
415-0086-300  
415-0086-500  
415-0087-050

### HIROSE

U.FL-R-SMT(10)  
U.FL-2LP(V)-04N1-A-50  
U.FL-2LP(V)-04N1-A-100  
U.FL-2LP(V)-04N1-A-150  
U.FL-2LP(V)-04N1-A-200  
U.FL-2LP(V)-04N1-A-250  
U.FL-2LP(V)-04N1-A-300  
U.FL-2LP(V)-04N1-A-500  
U.FL-2LP-04N2-A-50  
U.FL-2LP-04N2-A-100  
U.FL-2LP-04N2-A-150  
U.FL-2LP-04N2-A-200  
U.FL-2LP-04N2-A-250  
U.FL-2LP-04N2-A-300  
U.FL-2LP-04N2-A-500  
U.FL-2LP-068N2-A-50  
U.FL-2LP-068N2-A-100  
U.FL-2LP-068N2-A-150  
U.FL-2LP-068N2-A-200  
U.FL-2LP-068N2-A-250  
U.FL-2LP-068N2-A-300  
U.FL-2LP-068N2-A-500  
U.FL-2LP-066J2-A-50

### JOHNSON P/N

415-0087-100  
415-0087-150  
415-0087-200  
415-0087-250  
415-0087-300  
415-0087-500  
415-0088-050  
415-0088-100  
415-0088-150  
415-0088-200  
415-0088-250  
415-0088-300  
415-0088-500  
415-0104-150  
415-0104-250  
415-0105-150  
415-0105-250  
415-0106-150  
415-0106-250  
415-0107-150  
415-0107-250  
415-0108-150  
415-0108-250

### HIROSE

U.FL-2LP-066J2-A-100  
U.FL-2LP-066J2-A-150  
U.FL-2LP-066J2-A-200  
U.FL-2LP-066J2-A-250  
U.FL-2LP-066J2-A-300  
U.FL-2LP-066J2-A-500  
U.FL-2LP-088K2T-A-50  
U.FL-2LP-088K2T-A-100  
U.FL-2LP-088K2T-A-150  
U.FL-2LP-088K2T-A-200  
U.FL-2LP-088K2T-A-250  
U.FL-2LP-088K2T-A-300  
U.FL-2LP-088K2T-A-500  
U.FL-LP(V)-04N1-A-150  
U.FL-LP(V)-04N1-A-250  
U.FL-LP-04N2-A-150  
U.FL-LP-04N2-A-250  
U.FL-LP-068N2-A-150  
U.FL-LP-068N2-A-250  
U.FL-LP-066J2-A-150  
U.FL-LP-066J2-A-250  
U.FL-LP-088K2T-A-150  
U.FL-LP-088K2T-A-250

### UMC Family : UMC MP, LP, ULP Competition with other Supplier's Product

| Model Name                          | Emerson / Johnson                                                |               |               | HIROSE                          |                |               |
|-------------------------------------|------------------------------------------------------------------|---------------|---------------|---------------------------------|----------------|---------------|
|                                     | UMC MP                                                           | UMC LP        | UMC ULP       | U.FL-LP-040/066                 | U.FL-LP(V)-040 | W.FL-LP-040   |
| Mated Height (Max.)                 | 2.5/2.7mm                                                        | 2.1mm         | 1.6mm         | 2.5mm                           | 2.0mm          | 1.55mm        |
| Termination Style                   | Mechanical Termination                                           |               |               | Soldering                       |                |               |
| Plating of Shell                    | Gold                                                             | Gold          | Gold          | Silver                          | Silver         | Silver        |
| Plating of Contact                  | Gold                                                             | Gold          | Gold          | Gold                            | Gold           | Gold          |
| Applicable Coaxial Cable (Diameter) | AWG30(1.37mm)<br>AWG32(1.32mm)<br>AWG32(1.13mm)<br>AWG36(0.81mm) | AWG36(0.81mm) | AWG36(0.81mm) | AWG32(1.32mm)<br>AWG36 (0.81mm) | AWG36(0.81mm)  | AWG36(0.81mm) |
| Frequencies                         | DC to 6GHz                                                       |               |               | DC to 6GHz                      |                |               |

### UMC Compatibility Table Johnson Vs HIROSE

| UMC Family     | Mated Height (mm) | AWG (O.D. mm) | Emerson / Johnson          |              | HIROSE                     |                  |
|----------------|-------------------|---------------|----------------------------|--------------|----------------------------|------------------|
|                |                   |               | Plating (Contact / Ground) | Part No.     | Plating (Contact / Ground) | Product No.      |
| UMC Receptacle | 2.7/2.5/2.1       | N/A           | Gold                       | 128-0711-201 | Gold/Silver                | U.FL-R-SMT (10)  |
| UMC MP Plug    | 2.5               | 30 (1.37)     | Gold                       | 415-0088-xxx | Gold/Silver                | U.FL-LP-088      |
| UMC MP Plug    | 2.7/2.5           | 32 (1.32)     | Gold                       | 415-0087-xxx | Gold/Silver                | U.FL-LP-066      |
|                |                   | 32 (1.13)     | Gold                       | 415-0086-xxx | Gold/Silver                | U.FL-LP-066      |
|                |                   | 36 (0.81)     | Gold                       | 415-0085-xxx | Gold/Silver                | U.FL-LP-040      |
| UMC LP Plug    | 2.1               | 36 (0.81)     | Gold                       | 415-0084-xxx | Gold/Silver                | U.FL-LP(V)-040   |
| UMC ULP Plug   | 1.6               | N/A           | Gold                       | 415-0109-xxx | Gold/Silver                | CL-331-0482-6-10 |

## Emerson Network Power Connectivity Solutions

**Johnson**  
**299 Johnson Avenue**  
**Waseca, MN 56093**  
**USA**

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**[www.EmersonNetworkPower.com/Connectivity](http://www.EmersonNetworkPower.com/Connectivity)**

## About Emerson Network Power Connectivity Solutions

Emerson Network Power Connectivity Solutions, an Emerson business, serves the needs of wireless communications, telephony and data networks, CATV, security systems, health care and industrial facilities with a full spectrum of RF and Microwave connectivity products. For more information, visit [www.EmersonNetworkPower.com/Connectivity](http://www.EmersonNetworkPower.com/Connectivity).

## About Emerson

Emerson (NYSE: EMR), based in St. Louis, is a global leader in bringing technology and engineering together to provide innovative solutions to customers through its network power, process management, industrial automation, climate technologies, and appliance and tools businesses. Sales in fiscal 2006 were \$20.1 billion. For more information, visit [www.gotoemerson.com](http://www.gotoemerson.com).

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