

## Features

- All signals on ONE Cable
- Six full bandwidth paths of 3G-SDI (five down, one return)
- 20+Km Operation
- Universal intercom interface with IFB/PGM inject
- 2 Mic inputs with phantom and pre-amps
- Anton-Bauer or “V-mount” battery option
- Integrated tally lamps
- Camera RCP Control
- 1 additional data path (232/422)
- Optical connector on Integrated swivel
- Top & bottom dovetail plates with ¼-20 & ⅜-16 taps for mounting accessories
- Dovetail accessories:
  - » Audio breakout module
  - » Aux/Audio/Tally breakout module
  - » 15mm iris rod bracket
  - » Tally light
- Lightweight, low-profile packaging
- Rugged Design
- Designed & built in New York
- SEVEN year warranty

## Applications

- 4K Sports & OB
- Music & Entertainment
- Digital cinema
- 3-D Acquisition



**Convert any Dual-Link or Quad-Link 4K camcorder to a “4K Live” camera, connected to the base station with a single fiber cable.**

### Multipurpose Your 4K Camera

The SilverBack™ 4K5 provides a robust, full bandwidth fiber optic link between any Quad-Link or Dual-Link 4K camera and your truck, control room or “video village” position. The system puts all of the signals needed for multi-camera 4K/UHDTV production onto a single tactical or SMPTE hybrid fiber cable, insuring robust, trouble-free connectivity on any studio or remote production.

The system transports up to five 3 Gb/s HD/SDI signal paths from the camera to the Base Station and one return path the other way. Full camera control is provided by the camera manufacturer’s control panel via serial or a 10/100/GigE ethernet path. Genlock, intercom, tally and audio paths are also provided.

Operate on hybrid cable and provide power to camera or use lightweight, robust tactical fiber and power the camera locally.

### Integrated Camera Unit

The compact SilverBack™ 4K5 Camera Unit mounts elegantly to any Dual-Link or Quad-Link 4K camera seamlessly, with no angles or sharp corners. The display uses high-intensity blue LEDs that are easy for the operator to see, but not intrusive.

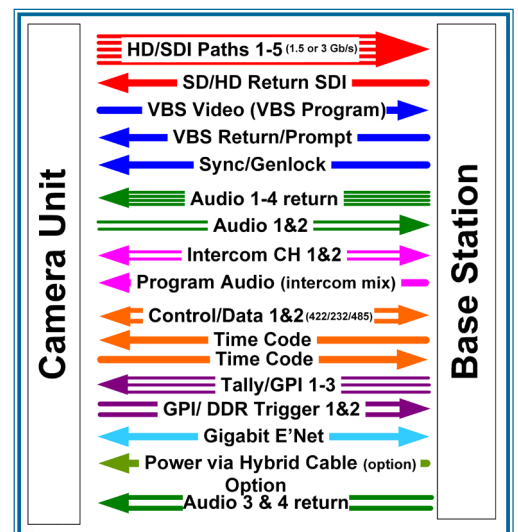
When equipped with the integrated “Juice”™ option, no external power supplies are required; the rear battery plate can be used for back-up power.

### Next Generation Base Station

The SilverBack™ 4K5 Base Station is a standard 1RU enclosure with LED status indicators for each signal, as well as a color LCD screen that intuitively displays system status and general health.

### MultiDyne Innovation

The SilverBack™ 4K5 incorporates the proven connectivity solutions of MultiDyne’s decades of experience outfitting production environments for OB vans and production control rooms to create a finely tuned solution for 4K/UHDTV multi-camera production. Designed and built in New York.

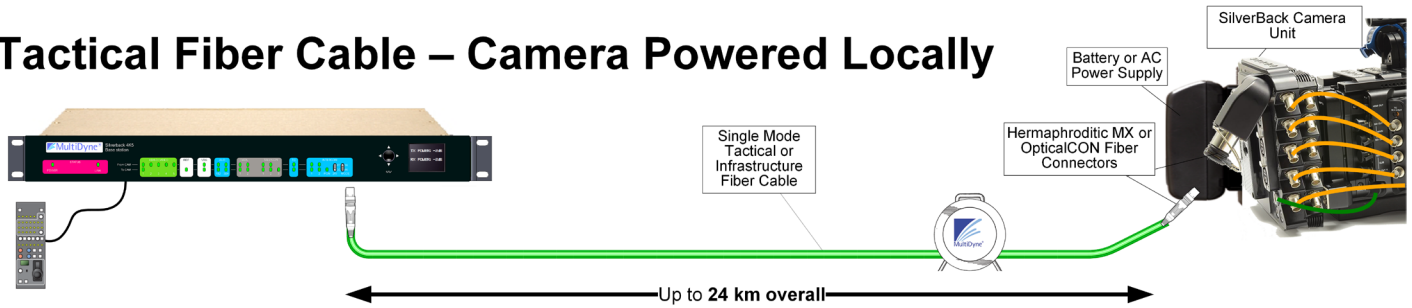


# Dual-purpose your 4K camcorders for live events & multi-camera production.

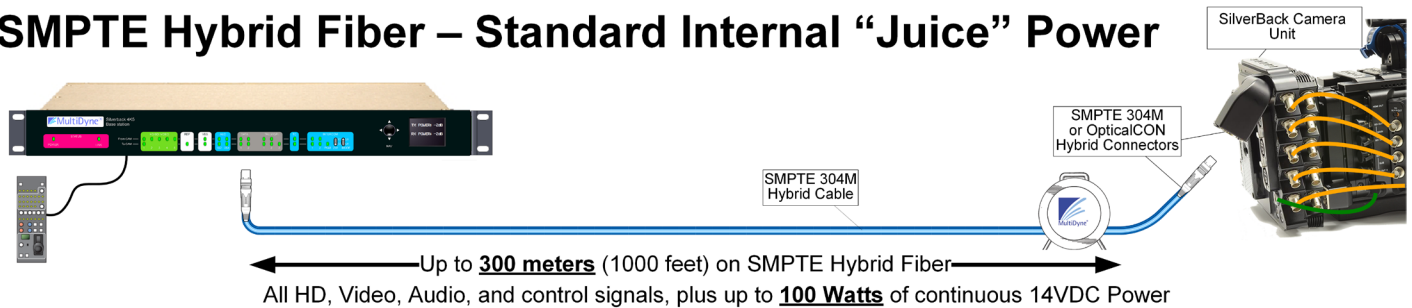
## Make The Connection

The SilverBack™ 4K5 can operate on lightweight Tactical fiber cable, or with SMPTE hybrid fiber cable to deliver all of your signals and the power to run your cameras and accessories.

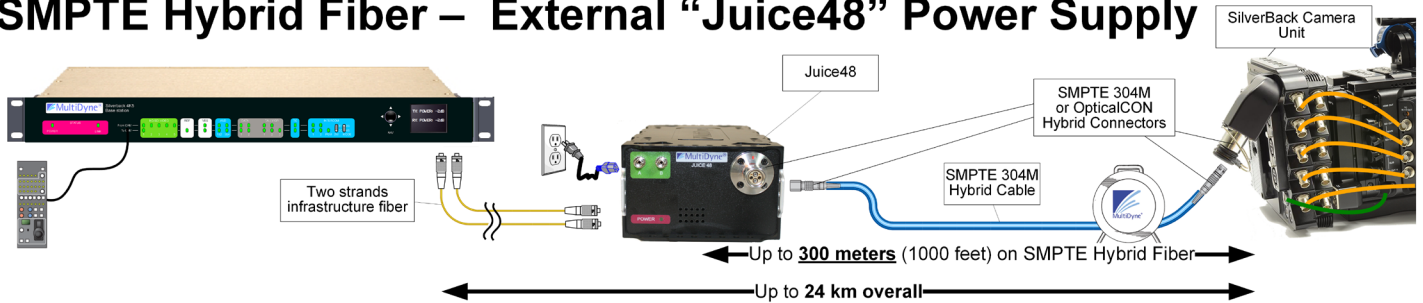
### A. Tactical Fiber Cable – Camera Powered Locally



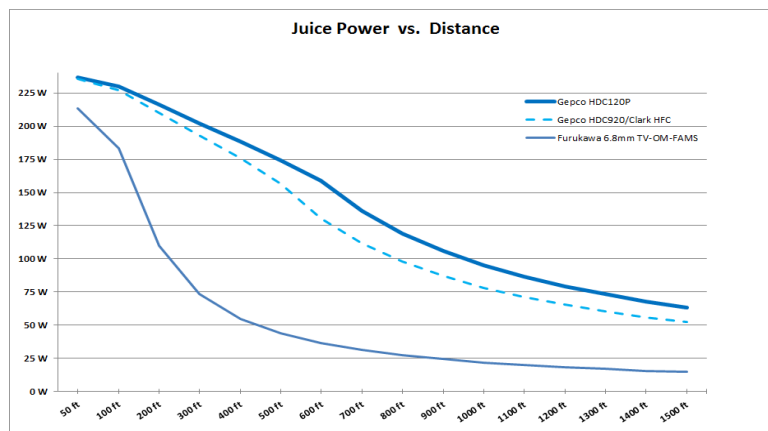
### B. SMPTE Hybrid Fiber – Standard Internal “Juice” Power



### C. SMPTE Hybrid Fiber – External “Juice48” Power Supply



The Juice™ power system delivers plenty of power from the SilverBack™ Base Station (or the external Juice48™ power supply) to the camera.



## Typical system examples (as shown above)\*:

#### A: Tactical Cable

**Camera Unit:** SB3-C451-D2RD-5CVV-S:  
SilverBack 4K5 Camera Unit, Dry fiber cable.  
Fiber conn: OpticalCON recept. “V”-Mount plates both sides.

**Base Station:** SB3-B451-D2RD-UB1R-S:  
SilverBack 4K5 Base Station, dry fiber connectivity.  
Fiber conn: OpticalCON recept.

#### B: Internal Juice Power

**Camera Unit:** SB3-C451-D2RJ-5CAA-S:  
SilverBack 4K5 Camera Unit, “Juice” power via SMPTE cable. Fiber conn: OpticalCON recept. Anton Bauer plates both sides.

**Base Station:** SB3-B451-D2RJ-UB1R-S:  
SilverBack 4K5 Base Station, internal “Juice” power supply. OpticalCON recept.

#### C: External Juice48 Power

**Camera Unit:** SB3-C451-SPRJ-5CAA-S:  
SilverBack 4K5 Camera Unit, “Juice” power via SMPTE cable. Fiber conn: SMPTE 304M (hybrid) recept. Anton Bauer plates both sides.

**Base Station:** SB3-B451-ST2D-RB1R-S:  
SilverBack 4K5 Base Station, dry fiber connectivity. Fiber conn: 2 STs.

#### Juice48: JUICE-48V-SPP-ST2-F:

Juice48 power supply. Wet fiber connector: SMPTE 304M plug. Dry fiber connectors: 2 STs. Both fiber connectors on front.

\*For complete system part numbers, please see “Ordering Information” (page 4).

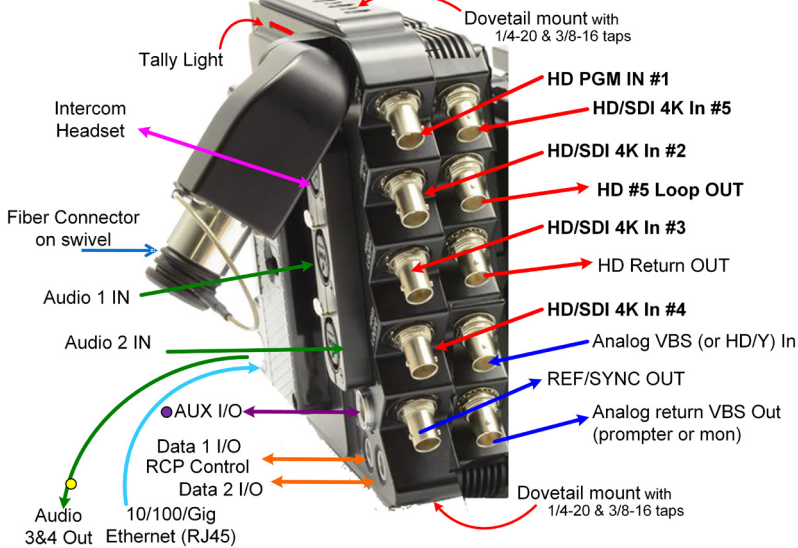
## Camera Unit

The control panel's simple interface lets the camera operator easily monitor system link and signal status via a backlit blue-LED display. Soft-touch buttons permit easy adjustment of audio and intercom levels.

Two mic inputs' pre-amps and phantom power are controlled via convenient soft switches and the levels are easily monitored with VU meters.

The operator can trigger the intercom mic via a local toggle switch or via an external switch or button.

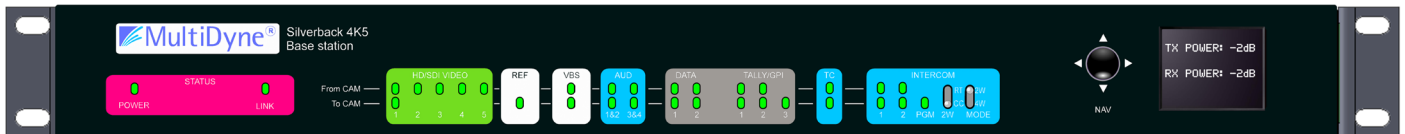
Ten standard, full size BNCs allow connection from the camera's four 4K Quad-Link outputs, an additional HD/SDI path from the camera (for menus), VBS input and output, as well as return HD/SDI (3G) and genlock/sync



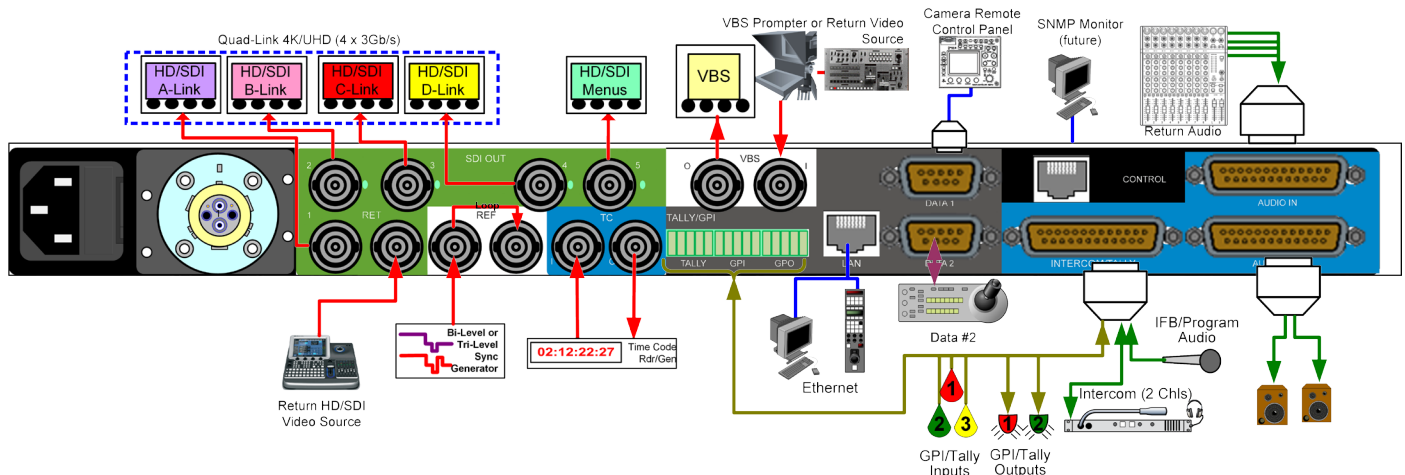
Two XLR3-F allow for mic/line level inputs, with a 5-pin XLR for intercom headset and a 3.5mm headset jack also available for Program/IFB to the operator or Talent.

## Base Station:

The 1RU Base unit is ideal for space-limited production areas. Indicator LEDs and a color LCD control panel provide easy monitoring of the entire system's status.



Rear connectivity makes it easy to integrate into a simple studio or flypack system, or as part of a large-scale system consisting of multiple cameras spread over a wide area.



## SilverBack 4K5 System Components and Accessories:



SB3-C451-①②-5C③-S  
SilverBack 4K5 Camera Unit



SB3-B451-④②-UB1R-S  
SilverBack 4K5 Base Station



JUICE-48V-④(w)④(d)⑦  
Juice48 External Power Supply



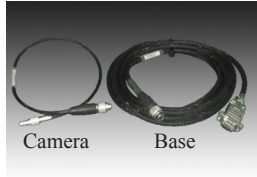
SDT-BA4 & SDT-AX1  
Dovetail breakout modules  
BA4: Audio I/O SB3: Aux/Tally



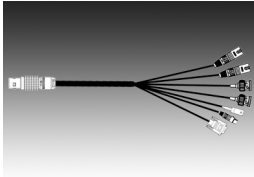
TL-SB2  
External Tally Light



SLB2-15MM-RB  
15mm iris rod bracket



MDCAB00⑥  
Camera & Base Remote Cables



MDCAB00550-B  
Aux. Signal Breakout Cable



MC-SH⑧-⑨(h)⑨(b)⑩  
SMPTE 311M hybrid fiber cable assemblies: various connectors, lengths



MC-2S⑧-⑨(h)⑨(b)⑩  
Tac2 two-fiber tactical cable assemblies: various connectors, lengths  
(TAC1, TAC4, TAC6, TAC12 available)

## Ordering Information:

### ① Camera Fiber Connector

D2R.....OpticalCON Duo(wet or dry)  
SPR.....SMPTE 304M recept (Lemo, wet)  
MX2.....MX Expanded Beam (dry)  
Others (Fischer, Tajimi, more) available

### ② Power

J....."Juice" 14V to camera via SMPTE cable  
D.....Local 12VDC power at camera  
H.....High power "Juice" to camera  
2.....High power to camera with 24VDC tap

### ③ Battery Plate Options

AA.....Anton/Bauer ("A/B") plates both sides  
VV.....V-Mount ("V") plates both sides

AV.....Cam plate: "A/B", batt plate: "V"  
VA.....Cam plate: "V", batt plate: "A/B"

### ④ Base Fiber Connector

D2R.....OpticalCON Duo (wet or dry)  
SPP.....SMPTE 304M plug (Lemo, wet)  
ST2.....2 STs (dry)  
STM.....2 STs and Molex (wet)  
MX2.....MX Expanded Beam (dry)  
Others (Fischer, Tajimi, more) available

### ⑤ Reserved

### ⑥ Remote Data Cables (Camera/RCP)

150/160.....Sony  
170/180.....Panasonic

190/200.....JVC  
210/220.....Hitachi

### ⑦ Juice48: Fiber Connector Location

F.....Both on front  
R.....Both on Rear  
D.....Dry on front, wet on rear  
W.....Wet on front, dry on rear

### ⑧ Cable Length

0000-to-9999.....Length in feet (4 digits)

### ⑨ Fiber Connector (hub end 1st, bitter end 2nd)

SIP.....SMPTE 304M in-line plug (FUW, wet)  
SIR.....SMPTE 304M in-line recept (PUW, wet)

D2P.....OpticalCON Duo (NK02, wet or dry)  
Q4P.....OpticalCON Quad (NK04, dry)

M2P.....MX Mini ExBeam Plug (dry)  
ST2/SC2/LC2.....2 STs, 2 SCs, 2 LCs  
(breakout, dry)

Others (Fischer, Tajimi, more) available

### ⑩ Reel

XX.....No reel  
SS.....Small reel  
SM.....Medium reel  
SL.....Large reel  
Contact MultiDyne for reel capacity of various fiber types, other options

## Specifications

### Video, Digital

Signal Court  
Camera Unit-to-Base.....5  
Base-to-Camera Unit.....1  
Interface.....SMPTE 424M, 292M, 259M  
Data Rate.....3 Gb/s, 1.5 Gb/s, or 270 Mb/s  
Input/Output Level.....800 mV (peak to peak)  
Input/Output Impedance.....75 Ohms  
Return Loss.....> 15 dB typical (5 - 1500MHz)  
.....> 10 dB typical (1.5 - 3GHz)  
Cable Equalization (Belden 1694A):  
270 MHz.....up to 500m  
1.5 GHz.....up to 200m  
3 GHz.....up to 150m

### Video, Analog (bidirectional)

Interface.....RS170, NTSC, PAL, HDTV Y Component  
Frequency Response  
30Hz-4.2MHz (30Hz-35MHz for HDTV-Y):±0.3 dB  
Video Signal to Noise Ratio.....≥ 70 dB  
Differential Phase.....< 2°

### Sync

.....Genlock, Black Burst, Tri-Level

### Ethernet

Data Support.....10BaseT/100BaseT/Gig E  
Connector.....Twisted Pair RJ45  
Cable compatible.....UTP 100-ohm Cat5

### Audio, Camera to Base

Format.....Analog or Digital  
Number of Channels.....Analog: 2, AES: 1  
Mic Input Level Adj. Range.....-60 dBu to -0 dBu  
Phantom power.....48V  
Impedance.....>15KΩ

Maximum Input Level.....22 dBu  
Sampling.....24 bits, 48 kS/sec  
Frequency Response.....±0.5 dB, 20 Hz to 20 KHz  
Output at Base Station.....Line Level

### Audio, Base to Camera (Return/IFB)

Number of Channels.....4  
Input Level at Base Station.....Line Level  
Output at Camera Unit.....Line Level

### Intercom

Number of channels.....2  
Interface types (Base).....RTS, Clear-Com or Four-Wire  
Frequency Response.....200 - 18KHz ± 3dB  
Max Distortion.....≤ 0.5%  
Noise.....< -60dBu  
Input gain.....-60 dBu to -0 dBu

### Data

Number of Channels.....2  
RS422/RS485.....0 to 1 Mbaud  
RS232.....0 to 300 Kbaud  
Connector.....Camera Unit: 7-pin Lemo. Base: DB9

### GPI/Tally

Inputs:  
On:.....TTL Low or Short to GND  
Off:.....TTL High or Open  
Outputs:  
.....2 pos Form A (SPST, norm open) relay, to GND  
Max Switching Voltage.....24VDC/AC,  
Max current.....1 Amp

### Electrical Output (aux connector)

Power.....14VDC, ~1A

### Electro-Optical

Nominal Optical Loss Budget Values  
TX Laser output power (std./opt).. -6 dBm/0 dBm  
RX Sensitivity, HD/SDI (bars).....-22 dBm  
Fiber Compatibility.....Single Mode  
Optical Connector Options - Camera Unit:  
Local Power:.....OpticalCON, MX, STs, FC, LC  
Remote Power:.....OpticalCON, SMPTE 304M  
Optical Connector Options - Base Station:  
Unpowered Cable (Tac fiber):.....OpticalCON, MX,  
.....ST, LC, FC  
Remote Power-carrying Cable (Hybrid fiber/wire):  
.....SMPTE 304M, OpticalCON, or STs+Molex

### Mechanical/Environmental

Dimensions (WxLxD)  
Camera Unit.....4" x 6.75" x 7"  
Base Station.....17.5" x 9" x 1.75"  
Weight  
Camera Unit.....3.25 lb  
Base Station.....5.0 lb  
Power Consumption  
Camera unit.....20 watts@14VDC  
Base Station (Tac Fiber).....40 watts@90-230VAC  
Temperature Range.....-25° to +55°C  
Humidity Range.....0 to 95% RH, Noncondensing

### Compliance

Laser Safety.....Class 1 Laser  
Other.....RoHS

†Note: the length of hybrid cable that can be supported between the powered SilverBack Base Station and the Camera Unit is a function of many variables including diameter of the hybrid cable, number of cable interconnections, number and current draw of camera accessories and lens size/type/servo.