

FEATURES

- ▷ All signals on ONE Cable
- ▷ Up to 1x 12G, 2x 6G, or 4x 3G Program & Bi-Directional 3G-SDI
- ▷ 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 Indicator
- ▷ 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
- ▷ Tally/GPIO cable
- ▷ Optional Tally light accessory
- ▷ Rugged lightweight, low-profile design
- ▷ Designed & built in New York

APPLICATIONS

- ▷ 4K Sports & OB
- ▷ Live Music & Entertainment
- ▷ Digital cinema
- ▷ High Frame Rate Acquisition
- ▷ Live Cinematic Multi-cam

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 12G, 4K Camera

The SilverBack V provides a robust, full bandwidth fiber optic link between any 12G, 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, ensuring robust, trouble-free connectivity on any studio or remote production.

The system can transport up to one 12G-SDI, two 6G-SDI, or four 3G-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 V Camera Unit mounts elegantly to any 12G, Dual-Link or Quad-Link 4K camera seamlessly, with no angles or sharp corners. The LCD display shows status and controls and is 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.

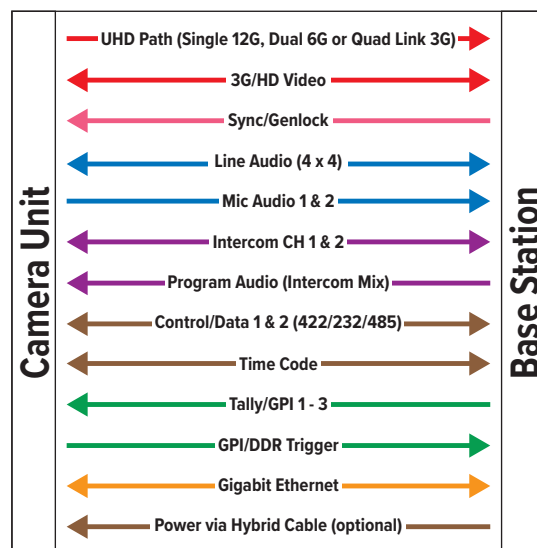
Next Generation Base Station

The SilverBack V Base Station is a standard 2RU enclosure with LED status indicators for each signal,

as well as a color LCD screen that intuitively displays system status and general health. The base station is available in single and dual channel configurations. The unit also provides support for two standard width (2 slot) openGear rear modules that can handle up to four cards.

MultiDyne Innovation

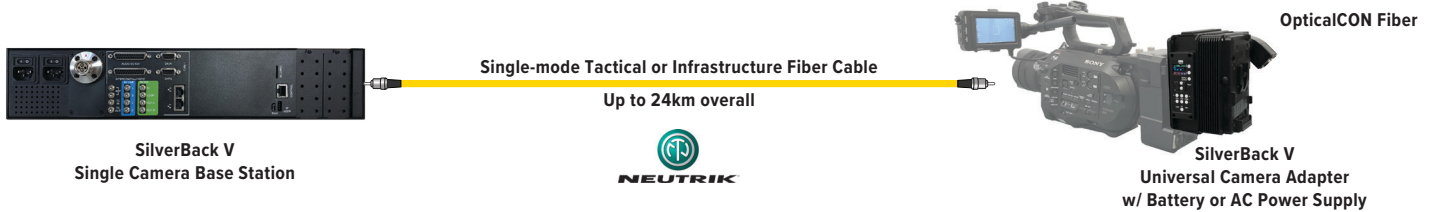
The system design is modular, so a system can be built with various types, amounts, and directions of I/O. A representative signal flow is shown. The SilverBack V incorporates the proven connectivity solutions of MultiDyne’s decades of experience outfitting production environments for OB vans and production control rooms to create a finely tuned solution for 4K/UHDTV multi-camera production. Designed and built in New York.



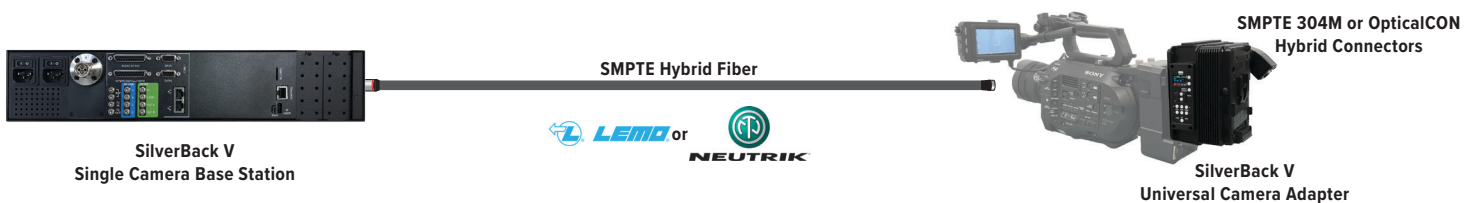
FEATURES & APPLICATION

The SilverBack V 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 “Juice48” Power



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



Typical system examples (as shown above):

A: Tactical Fiber Cable (Camera Powered Locally)

Camera Unit: SB5-C4K1-D2RD-5CVV-S:

SilverBack V Camera Unit, Dry fiber cable.

Fiber Connector: Neutrik OpticalCON receptacle.

“V”-Mount plates both sides.

Base Station: SB5-B4K1-D2RD-UB1R-S:

SilverBack V Base Station, dry fiber connectivity.

Fiber Connector: Neutrik OpticalCON receptacle.

B: SMPTE Hybrid Fiber (Standard Internal Juice48 Power)

Camera Unit: SB5-C4K1-SPRJ-5CAA-S:

SilverBack V Camera Unit, “Juice” power via SMPTE cable.

Fiber Connector: SMPTE 304M receptacle.

Anton Bauer plates both sides.

Base Station: SB5-B4K1-SPPJ-UB1R-S:

SilverBack V Base Station, internal “Juice” power supply.

SMPTE 304M plug.

C: SMPTE Hybrid Fiber - (External Juice48 Power Supply)

Camera Unit: SB5-C4K1-SPRJ-5CAA-S:

SilverBack V Camera Unit, “Juice” power via SMPTE cable.

Fiber Connector: SMPTE 304M (hybrid) receptacle.

Anton Bauer plates both sides.

Base Station: SB5-B4K1-ST2D-UB1R-S:

SilverBack V Base Station, dry fiber connectivity.

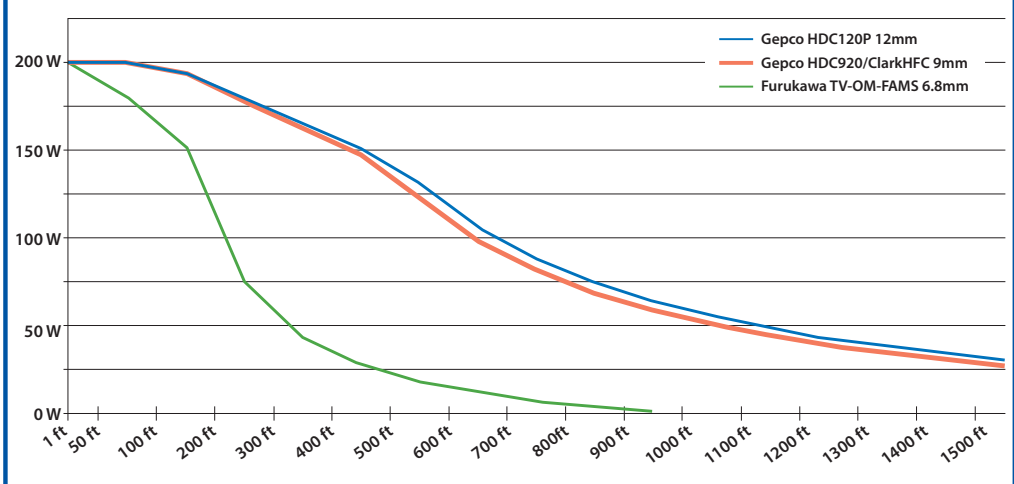
Fiber conn: 2 ST connectors.

Juice48: JUICE-48V-SPPST2F: Juice48 power supply.

Wet fiber connector: SMPTE 304M plug.

Dry fiber connectors: 2 STs. Both fiber connectors on front.

Juice Power vs. Distance



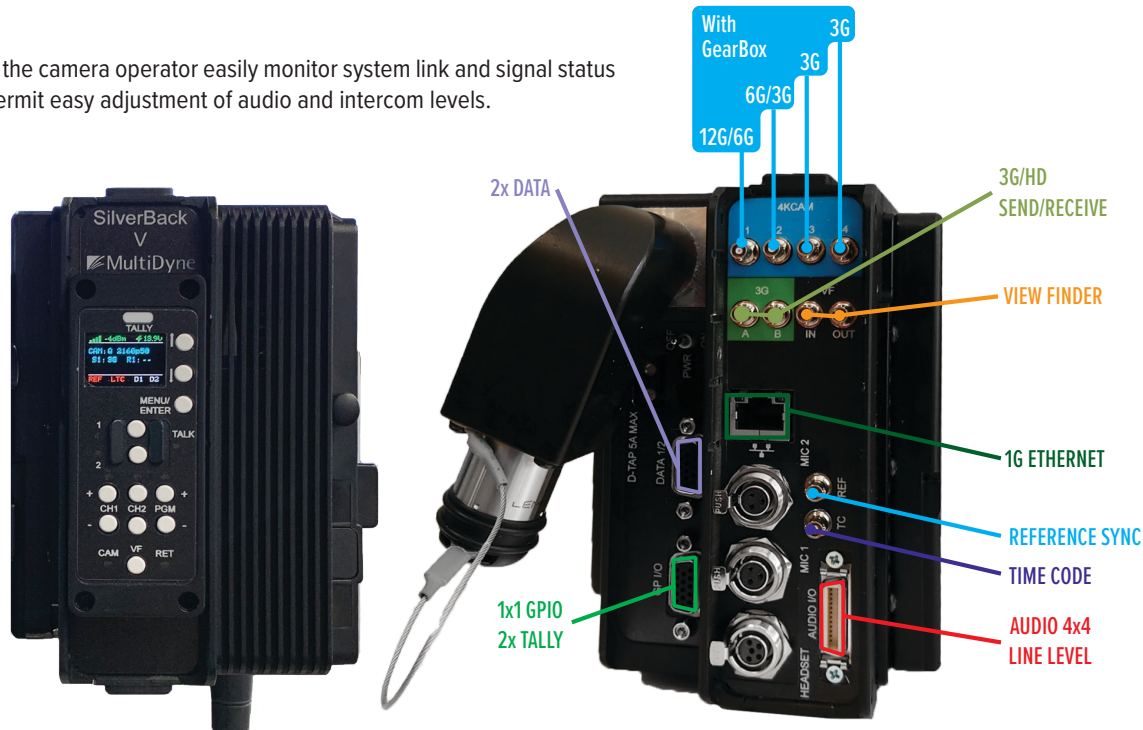
The Juice™ power system delivers plenty of power from the SilverBack V Base Station (or the external Juice48™ power supply) to the camera.

CAMERA UNIT

The control panel's simple interface lets the camera operator easily monitor system link and signal status via a back-lit LCD display and buttons permit easy adjustment of audio and intercom levels.

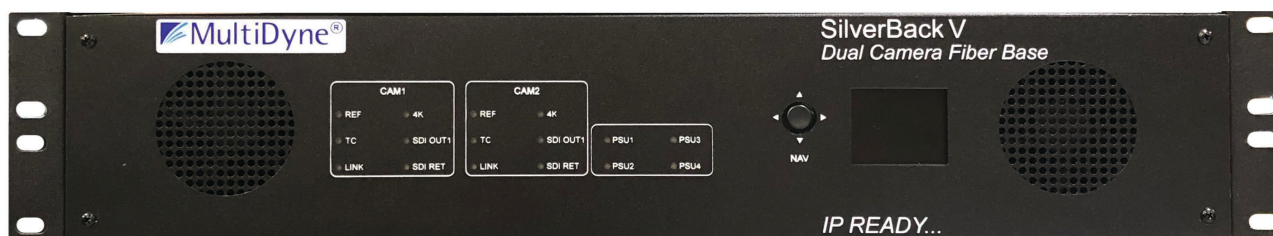
Two mini-3-pin XLRs allow for mic/line level inputs with switchable 48V Phantom power. A mini 5-pin XLR is used for intercom headset and the operator can trigger the intercom mic via a local switch or via an external switch or button.

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

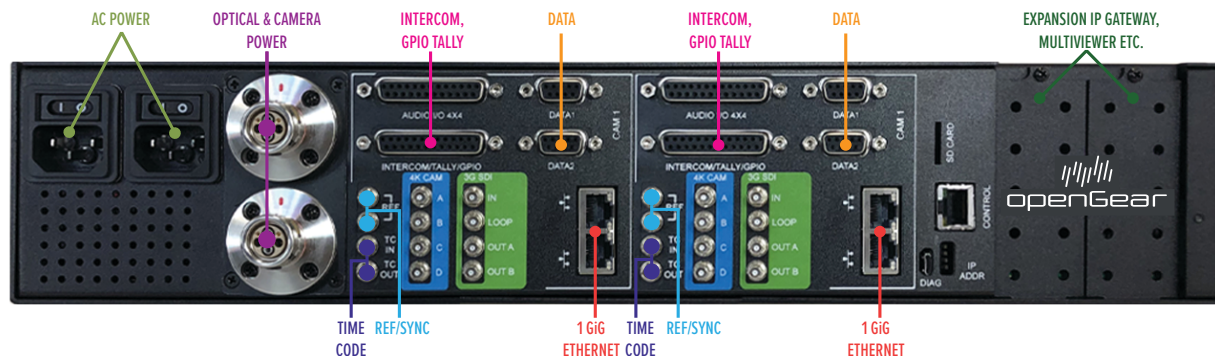


BASE STATION

The 2RU 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. It can support up to two cameras, has a redundant power option (for the base electronics), and has two full-size openGear® card slots. The system can be ordered as a single channel or dual channel configuration that supports two cameras.



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



SILVERBACK V SYSTEM COMPONENTS AND ACCESSORIES (ORDERING INFO):



SB5-C451-①②-5C③-S
SilverBack V Camera Unit



SB5-B451-④②-UB1R-⑤
SilverBack V Base Station



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



MXLRM3-XLRF3-SB5
(3-pin Mini XLR Male to 3-pin XLR Female)



MXLRM5-XLRF5-SB5
(5-pin Mini XLR Male to 5-pin XLR Female)



TL-SBV
External Tally Light



BO-PTT-TALLY-DB15
Y-Cable for Push-to-Talk and Tally



Camera
Base
MDCAB00⑥
Camera & Base Remote Cables



MC-SH⑦-⑧(h)⑧(b)
SMPTE 311M hybrid fiber cable assemblies: various connectors, lengths



TAC2
TAC4
TAC12
Available
MC-⑨S⑦-⑧(h)⑧(b)
Tactical cable assemblies, various connectors, and lengths

① Camera Fiber Connector	
D2R	Neutrik OpticalCON Duo(wet or dry)
SPR	SMPTE 304M recept (Lemo, wet)

② Power	
J	"Juice" 14V to camera via SMPTE cable
D	Requires battery or local 12VDC to power

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 Fiber Connector	
D2R	Neutrik OpticalCON Duo (wet or dry)
SPP	SMPTE 304M plug (Lemo, wet)
ST2	2 STs (dry)
STM	2 STs and Molex (wet)

⑤ Base Station	
S	Single Camera Base Station
2	Dual Camera Base Station

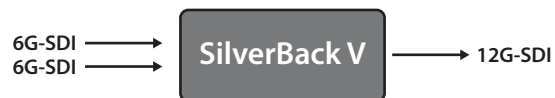
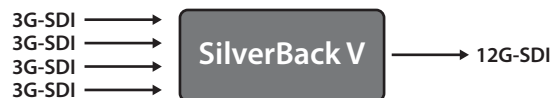
⑥ Base Fiber Connector	
155/160	Sony
175/180	Panasonic

⑦ Cable Length	
0000 to 9999	Length in Feet (4 digits)

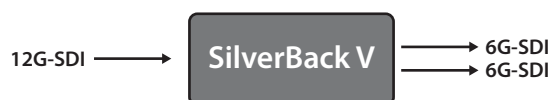
⑧ Fiber Connector (hub end 1st, bitter end 2nd)	
FUW	SMPTE 304M in-line plug (FUW, Lemo)
PUW	SMPTE 304M in-line recept (PUW, Lemo)
D2P	Neutrik OpticalCON Duo
Q4P	Neutrik OpticalCON Quad
MX2	MX Expanded Beam Plug
ST2/SC2/LC2	2 STs, 2 SCs, 2 LCs

⑨ Tactical Fiber Strands	
2	2 Single-mode Fibers
4	4 Single-mode Fibers
12	12 Single-mode Fibers

UHD SDI CONVERSION TABLE (AVAILABLE ON 12G-SDI EQUIPPED SYSTEMS)



UHD SDI Mux Mode		Supported SMPTE Mapping	
Input	Output	Input Mapping	Output Mapping
Quad Link 3G	Single Link 12G	ST425-5 2160 Line Level A Mapping ST425-5 2160 Line Level B Mapping	ST2082-11 2160-line Mode 1*
Dual Link 6G	Single Link 12G	ST2081-11 2160 Line Mode 1	ST2081-10 2160-line Mode 1



UHD SDI De-Mux Mode		Supported SMPTE Mapping	
Input	Output	Input Mapping	Output Mapping
Single Link 12G	Quad Link 3G	ST2082-10 2160-Line Mode 1	ST425-5 2160 Line Level A Mapping
Single Link 12G	Dual Link 6G	ST2082-10 2160-Line Mode 1	ST2081-11 2160-line Mode 1

Note: For QL Level B Mapping, the SilverBack V will not convert input from Level B mapping to a Level A mapping.

** QL Level B streams will be multiplexed in a non ST2081-11 2160-line Mode 1 compatible 12G-SDI signal for transport to the base station where it will be output as four 3G-SDI with the same QL Level B mapping as the input.*

Other formats and conversions may be supported. Please contact your MultiDyne sales representative to learn more.

TECHNICAL SPECIFICATIONS

SDI Video

Interface	SMPTE ST259, ST292, ST425, ST2081, ST2082
Data Rate	270Mbps, 1.5Gbps, 3Gbps, 6Gbps, 12Gbps
Number of Channels (cam to base)	1 to 8, depending on particular model ordered
Number of Channels (base to cam)	1 to 8, depending on particular model ordered
Input/output Level	800mVp-p
Input/output Impedance	75 Ohms
Connector, Camera Unit	HDBNC
Connector, Base Unit	HDBNC
Embedded Audio Supported	Yes

Video, Genlock

Type	Analog Black Burst, HD Tri-Level
Impedance	75 Ohms
Level	1Vp-p
Connector, Camera Unit	HDBNC
Connector, Base Unit	HDBNC

Audio

Type	Balanced Analog, AES3
Number of Channels (bidirectional)	4 Analog, 2 AES, 2 MIC/Line (cam to base only)
Level (Analog)	+4dBu nominal, +24dBu max.
Mic Input Adjustment Range	0 to 60dB
Input Impedance	> 10k ohms
Output Impedance	50 ohms
THD+N	Better than 0.1%
Frequency Response	+0.1 dB/-3dB, 20Hz to 20kHz
MIC Phantom Power	48V
AES Sampling	24 bit, 48kHz
Connector, Camera Unit	MDR-26, miniXLR (MIC/Line Inputs)
Connector, Base Unit	DB25 (Tascam compatible)

Intercom

Number of Channels	2
Interface	2-Wire or 4-Wire
Compatibility	RTS, Clear-Com
Headset MIC Type	Dynamic
Headset MIC Impedance	200 Ohms nominal
Level, 4-Wire	+4dBu nominal, +24dBu max.
Level, 2-Wire	-10dBu nominal
Connector, Headset	miniXLR-5
Connector, Base Unit	DB25 (Sony/Panasonic CCU compatible)

Serial Data (Control)

Type	RS232, RS422, LANC
Number of Channels (bidirectional)	2
Data Rate	1Mbps max
Connector, Camera Unit	HD15
Connector, Base Unit	DB9 (2)

Ethernet

Data Rates	10/100/1000 Base-T
Connector	RJ45 Cat5e

Tally/GPIO

Number of Channels (base to cam)	3
Number of Channels (cam to base)	1
Input type	Short to GND or TTL Low to Activate
Output Type	Relay Contact Closure (30V, 2A max)
Connector, Camera Unit	HD15
Connector, Base Unit	DB25 (shared with intercom)

Timecode

Type	SMPTE/EBU LTC
Input	Unbalanced, 15Vp-p max
Output	Unbalanced, 3Vp-p max
Connector, Camera Unit	HDBNC
Connector, Base Unit	HDBNC

Electro-Optical

Operating Wavelengths	1271-1611nm
TX Laser Output Power	0dBm (Class 1 Laser)
Receiver Sensitivity	-24dBm(1.25G), -20dBm(3G), -14dBm(12G)
Optical Budget*	16dB (3G models), 10dB (12G/Gearbox models)
Fiber Compatibility	Single-mode
Available Optical Connector Types	opticalCON DUO, SMPTE 304M, ST, LC

* The number, quality, and cleanliness of all fiber cables and interconnection points in the fiber path will affect the maximum usable cable length.

Power

Power Input, Base Unit	IEC320, Universal Input, 90-250VAC, 50-60Hz
Power Consumption, Base Unit	450W max
Power Input, Camera:	
Remote Power	Hybrid Fiber Connector, 54 VDC
Local Power	Battery Mount (Anton Bauer or V-Mount), 11-17 VDC
Power Consumption, Camera Unit	30W max
Total Power Available from Camera Unit via Hybrid Fiber for Camera and Accessories*	14V (nominal), 150W max
Auxiliary Power Outputs from Camera Unit	2
Connector Type	D-Tap
Power Output	14V (nominal), 5A max (each)

* Maximum powered Hybrid Fiber distance varies and is determined by the size of the hybrid cable and the overall system power requirements. Power consumption of the camera, viewfinder, lens, and any other accessories will effect maximum available power at any given distance.

Mechanical/Environmental

Dimensions	
Camera Unit	6" x 7" x 4"
Base Unit	19" x 22" x 3.5" (2RU)
Operating Temperature	0 to 50°C
Operating Temperature	0 to 95% RH, non-condensing.

Compliance

Laser Safety	Class 1 Laser
Other	RoHS