



### FR-N-4SM-01-xxF1 Series

HYBRIFLEX® RRH Optical Fiber Cable, 4 Pair, Ruggedized Bend-Insensitive Single-Mode Fiber, DLC to DLC/FullAXS Compatible Connectors

#### PRODUCT DESCRIPTION

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines any combination of optical fiber and/or DC power for RRHs in a single lightweight armored or unarmored cable, making it the world's most innovative solution for RRH deployments. Hybrid, Fiber Optic and DC riser trunk and jumper cables are available in a large variety of fiber counts, DC counts and cross sections. Both pre-connectorized and on-site options are available.

#### FEATURES / BENEFITS

- Ruggedized, bend-insensitive fiber design with outstanding bending characteristics
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pair directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Outdoor, black jacket – Ensures long-lasting cable protection
- **100% Factory tested - Online test results available**



## TECHNICAL FEATURES

#### STRUCTURE

Cable Type		HYBRIFLEX®
Fire Performance		Flame Retardant

#### MECHANICAL SPECIFICATIONS

Outer Diameter Nominal	mm (in)	5.5 (0.217)
Cable Weight	kg/m (lb/ft)	0.033 (0.022)
Minimum Bending Radius, Single Bend	mm (in)	66 (2.6)
Minimum Bending Radius, Multiple Bends	mm (in)	83 (3.3)
Recommended / Maximum Clamp Spacing	m (ft)	1 / 1.2 (3.25 / 4)

#### F/O CABLE SPECIFICATIONS

Number of F/O Pairs		4
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<b>F/O Cable Type</b>		G657-A2 Single Mode, Bend Tolerant
<b>Core/Clad</b>	µm	9/125
<b>Secondary Protection Nominal</b>	µm (in)	900 (0.035)
<b>F/O Standards (Meets or Exceeds)</b>		UL Listed Type OFNR (UL1666), RoHS Compliant
<b>Optical Loss</b>	dB/Km	0.5 @ 1310 nm 0.5 @ 1550 nm
<b>FO Break-out Length (Top)</b>	mm (in)	279 (11)
<b>FO Break-out Length (Bottom)</b>	mm (in)	228 (9)
<b>Cable Sealing Method</b>		Semi-rigid flame-retardant polyolefin, with hot melt adhesive
<b>Fiber Termination End 1</b>		DLC Connector
<b>Fiber Termination End 2</b>		DLC Connector with FullAXS Compatibility

**CABLE JACKET**

<b>UV-Protection Individual and External Jacket</b>		Yes
<b>Jacket Material</b>		Flame Retardant, Indoor/Outdoor, PVC, Black

**TESTING AND ENVIRONMENTAL**

<b>Storage Temperature</b>	°C (°F)	-40 to 70 (-40 to 158)
<b>Operation Temperature</b>	°C (°F)	-40 to 65 (-40 to 149)
<b>Installation Temperature</b>	°C (°F)	-20 to 65 (-4 to 149)
<b>Jacket Specifications</b>		UL 1666

**EXTERNAL DOCUMENT LINKS**

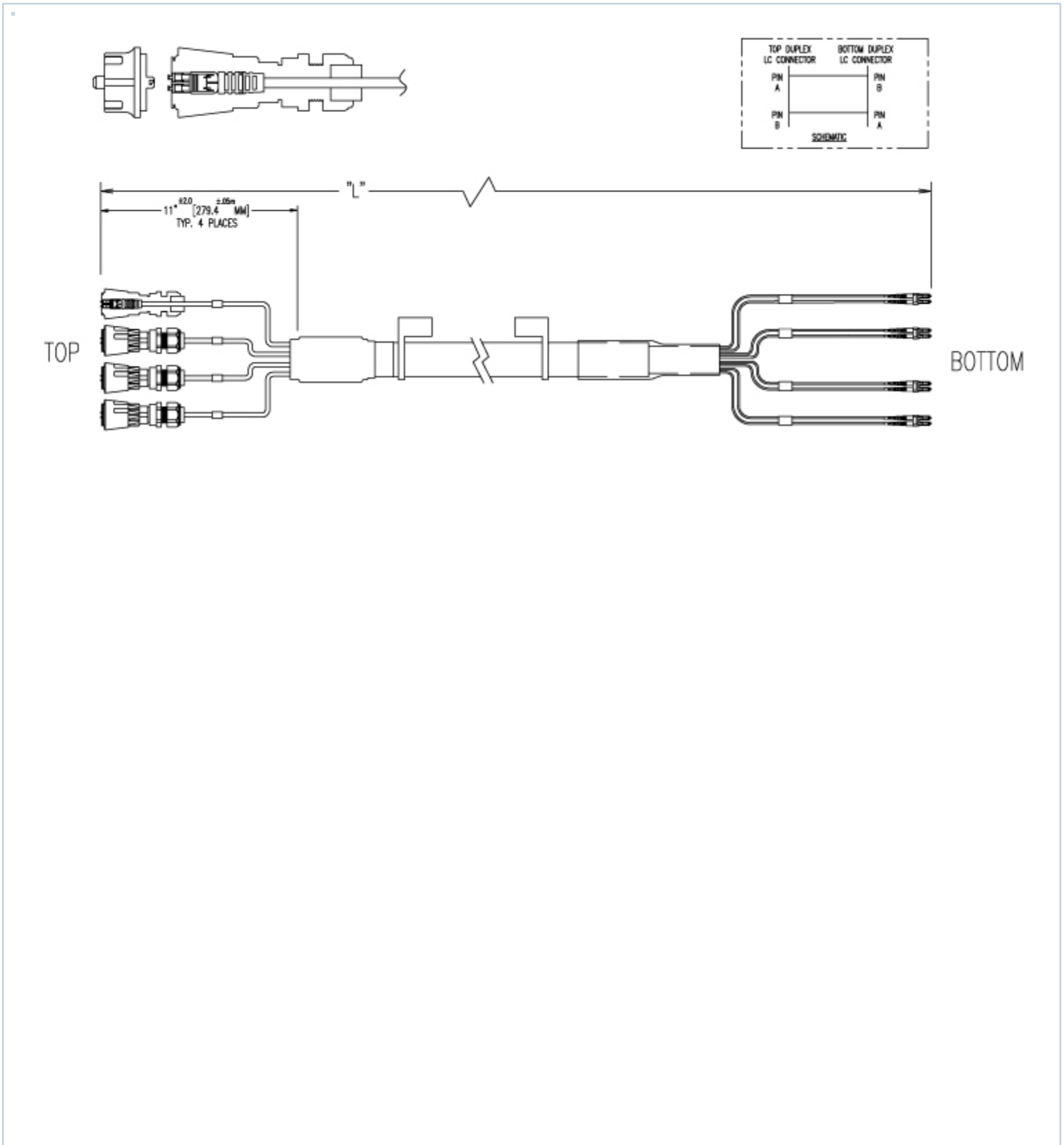
Installation Guidelines: [Download](#)  
QuickShip 2.0 Program Information: [Download](#)  
On-line Factory Test Results: [View](#)

**NOTES**



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**ADDITIONAL ASSEMBLIES - 1 PAIR SM FIBER**

Length, ft	Model Number
10	FR-N-1SM-01-10F1
20	FR-N-1SM-01-20F1
30	FR-N-1SM-01-30F1
40	FR-N-1SM-01-40F1
50	FR-N-1SM-01-50F1
60	FR-N-1SM-01-60F1
79	FR-N-1SM-01-70F1
80	FR-N-1SM-01-80F1
90	FR-N-1SM-01-90F1
100	FR-N-1SM-01-100F1

**ADDITIONAL ASSEMBLIES - 2 PAIR SM FIBER**

Length, ft	Model Number
10	FR-N-2SM-01-10F1
20	FR-N-2SM-01-20F1
30	FR-N-2SM-01-30F1
40	FR-N-2SM-01-40F1
50	FR-N-2SM-01-50F1
60	FR-N-2SM-01-60F1
70	FR-N-2SM-01-70F1
80	FR-N-2SM-01-80F1
90	FR-N-2SM-01-90F1
100	FR-N-2SM-01-100F1



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**ADDITIONAL ASSEMBLIES - 3 PAIR SM FIBER**

Length, ft	Model Number
10	FR-N-3SM-01-10F1
20	FR-N-3SM-01-20F1
30	FR-N-3SM-01-30F1
40	FR-N-3SM-01-40F1
50	FR-N-3SM-01-50F1
60	FR-N-3SM-01-60F1
79	FR-N-3SM-01-70F1
80	FR-N-3SM-01-80F1
90	FR-N-3SM-01-90F1
100	FR-N-3SM-01-100F1

**ADDITIONAL ASSEMBLIES - 4 PAIR SM FIBER**

Length, ft	Model Number
10	FR-N-4SM-01-10F1
20	FR-N-4SM-01-20F1
30	FR-N-4SM-01-30F1
40	FR-N-4SM-01-40F1
50	FR-N-4SM-01-50F1
60	FR-N-4SM-01-60F1
70	FR-N-4SM-01-70F1
80	FR-N-4SM-01-80F1
90	FR-N-4SM-01-90F1
100	FR-N-4SM-01-100F1



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**ADDITIONAL ASSEMBLIES - 1 STRAND SM FIBER**

Length, ft	Model Number
10	FR-N-1SSM-01-10F1
20	FR-N-1SSM-01-20F1
30	FR-N-1SSM-01-30F1
40	FR-N-1SSM-01-40F1
50	FR-N-1SSM-01-50F1
60	FR-N-1SSM-01-60F1
70	FR-N-1SSM-01-70F1
80	FR-N-1SSM-01-80F1
90	FR-N-1SSM-01-90F1
100	FR-N-1SSM-01-100F1

**ADDITIONAL ASSEMBLIES - 2 STRAND SM FIBER**

Length, ft	Model Number
10	FR-N-2SSM-01-10F1
20	FR-N-2SSM-01-20F1
30	FR-N-2SSM-01-30F1
40	FR-N-2SSM-01-40F1
50	FR-N-2SSM-01-50F1
60	FR-N-2SSM-01-60F1
70	FR-N-2SSM-01-70F1
80	FR-N-2SSM-01-80F1
90	FR-N-2SSM-01-90F1
100	FR-N-2SSM-01-100F1



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Length, ft	Model Number
10	FR-N-3SSM-01-10F1
20	FR-N-3SSM-01-20F1
30	FR-N-3SSM-01-30F1
40	FR-N-3SSM-01-40F1
50	FR-N-3SSM-01-50F1
60	FR-N-3SSM-01-60F1
70	FR-N-3SSM-01-70F1
80	FR-N-3SSM-01-80F1
90	FR-N-3SSM-01-90F1
100	FR-N-3SSM-01-100F1

**ADDITIONAL ASSEMBLIES - 4 STRAND SM FIBER**

Length, ft	Model Number
10	FR-N-4SSM-01-10F1
20	FR-N-4SSM-01-20F1
30	FR-N-4SSM-01-30F1
40	FR-N-4SSM-01-40F1
50	FR-N-4SSM-01-50F1
60	FR-N-4SSM-01-60F1
70	FR-N-4SSM-01-70F1
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**PRE-PACKED HYBRIFLEX KITS FOR EASY INTEGRATION INTO RAYCAP JUNCTION BOXES**

RFS Technologies now offers Kitting options for most hybrid risers and jumpers that include both the cable assembly and the Raycap inserts. For reference, kits have a “K” as the third digit in the model number. HB158 does not require an additional gland/insert for proper installation and sealing into the Distribution Boxes.

Kit Model Prefix	Assembly Prefix	Assembly Qty	Raycap Insert Kit	Insert Kit Contents	Raycap Insert Kit Qty
<b>HBK114</b>	HB114	1	RFS Technologies-TRUNK-KIT	(2) 190 0620, Insert, M75, 1H, 40mm	1
<b>HBK058</b>	HBF058		RFS Technologies-JUMP-KIT	(1) 190 0621, Insert, M75, 3H, 22mm, Split w/ plugs	
<b>HBK012</b>	HBF012		RFS Technologies-JUMP-KIT-2	(1) 190 0903, Insert, M75, 2H, 15mm, Split w/ plugs	
<b>FRK-N</b>	FR-N		RFS Technologies-FIBER-KIT	(1) 190 0657, Insert, M75, 6H, 6.1mm, Split w/ plugs	