PRODUCT DATASHEET

# HB114-13U6S12-40M-01

HYBRIFLEX® Hybrid Feeder Cabling Solution 6x12, 6AWG, 1-1/4”, Single-Mode Fiber, DLC to ODC, with 10AWG DC breakout top, 10 m

## PRODUCT DESCRIPTION

RFS Technologies’ HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world’s most innovative solution for RRH deployments. It was developed to reduce installation complexity and costs at Cellular sites.
HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS Technologies CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.



## FEATURES / BENEFITS

- Aluminum corrugated armor with outstanding bending characteristics – Minimizes installation time and enables mechanical protection and shielding
- Armored fiber optic breakout – Preserves the integrity of the fiber and provides mechanical/environmental protection
- Same accessories as 1-1/4" coaxial cable
- Outer conductor grounding – Utilizes same grounding methods as coaxial cable
- 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 pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor, black PE jacket – Ensures long-lasting cable protection
- Shielded DC wire – Jacketed and braided cable on top breakout provides grounding and EMI protection
- **Maximum robustness – Fully armored cable includes riser trunk and top outdoor breakout**

# TECHNICAL FEATURES

### STRUCTURE

| | | |
|---|---|---|
| **Cable Type** | | HYBRIFLEX® |
| **Size** | | 1-1/4" |
| **Length** | m (ft) | 40 (131.2) |

### MECHANICAL SPECIFICATIONS

| | | |
|---|---|---|
| **Outer Diameter Nominal** | mm (in) | 39 (1.54) |
| **Cable Weight** | kg/m (lb/ft) | 2.24 (1.54) |
| **Minimum Bending Radius, Single Bend** | mm (in) | 152 (6) |
| **Minimum Bending Radius, Multiple Bends** | mm (in) | 254 (10) |
| **Recommended / Maximum Clamp Spacing** | m (ft) | 1 / 1.2 (3.25 / 4) |



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## ARMOR SPECIFICATIONS

| | | |
|---|---|---|
| **Armor Type** | | Corrugated Aluminum |
| **Maximum DC-Resistance of Armor** | Ω/km (Ω/kft) | 0.9 (0.27) |
| **Diameter Corrugated Armor** | mm (in) | 36 (1.42) |

## CABLE JACKET

| | | |
|---|---|---|
| **UV-Protection Individual and External Jacket** | | Yes |

## DC POWER CABLE SPECIFICATIONS

| | | |
|---|---|---|
| **Number of DC Pairs** | | 6 |
| **Maximum DC-Resistance Power Cable** | Ω/km (Ω/kft) | 1.4 (0.42) |
| **Cross Section of Power Cable** | $mm^2$ (AWG) | 13.3 (6) |
| **DC Wire Jacket Material** | | PVC/Nylon |
| **DC Cable Single Bending Radius** | mm (in) | 137 (5.4) |
| **DC Cable Diameter** | mm (in) | 6.45 (0.254) |
| **DC Standards (Meets or Exceeds)** | | For use in UL 1569, PVC Nylon, RoHS/REACH Compliant |
| **Break-out Length (Top)** | mm (in) | 4000 (157) |
| **Break-out Length (Bottom)** | mm (in) | 355 (14) |
| **DC Cable Sealing Method** | | Semi-rigid flame-retardant polyolefin, with hot melt adhesive |

## F/O CABLE SPECIFICATIONS

| | | |
|---|---|---|
| **F/O Cable Type** | | G657-A1 Single Mode, Bend Tolerant |
| **Number of F/O Pairs** | | 12 |
| **Core/Clad** | µm | 9/125 |
| **Secondary Protection Nominal** | µm (in) | 900 (0.035) |
| **Single Bending Radius** | mm (in) | 157 (6.2) |
| **Cable Diameter** | | 5.512 (0.217) |
| **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 |
| **Fiber Termination End 1** | | ODC plug |
| **Fiber Termination End 2** | | DLC connector |
| **FO Break-out Length (Top)** | mm (in) | 914 (36) |
| **FO Break-out Length (Bottom)** | mm (in) | 1670 (65.7) |
| **Cable Sealing Method** | | Semi-rigid flame-retardant polyolefin, with hot melt adhesive |

## 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) |



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## ASSEMBLY LOSS

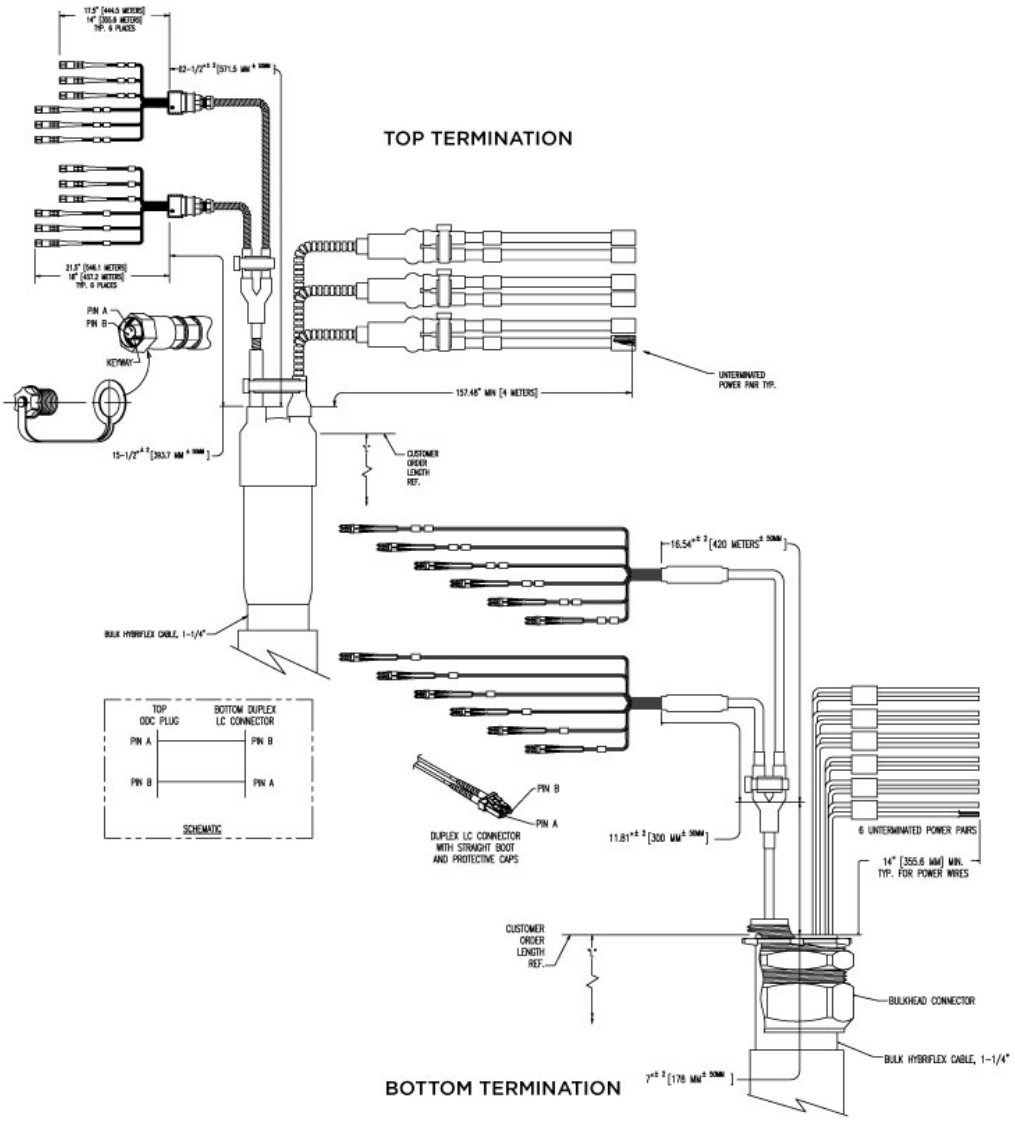
| | | |
|---|---|---|
| **Optical Insertion Loss, Riser or Jumper Tested Individually** | Riser or Jumper | 0.4 dB typical @1310/1550nm |

## SYSTEM LOSS

| | | |
|---|---|---|
| **Optical Insertion Loss, Riser and Jumper Connected in Series** | Total, End to End | 0.7dB typical / 1.25dB max @1310/1550nm |



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## EXTERNAL DOCUMENT LINKS

On-line Factory Test Results: View

## NOTES

Nominal length equals length of trunk not including top and bottom breakouts; breakout lengths add additionally to the total assembly length tip to tip

**Top Breakout - DC Power Cable Specifications:**

- No of DC pairs 6; Specifications per 1 pair:
- Maximum DC-Resistance Power Cable Ω/km (Ω/ft) 3.4 (1.04),
- Cross Section of Power Cable mm2 (AWG) 5.3 (10),
- Overall Cable Diameter mm (in) 11.5 (0.453),



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- DC Cable Jacket Material PVC,
- EMI Shield Tinned Copper Braid

## ADDITIONAL ASSEMBLY LENGTHS

| Length (m) | Model Number |
|---|---|
| **10** | HB114-13U6S12-10M-01 |
| **20** | HB114-13U6S12-20M-01 |
| **30** | HB114-13U6S12-30M-01 |
| **40** | HB114-13U6S12-40M-01 |
| **50** | HB114-13U6S12-50M-01 |
| **60** | HB114-13U6S12-60M-01 |
| **70** | HB114-13U6S12-70M-01 |
| **80** | HB114-13U6S12-80M-01 |



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## PRE-PACKED HYBRIFLEX KITS FOR QUICK AND EASY FIELD INSTALLS

All Kits include an above cable assembly plus predefined quantities of grounding kit(s) and hoisting grip(s)

### KIT ASSEMBLY LENGTHS

| Length (m) | Model Number | Grounding Kit | GK Qty | Hoisting Grip | HG Qty |
|---|---|---|---|---|---|
| **10** | HB114-13U6S12-10M-KIT-01 | GKFORM60-114 | 3 | HOIST1-114L | 1 |
| **20** | HB114-13U6S12-20M-KIT-01 | | 3 | | 1 |
| **30** | HB114-13U6S12-30M-KIT-01 | | 3 | | 1 |
| **40** | HB114-13U6S12-40M-KIT-01 | | 3 | | 1 |
| **50** | HB114-13U6S12-50M-KIT-01 | | 3 | | 1 |
| **60** | HB114-13U6S12-60M-KIT-01 | | 3 | | 1 |
| **70** | HB114-13U6S12-70M-KIT-01 | | 4 | | 2 |
| **80** | HB114-13U6S12-80M-KIT-01 | | 4 | | 2 |



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