MultiDyne
Video & Fiber Optic Systems

SilverBack™ II

Camera Mountable Fiber Optic System for HD/SDI Camcorders

Features

- All signals on ONE Cable
- Two full bandwidth paths of 3G-SDI (one down, one return)
- 20+Km Operation
- Universal intercom interafce 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:
  - » 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

- Live HD Studios
- Flypacks and OB Production
- University/Education
- House of Worship

Convert any HD/SDI camcorder to a "HD/SDI Live" camera, connected to the base station with a single fiber cable.

Multipurpose Your HD/SDI Camcorder

The SilverBack™ II provides a robust, full bandwidth fiber optic link between any HD/SDI camcorder and your truck, control room or "video village" position. The system puts all of the signals needed for multi-camera HD/SDI production onto a single tactical or SMPTE hybrid fiber cable, insuring robust, trouble-free connectivity on any studio or remote production.

The system transports an HD/SDI signal (1.5 or 3 Gb/s) from the camera to the Base Station and a return HD/SDI path the other way. Full camera control is provided by the camera manufacturer's control panel. 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™ II Camera Unit mounts elegantly to any HD/SDI camcorder 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.

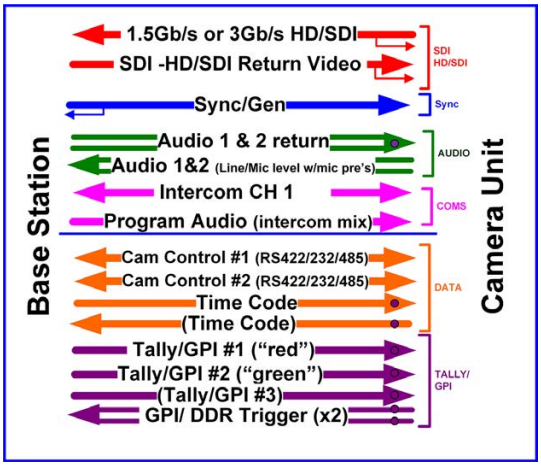
When equipped with the integrated "Juice"™ option, no external power supplies are required; the rear battery plate can be used for back-up power.

Next Generation Base Station

The SilverBack™ II Base Station is a standard 1RU enclosure with LED status indicators for each signal.

MultiDyne Innovation

The SilverBack™ II 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 HD/SDI multi-camera production. Designed and built in New York.



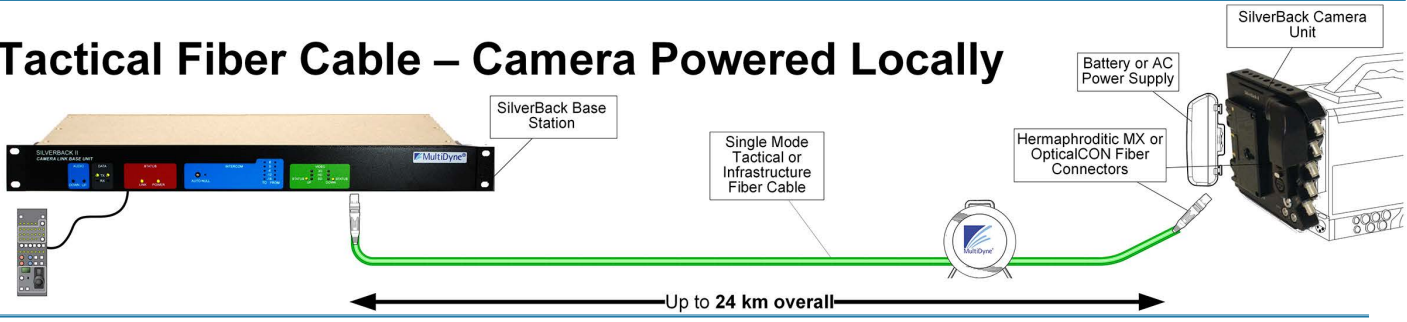
7 Year MultiDyne Warranty

Dual-purpose your HD/SDI camcorders for live events & multi-camera production.

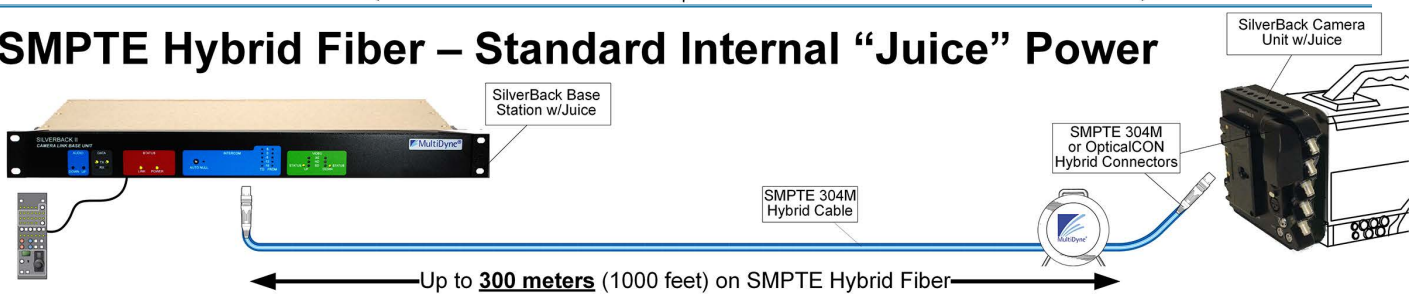
Make The Connection

The SilverBack™ II 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.

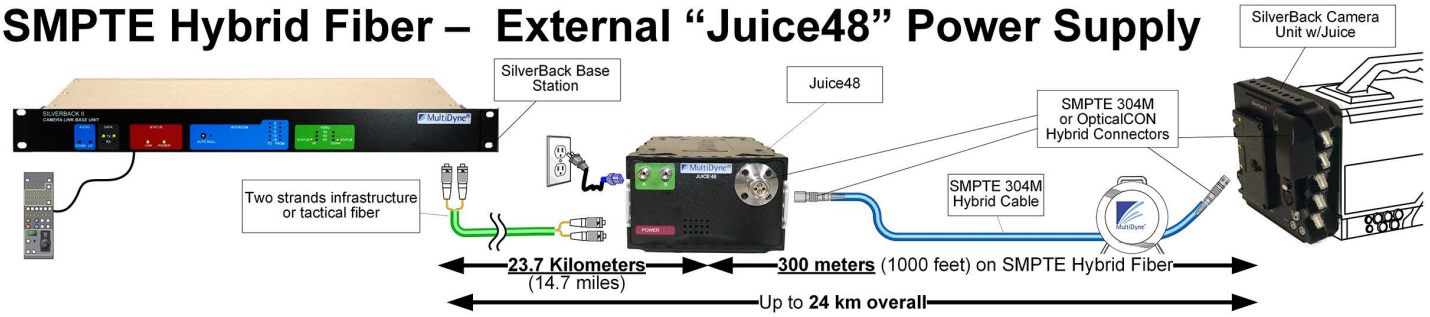
A. Tactical Fiber Cable – Camera Powered Locally



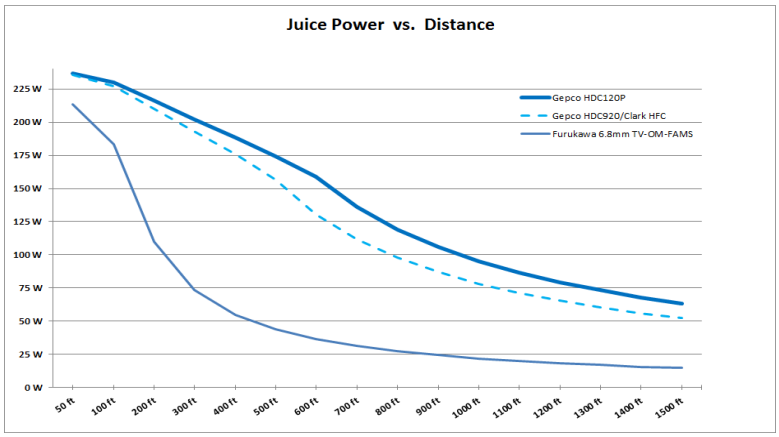
B. SMPTE Hybrid Fiber – Standard Internal "Juice" Power



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: SB2-CSD1-D2RD-5CVV-S: SilverBack II Camera Unit, Dry fiber cable. Fiber conn: OpticalCON recept. "V"-Mount plates both sides.

Base Station: SB2-BSD1-D2RD-UB1R-S: SilverBack II Base Station, dry fiber connectivity. Fiber conn: OpticalCON recept.

B: Internal Juice Power

Camera Unit: SB2-CSD1-D2RJ-5CAA-S: SilverBack II Camera Unit, "Juice" power via SMPTE cable. Fiber conn: OpticalCON recept. Anton Bauer plates both sides.

Base Station: SB2-BSD1-D2RJ-UB1R-S: SilverBack II Base Station, internal "Juice" power supply. OpticalCON recept.

C: External Juice48 Power

Camera Unit: SB2-CSD1-SPRJ-5CAA-S: SilverBack II Camera Unit, "Juice" power via SMPTE cable. Fiber conn: SMPTE 304M (hybrid) recept. Anton Bauer plates both sides.

Base Station: SB2-BSD1-ST2D-RB1R-S: SilverBack II Base Station, dry fiber connectivity. Fiber conn: 2 STs.

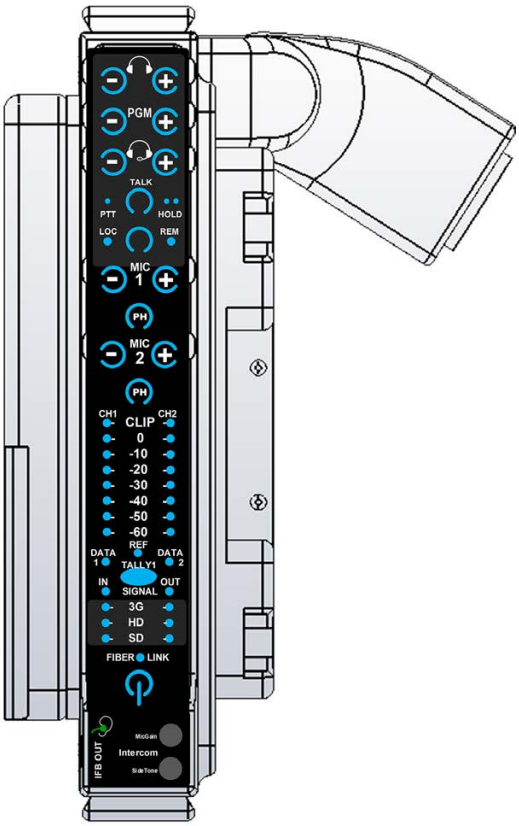
Juice48: JUICE-48V-SPP-ST2-F: Juice48 power supply. Wet fiber connector: SMPTE 304M plug. Dry fiber connectors: 2 STs. Both fiber connectors on front.

*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.

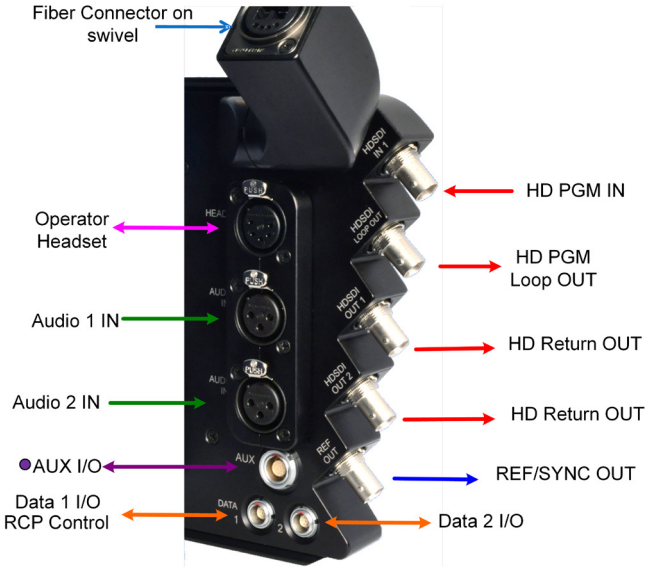
Two mic inputs' pre-amps and phantom power are controlled via convenient soft switches and the levels are easily monitored with VU meters.



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

Five standard, full size BNCs allow connection from the camera's HD/SDI 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.

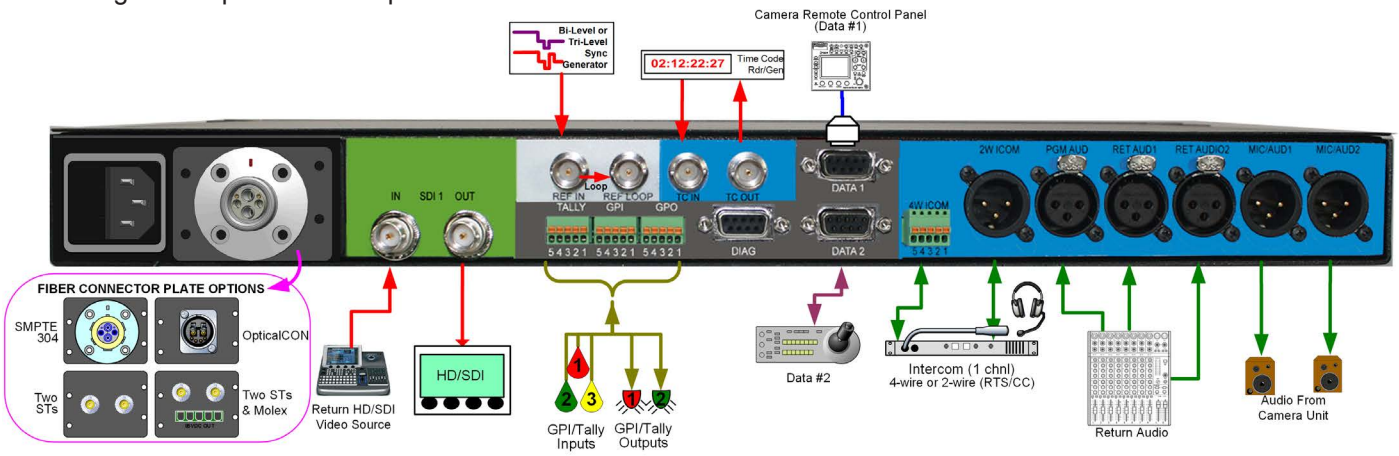


A variety of fiber connectors are available on a robust swivel. Choose Anton/Bauer™ Gold Mount or V-mount battery plates.

Base Station:

The 1RU Base unit is ideal for space-limited production areas. Indicator LEDs 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.

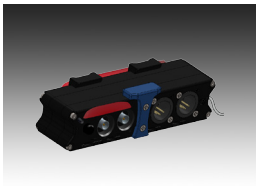


SilverBack II System Components and Accessories:

SilverBack II Camera Unit
SB2-CSD1-①②-5C③-S

SilverBack II Base Station
SB2-BSD1-④②-⑤B1R-S

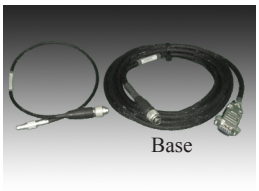
Juice48 Ext. Power Supply
JUICE-48V-④(w)④(d)⑦



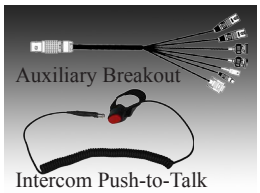
Dovetail Aux/Tally breakout module
SDT-AX1

External Tally Light
TL-SB2

15mm iris rod bracket
SLB2-15MM-RB



Camera & Base Remote Cables
MDCAB00⑥



Camera Aux Cables
Breakout: MDCAB00550-B
Intercom PTT: MDCAB00860

SMPTE 311M hybrid fiber cable assemblies
MC-SH⑧-⑨(h)⑨(b)⑩

Tac2 two-fiber tactical cable assemblies
MC-2S⑧-⑨(h) ⑨(b)⑩
(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)

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 Base Station Intercom Interface
- 4 ..... Four-Wire only
- C ..... Clear-Com Partyline (with 4W)
- R ..... RTS Partyline (with 4W)
- U ..... Universal (coming Q4 2015)

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)

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

*Other fiber connectors (Fischer, Tajimi, more) available. Contact MultiDyne.

Specifications:

Video, Digital
- Signal Count
  - Camera Unit to Base Station 1
  - Base Station to Camera Unit 1
- Interface ..... SMPTE 424M, 292M, 259M
- Data rate ..... 3 Gb/s, 1.5 Gb/s, or 270 Mb/s
- Input 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

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

Audio, Camera Unit to Base Station
- Format ..... Analog (2 channels)
- Mic input level adj. range: ..... -60 dBu to -0 dBu
- Phantom power 48V
- Impedance ..... >1485KΩ
- 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 Unit (Return)
- Number of channels 2
- Input level at Base Station ..... Line level
- Output at Camera Unit ..... Line level
- Connector ..... Aux breakout

Intercom/IFB
- Channels ..... 1 bi-di intercom channel, 1 program/IFB
- 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
- Connectors:
  - Base: ....4-wire: Pheonix terminal. 2-Wire: XLR3M
    Program/IFB input: XLR3F
  - Camera Unit:
    - Headset XLR5F
    - Return/IFB ..... 3.5mm headset jack
    - Remote PTT ..... Aux breakout

Data
- Number of channels 2
- RS422/RS485 ..... 0 to 3 Mbaud
- RS232 ..... 0 to 400 Mbaud
- Connector ..... Camera Unit: 7-pin Lemo. Base: DB9

GPI/Tally (aux breakout connector)
- 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
- Connector ..... Aux breakout

Electrical Output (aux breakout connector)
- Power ..... 14VDC, ~1A
- Connector ..... Aux breakout

Electro-Optical
- Nominal optical loss budget values
  - TX Laser output power (std./opt).. -6 dBm/0 dBm
  - RX Sensitivity, HD/SDI ..... -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
- Dims (WxLxD) / Weight:
  - Camera Unit:
    - Local pwr (no "Juice")... **8**" x **7**" x **3.25**" / 3.0 lbs
    - w/Int. "Juice" pwr ..... **8**" x **7**" x 3.75" / 3.75 lbs
  - Base Station: ..... 17.5" x 9" x 1.75" / **6** lbs
- Power Consumption:
  - Camera Unit: ..... 10W @14VDC
  - Base Station: ..... 30W @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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DS-SB2-RevA150722

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