PRODUCT DATASHEET

# FR-N-12SM-01-20F

HYBRIFLEX® RRH Optical Fiber Cable, 12 Pair, Ruggedized Bend-Insensitive Single-Mode Fiber, DLC Connectors, 20

## 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.



UL LISTED

## 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 |
| **Length** | m (ft) | 6 (20) |

### 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** | | 12 |
| **F/O Cable Type** | | G657-A2 Single Mode, Bend Tolerant |
| **Core/Clad** | µm | 9/125 |
| **Secondary Protection Nominal** | µm (in) | 900 (0.035) |
| **F/O Standards (Meets or Exceeds)** | | UL Listed Type OFNR (UL1666), RoHS Compliant |
| **Optical Loss** | dB/Km | 0.5 @ 1310 nm<br>0.5 @ 1550 nm |
| **FO Break-out Length (Top)** | mm (in) | 279 (11) |
| **FO Break-out Length (Bottom)** | mm (in) | 228 (9) |
| **Cable Sealing Method** | | Semi-rigid flame-retardant polyolefin, with hot melt adhesive |



All values nominal unless tolerances provided; information contained in the present datasheet is subject to confirmation at time of ordering

| | | |
|---|---|---|
| **Fiber Termination End 1** | | DLC Connector |
| **Fiber Termination End 2** | | DLC Connector |

**CABLE JACKET**

| | | |
|---|---|---|
| **UV-Protection Individual and External Jacket** | | Yes |
| **Jacket Material** | | Flame Retardant, Indoor/Outdoor, PVC, Black |

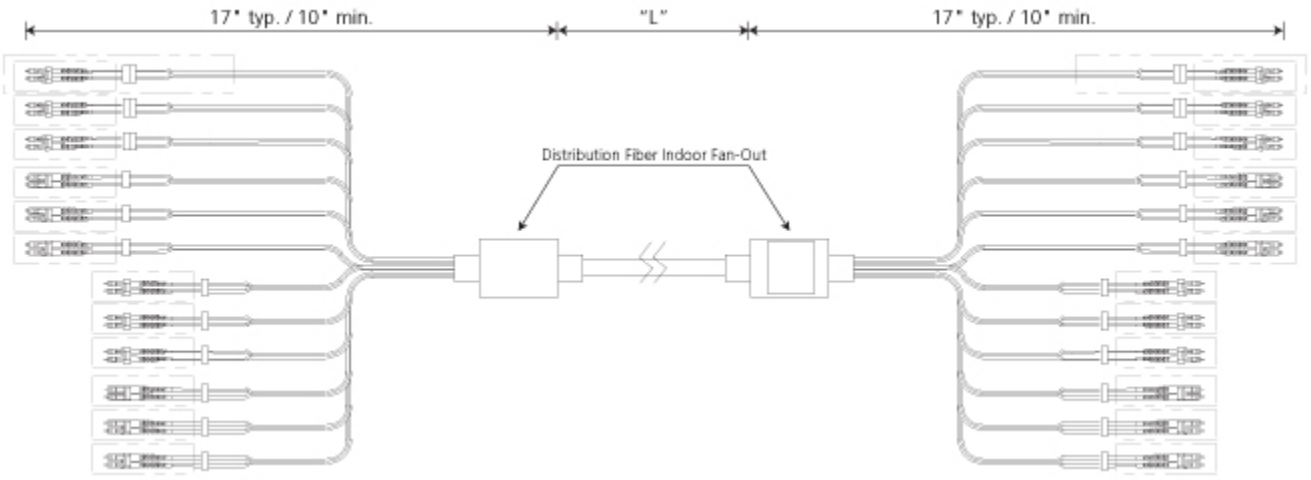
**TESTING AND ENVIRONMENTAL**

| | | |
|---|---|---|
| **Storage Temperature** | °C (°F) | -40 to 70 (-40 to 158) |
| **Operation Temperature** | °C (°F) | -40 to 65 (-40 to 149) |
| **Installation Temperature** | °C (°F) | -20 to 65 (-4 to 149) |
| **Jacket Specifications** | | UL 1666 |

**EXTERNAL DOCUMENT LINKS**

Installation Guidelines: Download
QuickShip 2.0 Program Information: Download
On-line Factory Test Results: View

**NOTES**






All values nominal unless tolerances provided; information contained in the present datasheet is subject to confirmation at time of ordering

### ADDITIONAL ASSEMBLIES - 1 PAIR SM FIBER

| Length, ft | Model Number |
|---|---|
| **6** | FR-N-1SM-01-6F |
| **10** | FR-N-1SM-01-10F |
| **15** | FR-N-1SM-01-15F |
| **20** | FR-N-1SM-01-20F |
| **30** | FR-N-1SM-01-30F |
| **40** | FR-N-1SM-01-40F |
| **50** | FR-N-1SM-01-50F |
| **60** | FR-N-1SM-01-60F |
| **79** | FR-N-1SM-01-70F |
| **80** | FR-N-1SM-01-80F |
| **90** | FR-N-1SM-01-90F |
| **100** | FR-N-1SM-01-100F |

### ADDITIONAL ASSEMBLIES - 2 PAIR SM FIBER

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



All values nominal unless tolerances provided; information contained in the present datasheet is subject to confirmation at time of ordering

### ADDITIONAL ASSEMBLIES - 3 PAIR SM FIBER

| Length, ft | Model Number |
|---|---|
| 3 | FR-N-3SM-01-3F |
| 4 | FR-N-3SM-01-4F |
| 6 | FR-N-3SM-01-6F |
| 8 | FR-N-3SM-01-8F |
| 10 | FR-N-3SM-01-10F |
| 15 | FR-N-3SM-01-15F |
| 20 | FR-N-3SM-01-20F |
| 30 | FR-N-3SM-01-30F |
| 50 | FR-N-3SM-01-50F |

### ADDITIONAL ASSEMBLIES - 6 PAIR SM FIBER

| Length, ft | Model Number |
|---|---|
| 3 | FR-N-6SM-01-3F |
| 4 | FR-N-6SM-01-4F |
| 6 | FR-N-6SM-01-6F |
| 8 | FR-N-6SM-01-8F |
| 10 | FR-N-6SM-01-10F |
| 15 | FR-N-6SM-01-15F |
| 20 | FR-N-6SM-01-20F |
| 30 | FR-N-6SM-01-30F |
| 40 | FR-N-6SM-01-40F |

### ADDITIONAL ASSEMBLIES - 12 PAIR SM FIBER

| Length, ft | Model Number |
|---|---|
| 3 | FR-N-12SM-01-3F |
| 4 | FR-N-12SM-01-4F |
| 6 | FR-N-12SM-01-6F |
| 8 | FR-N-12SM-01-8F |
| 10 | FR-N-12SM-01-10F |
| 15 | FR-N-12SM-01-15F |
| 20 | FR-N-12SM-01-20F |
| 30 | FR-N-12SM-01-30F |



All values nominal unless tolerances provided; information contained in the present datasheet is subject to confirmation at time of ordering

### ADDITIONAL ASSEMBLIES - 1 STRAND SM FIBER

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

### ADDITIONAL ASSEMBLIES - 2 STRAND SM FIBER

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



All values nominal unless tolerances provided; information contained in the present datasheet is subject to confirmation at time of ordering

## 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 |
|---|---|---|---|---|---|
| **HBK114** | HB114 | 1 | RFS Technologies-TRUNK-KIT | (2) 190 0620, Insert, M75, 1H, 40mm | 1 |
| **HBK058** | HBF058 | | RFS Technologies-JUMP-KIT | (1) 190 0621, Insert, M75, 3H, 22mm, Split w/ plugs | |
| **HBK012** | HBF012 | | RFS Technologies-JUMP-KIT-2 | (1) 190 0903, Insert, M75, 2H, 15mm, Split w/ plugs | |
| **FRK-N** | FR-N | | RFS Technologies-FIBER-KIT | (1) 190 0657, Insert, M75, 6H, 6.1mm, Split w/ plugs | |



All values nominal unless tolerances provided; information contained in the present datasheet is subject to confirmation at time of ordering