

SILVERBACK™ 4K5

Camera Mountable Fiber Optic System for 4K Quad-Link 3G Camcorders

MultiDyne

Video & Fiber Optic Systems

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 1/4-20 & 3/8-16 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



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

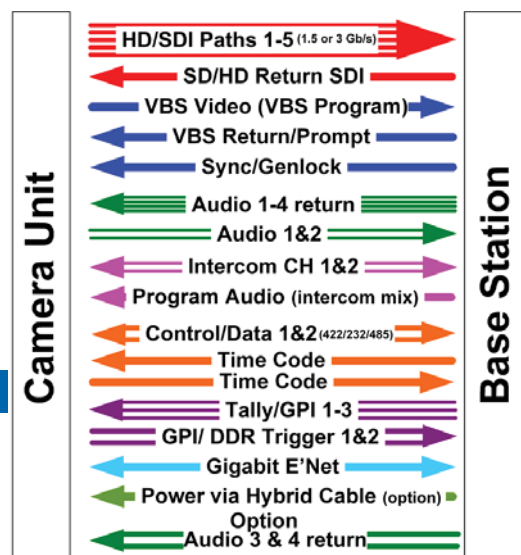
The SilverBack™ 4K5 Base Station is a standard 1RU enclosure with LED status indicators for each signal, as well as a color LCD screen that intuitively displays system status and general health.

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.

APPLICATIONS

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



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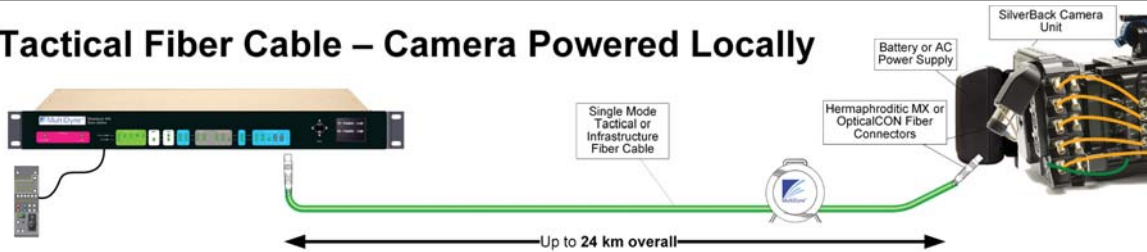
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Dual-purpose your 4K camcorders for live events & multi-camera production.

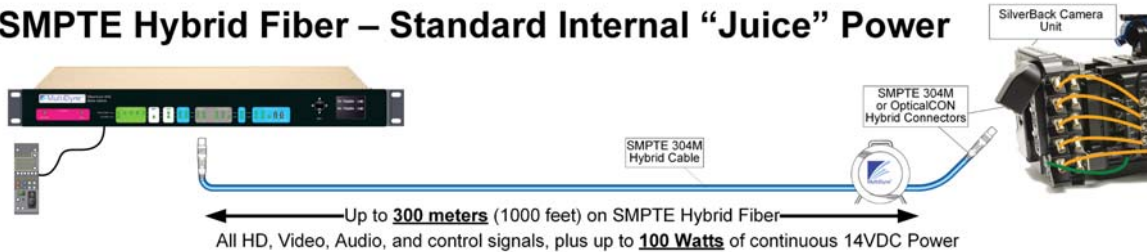
Make The Connection

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.

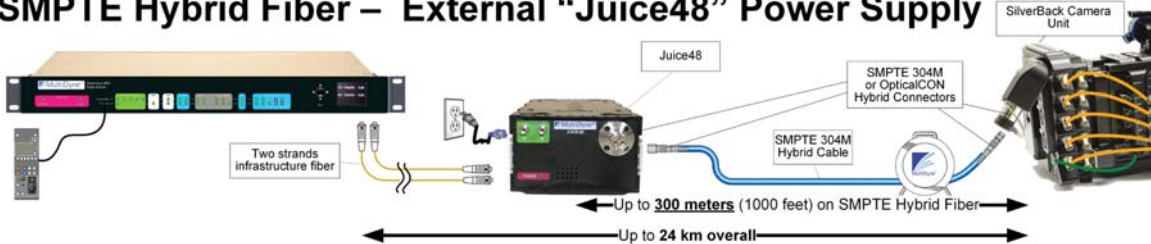
A. Tactical Fiber Cable – Camera Powered Locally



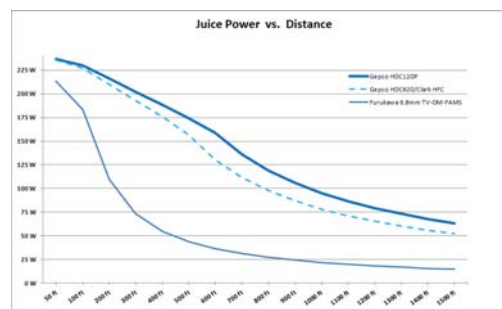
B. SMPTE Hybrid Fiber – Standard Internal “Juice” Power



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”

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Camera Unit

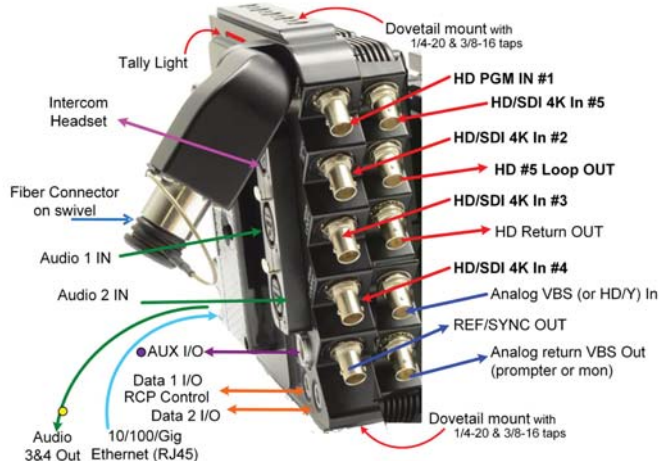
The control panel's simple interface lets the camera operator easily monitor system link and signal status via a backlit blue-LED display. Soft-touch buttons permit easy adjustment of audio and intercom levels.

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.

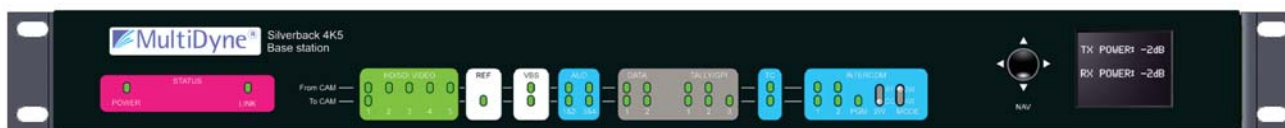
Ten standard, full size BNCs allow connection from the camera's four 4K Quad-Link outputs, an additional HD/SDI path from the camera (for menus), VBS input and output, as well as return HD/SDI (3G) and genlock/sync.

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.

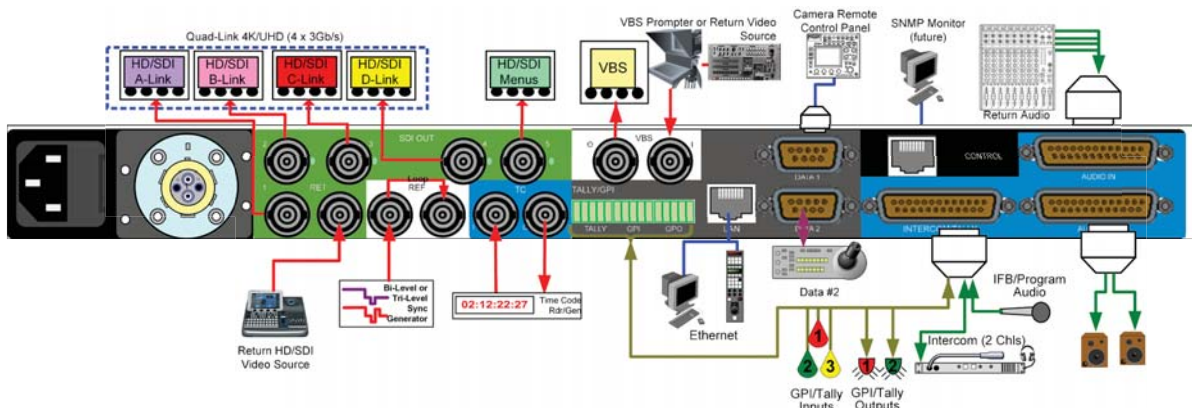


Base Station

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.



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SilverBack 4K5 System Components and Accessories:



SB3-C451-1-2-5C-S
SilverBack 4K5 Camera Unit



SB3-B451-4-2-UB1R-S
SilverBack 4K5 Base Station



JUICE-48V-4(w)4(d)2
Juice48 External Power Supply



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



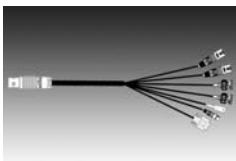
TL-SB2
External Tally Light



SLB2-15MM-RB
15mm iris rod bracket



MDCAB00
Camera & Base Remote Cables



MDCAB00550-B
Aux. Signal Breakout Cable



MC-SH-2-9(h)9(b)
SMPTE 311M hybrid fiber cable assemblies: various connectors, lengths



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

Ordering Information:

- | | | | |
|---|--|--|---|
| <p>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</p> <p>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</p> <p>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"</p> | <p>④ BaseFiber 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</p> <p>⑤ Reserved</p> <p>⑥ Remote Data Cables (Camera/RCP)
150/160..... Sony
170/180..... Panasonic
190/200..... JVC
210/220..... Hitachi</p> | <p>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</p> <p>⑧ Cable Length
0000-to-9999..... Length in feet (4 digits)</p> <p>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)</p> | <p>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</p> |
|---|--|--|---|

Specifications

Video, Digital

Signal Count
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.

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