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

▷ Designed & Built in New York

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 With a Single Fiber Cable Connected To The Base Station

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, ensuring 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. Provide power to camera via hybrid cable or use lightweight, robust tactical fiber and power the camera locally.

Integrated Camera Unit

The compact SilverBack 4K5 camera unit mounts 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.
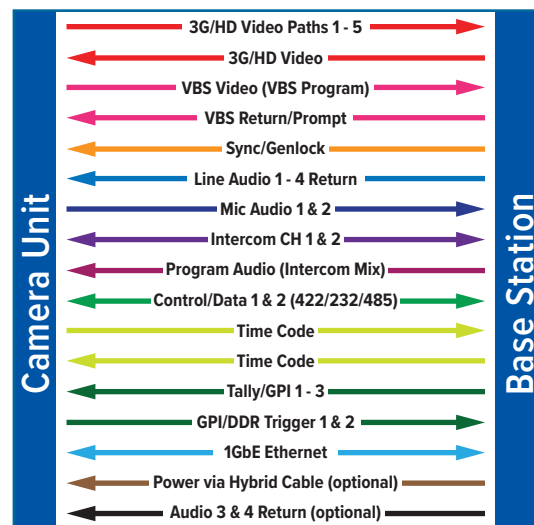
When equipped with the integrated "Juice" option, no external power supplies are required; the rear battery plate can be used for back-up power.

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.

Camera Unit | Base Station

- 3G/HD Video Paths 1 - 5
- 3G/HD Video
- VBS Video (VBS Program)
- VBS Return/Prompt
- Sync/Genlock
- Line Audio 1 - 4 Return
- Mic Audio 1 & 2
- Intercom CH 1 & 2
- Program Audio (Intercom Mix)
- Control/Data 1 & 2 (422/232/485)
- Time Code
- Time Code
- Tally/GPI 1 - 3
- GPI/DDR Trigger 1 & 2
- 1GbE Ethernet
- Power via Hybrid Cable (optional)
- Audio 3 & 4 Return (optional)

www.MultiDyne.com

MultiDyne®
Video & Fiber Optic Systems

FEATURES & APPLICATION

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
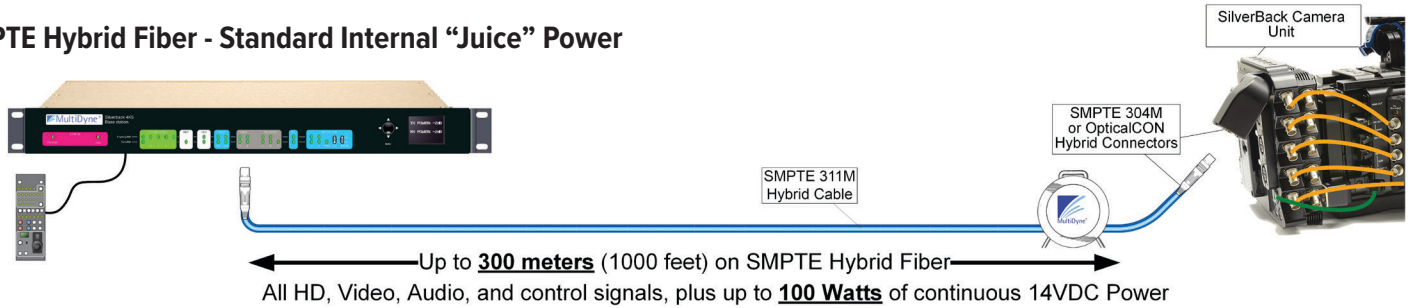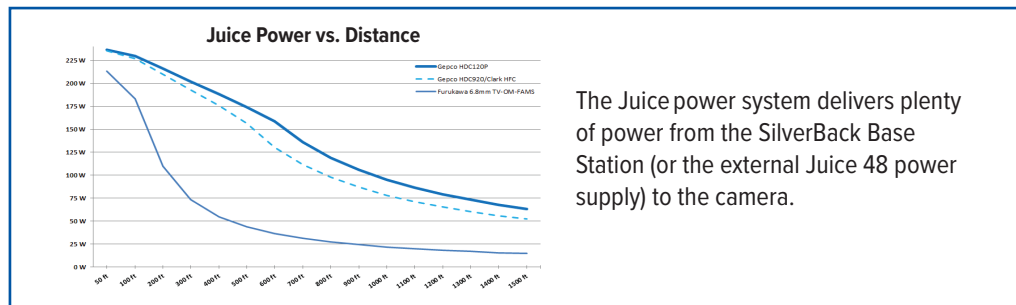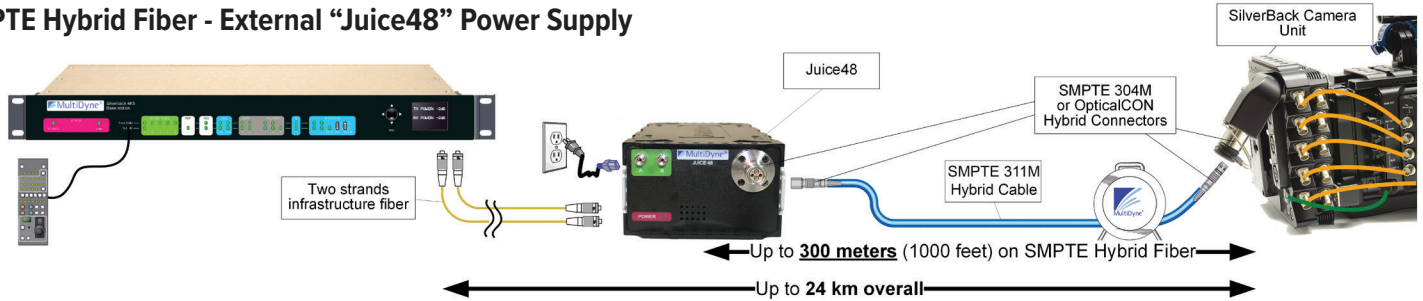

Single Mode Tactical or Infrastructure Fiber Cable

SilverBack Camera Unit

Battery or AC Power Supply

Hermaphroditic MX or OpticalCON Fiber Connectors

Up to **24 km overall**
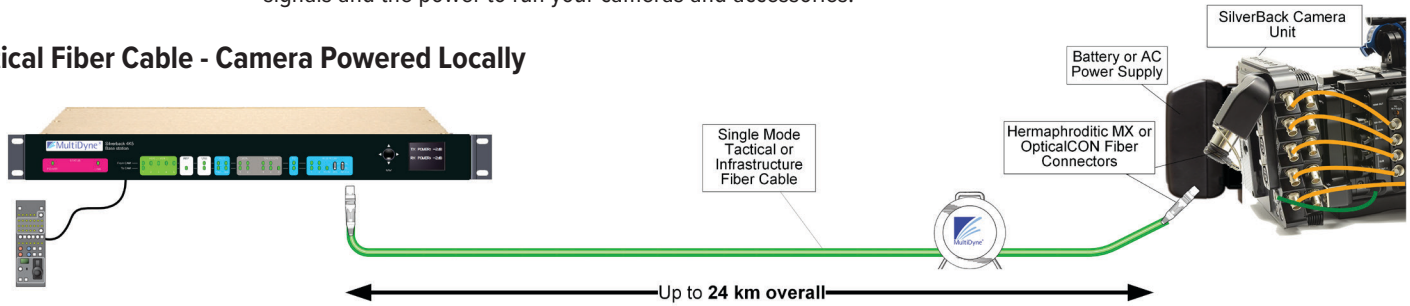
B. SMPTE Hybrid Fiber - Standard Internal "Juice" Power

SMPTE 311M Hybrid Cable

SilverBack Camera Unit

SMPTE 304M or OpticalCON Hybrid Connectors

Up to **300 meters** (1000 feet) on SMPTE Hybrid Fiber
All HD, Video, Audio, and control signals, plus up to **100 Watts** of continuous 14VDC Power

C. SMPTE Hybrid Fiber - External "Juice48" Power Supply

Juice48

SilverBack Camera Unit

SMPTE 304M or OpticalCON Hybrid Connectors

Two strands infrastructure fiber

SMPTE 311M Hybrid Cable

Up to **300 meters** (1000 feet) on SMPTE Hybrid Fiber
Up to **24 km overall**

Juice Power vs. Distance

Gepco HDC120P
Gepco HDC920/Clark HFC
Furukawa 6.8mm TV-OM-FAMS

The Juice power system delivers plenty of power from the SilverBack Base Station (or the external Juice 48 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.
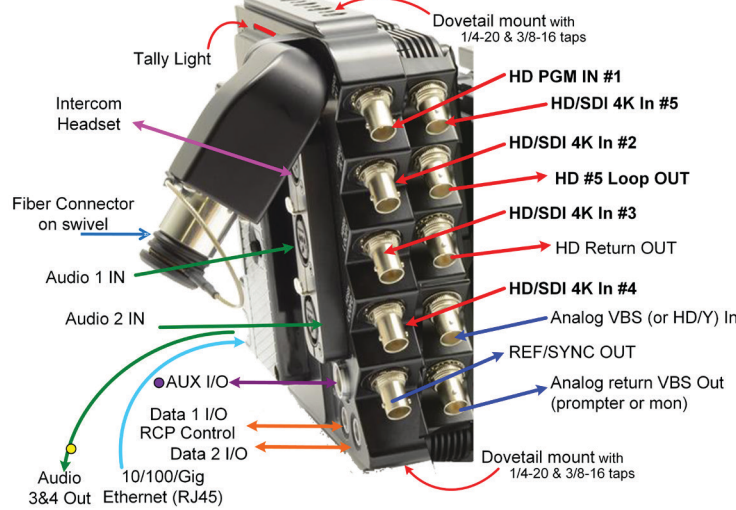**Dry fiber connectors:** 2 STs. *Both fiber connectors on front.*

CAMERA UNIT

The control panels 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.

Camera unit callouts: Dovetail mount with 1/4-20 & 3/8-16 taps; Tally Light; Intercom Headset; HD PGM IN #1; HD/SDI 4K In #5; HD/SDI 4K In #2; HD #5 Loop OUT; Fiber Connector on swivel; HD/SDI 4K In #3; HD Return OUT; Audio 1 IN; Audio 2 IN; HD/SDI 4K In #4; Analog VBS (or HD/Y) In; REF/SYNC OUT; AUX I/O; Analog return VBS Out (prompter or mon); Data 1 I/O RCP Control; Data 2 I/O; Dovetail mount with 1/4-20 & 3/8-16 taps; Audio 3&4 Out; 10/100/Gig Ethernet (RJ45)

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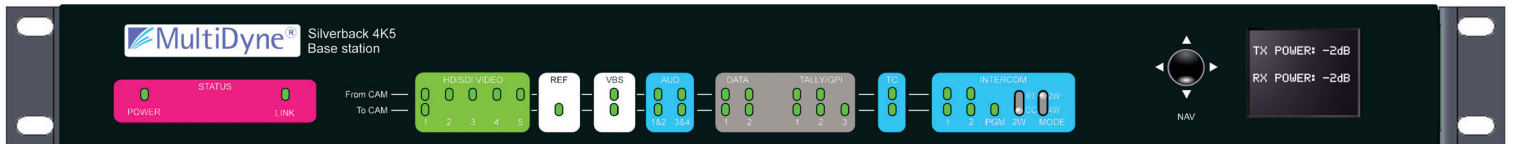
Rear connectivity makes it easy to integrate into a simple studio or flypack system, or as part of a large-scale system consisting of multiple cameras spread over a wide area.

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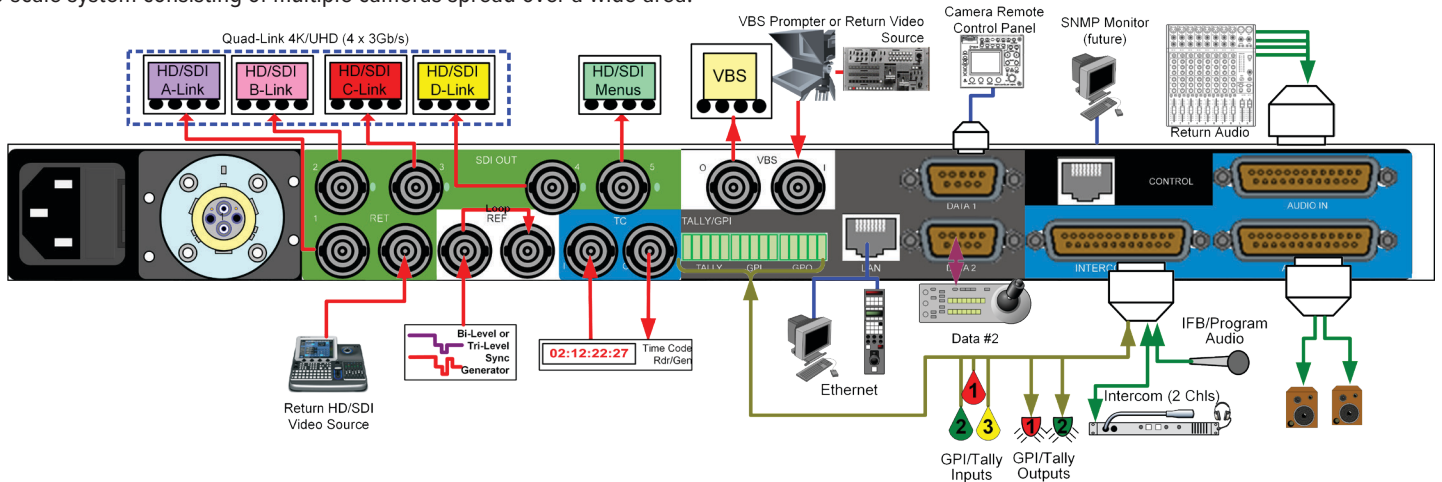
SILVERBACK 4K5 SYSTEM COMPONENTS AND ACCESSORIES:

SB3-C451-①②-5C③-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

BA4
AX1
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

Camera
Base
MDCAB00⑥
Camera & Base Remote Cables

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

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

TAC2
TAC4
TAC12
Available
MC-2S⑧-⑨(h) ⑨(b) ⑩
Tac2 two-fiber tactical cable assemblies, various connectors, and lengths

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"v
VA........................Cam plate: 'V', batt plate: "A/B"
170/180 ....Panasonic
190/200...JVC
210/220..Hitachi

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

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

TECHNICAL 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 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 or 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