

Series 3000 Camera-Mountable ENG/EFP Fiber Optic Transceiver System



Features

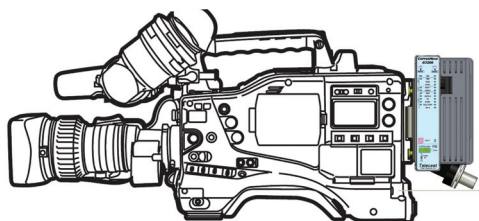
- All camera signals on 1 lightweight fiber cable
- Thinner, lighter, modular design
- Now with 10/100 Ethernet, camera to base
- Studio quality HD video and audio
- Multi-kilometer distance capability
- TDM Multiplexing, wavelength simplicity, for up to 8 cameras per fiber pair via Teleport™
- Anton/Bauer®, "V", & PAG™ battery options
- Wide temperature range
- Low power consumption
- Two fiber cable options
 - Tactical Fiber
 - Military Spec, battery/local power, 10+km
 - SMPTE Hybrid Fiber
 - Low voltage camera-mounted Power Wafer — 95 watts to 300m (984 ft.)
 - Hi voltage "PowerPlus" 2km (1.2 miles)
- Durable, high reliability design

The Fiber Optic System that "Dual-Purposes" Any Camcorder for Live News, Studio, and Multi-Camera Production

CopperHead 3000-series is your solution to the size, weight and transmission problems of ordinary coax, triax or multicore cabling. You will save time and effort and insure that your production gets done fast, right, on schedule and on budget. The camera-mounted systems provide a robust fiber link between your camcorder and your truck, control room or "video village" position. The model 3200 simultaneously transports both digital (SDI or HD/SDI) and analog (NTSC or PAL) program video, as well as all two-way camera control, audio, video, data, tally/call and intercom signals between the Camera and the Base Station. And for the first time a 10/100 Ethernet path is provided for a remote link to laptops and servers!

The CopperHead 3000 Camera Unit mounts directly to the camera's battery plate (Anton-Bauer, "V"-Mount, or PAG) and provides for a variety of power options. The Base Station end is a lightweight 1RU frame located at the "video village" position, or in your truck or control room.

Since the CopperHead transmits all signals digitally and optically, you are assured of the highest quality video and audio—free from interference, grounding problems or drifting due to temperature variations.



CopperHead 3200 Camera Unit
with Power Wafer adaptor

Applications

- TV news production
- Multi-Camera studio, truck, and flypack field production
- Electronic cinematography
- Sports production
- Inter/Intra campus cameras
- Government & military video

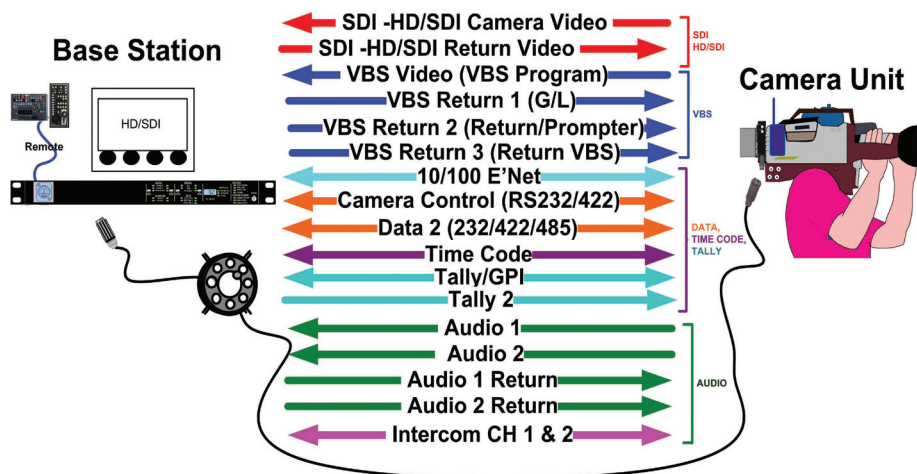
Compliance

Laser Safety Class 1 Laser 21 CFR 1040.10

EMI/RFI

IEC/EN 60825-1

RoHS



Three ways to connect

The CopperHead can utilize either of the two fiber optic cable styles found in the broadcast industry, depending on whether power is required at the camera. You can choose the lighter, more robust Mil-Spec "tactical" fiber cable and power the camera locally, or two options that utilize SMPTE hybrid fiber with its internal copper wires delivering power to the camera. Either way, connectivity is accomplished seamlessly and with no signal degradation:

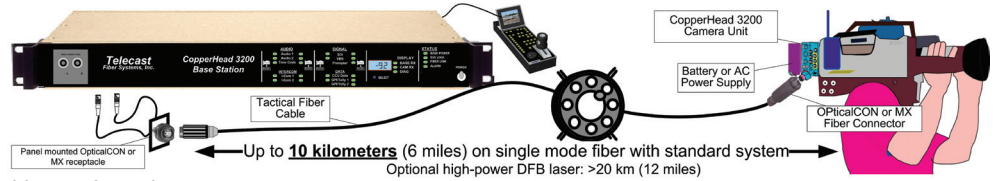
1. Connect with Tactical Fiber for highest reliability, longest range—up to 6 miles (10 km)*

Tougher than Coax

Telecast's TAC-series fiber cables have become the standard in field teleproduction for news, sports and EFP. Lightweight and flexible, they are tougher than coax, triax or any other copper cables, and stand up better to temperature extremes, vehicle traffic and flexing. Three sizes of Telecast OX-Frame™ reels give you the length you need.

MX Expanded Beam Connectors

Telecast's miniature MX™ connectors are designed for "harsh environment" use. Using advanced expanded beam technology, this is the most dependable and compact multicore fiber optic connector available today. Quick hermaphroditic plugs mate directly with each other, without the need for coupling barrels, making it quick and easy to deploy and extend.



Need longer lengths?
Just add one or several reels of cable.

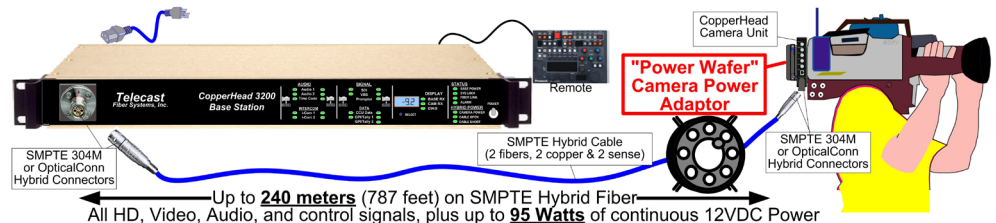
Neutrik opticalCon® Connectors

The hybrid opticalCON system consists of a ruggedized all metal and dirt protected cable plug and chassis receptacle to increase reliability. This versatile connector is based on a standard optical LC-Duplex connection, insuring easy field servicing. In addition to use on tactical fiber, four integral copper conductors allow it to be used with SMPTE hybrid fiber cable to carry power (below).



2. Connect up to 700 ft. (Standard Range) with SMPTE 311M Hybrid Fiber

When batteries or other local power supplies aren't practical, or in studio and small production environments, the CopperHead offers solutions for use with industry-standard SMPTE hybrid fiber cables to provide power to the camera, CopperHead Camera Unit, and other accessories at the camera position.



The "PowerWafer"

The CH3200-BS-95VD internally-powered Base Station, combined with the CH3200-CAM Camera Unit and the "PowerWafer" Adaptor will operate on SMPTE Hybrid fiber up to 1,000 feet, and deliver 95 watts of power to the camera and accessories. Use SMPTE304M or opticalCON connector.

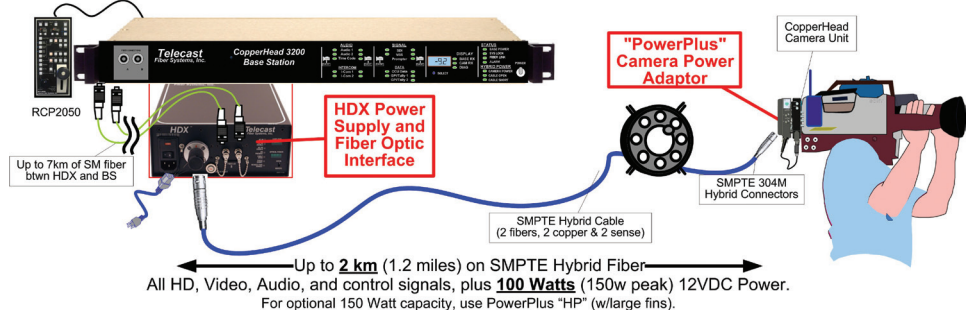


3. Connect up to 2km (Long Range) with SMPTE 311M Hybrid Fiber

When you need longer range and/or more power at the camera, the PowerPlus/HDX combo is the solution. The PowerPlus simply attaches to the CopperHead Camera Unit in place of the battery. The "HDX" power supply is installed anywhere along the camera chain where AC power is available.

Up to 150 Watts of Continuous Power

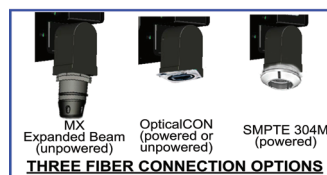
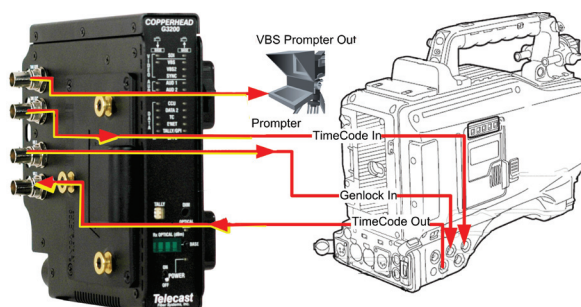
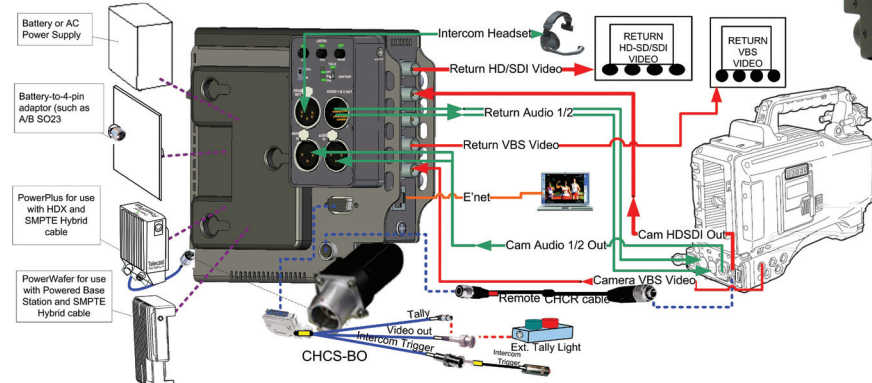
In addition to providing 100W of power (150W momentary) for the camera and the CopperHead, 12 VDC (and optional 24 VDC) power outputs are provided on the PowerPlus for external accessories, such as viewfinders, prompters, or lights. 150W of Power is available with the higher power PowerPlus "HP" (larger heatsink fins).



CopperHead 3200 Camera Unit Configuration

The CopperHead 3200 Camera Unit mounts to any professional camera's battery interface system (Anton/Bauer, V-Mount, or PAG), sandwiching between the camera and the battery or other power supply solution (such as the CopperHead PowerPlus or Power Wafer for use with SMPTE Hybrid fiber).

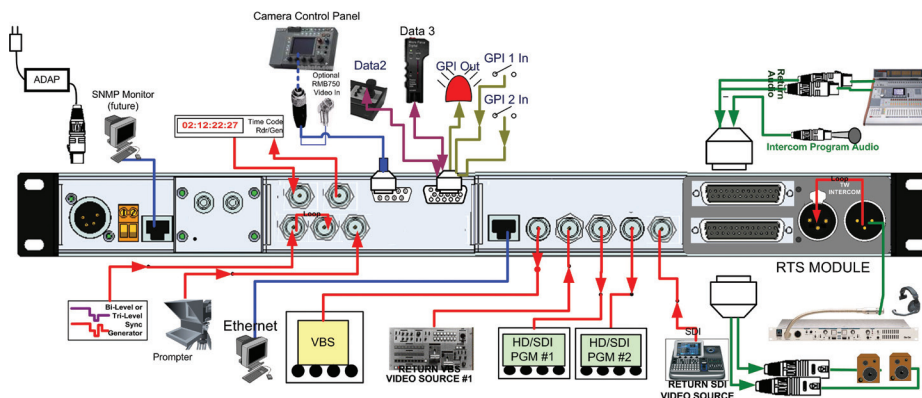
Camera Unit Power Options



CopperHead 3200 Base Station

The CopperHead 3200 Base Station is a lightweight 1RU frame located in your truck, control room, or "video village" position. Truly "plug-and-play," no front panel adjustments are required. Bi-color LEDs give easy-to-understand visual confirmation of link status with the CopperHead Camera Unit, as well as signal status of local input signals and signals coming down the fiber from the Camera Unit.

On the rear panel, standard connectors carry all video and intercom signals. Multipin DB25 connectors carry audio in and out. A DB9 is provided to connect to your Camera Control Panel.



Two Base Station Options

Versatile Configuration

Unpowered

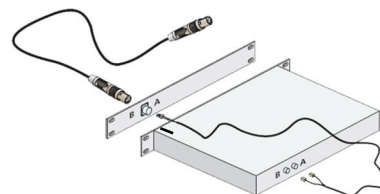
When used with Tactical fiber, or the external HDX power supply for long-range or high-powered applications, the Base Station is powered from an external 12VDC power source (via 4-Pin XLR connector) and is equipped with ST fiber connectors.

Powered

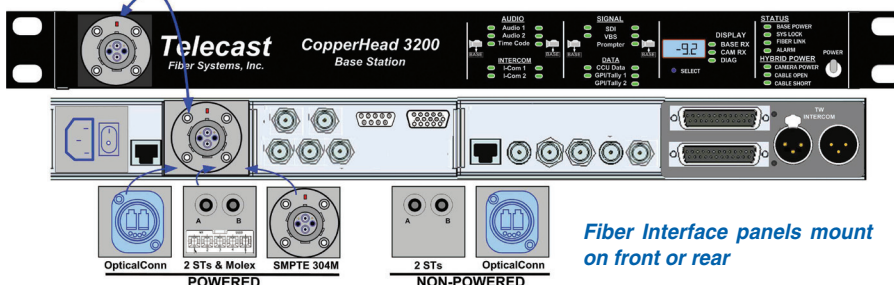
When used in the standard-range application, the Base Station is plugged directly into a 120/220VAC Mains source. This power-equipped Base Station will deliver 95 watts of power to the CopperHead camera unit over approx 780 feet of Hybrid fiber/copper cable.

Fiber Interface Panels

There are five different fiber optic connector interface panels available. Each can be mounted on the front or rear of the base station. ST type and opticalCONn panels can be used on the unpowered base station, while panels with opticalCON, SMPTE, or ST's and Molex connectors can be used with the powered Base Station.



Remote the fiber optic connector with MXRV or CH3BFC extension/breakout



Fiber Interface panels mount on front or rear

System Components and Accessories

 Camera Unit /MX Connector: Tac Fiber only CH3-CAM-3200-MX	 Camera Unit w/opticalCON connector: Tac or SMPTE Hybrid Fiber CH3-CAM-3200-NEU	 Camera Unit w/SMPTE 304M connector: Tac or SMPTE Hybrid Fiber CH3-CAM-3200-304M	 Standard Base Station 2 STs or opticalCON connector CH3-BS-2ST or -NEU	 Base Station w/internal Power Supply CH3-BS-95VD-304 or -NEU or -STM	 "Power Wafer" Camera Adaptor (for use with CHSeries 3000-BS-95VD) PWRWFR-95VD-FSR-AB
 Base Station AC Adaptor (for CHSeries 3000-BS-2ST) ADAP-AC-02	 Tactical Fiber on Reel CASM/MD/XL	 Tactical Fiber Assembly, MX Connectors CAXX-MX	 Tactical Fiber Cable Assembly, opticalCON Connectors CAXX-XT2S-NOC	 SMPTE 311M Hybrid Fiber Cable Assembly, opticalCON connectors CAXX-XSM311-NOC	 SMPTE 311M Hybrid Fiber Cable Assembly, SMPTE 304M connectors CAXX-XSM311-SMPTE
 2-Channel Intercom Modules: Clear-Com, RTS, or 4-wire CHG3-AUD-RTS/CC/4W	 Long Distance "Power Plus" Camera Adaptor for use with HDX (specify LP or HP) PWRPLUS-1MX/NO	 PowerAdaptor for PowerPlus HDX-2-ST	 Rack mount frame for 2 HDX units. HDX-FR-2	 Base Fiber Plates - unpowered: ST or opticalCON CH3BFP-ST/NOC	 Base Fiber Plates - powered: ST/Molex or opticalCON or 304M CH3BFP- STIMOL/NOC/304M
 MX Receptacle Flange Mount Assembly Breakout to STs MXRE	 MX Receptacle Jam Nut Assembly Breakout to STs MXRV	 opticalCON receptacle to STs and Molex 39-01-4051 CH3BFC-NOC-2ST/ MOL-08-XX	 opticalCON receptacle to opticalCON Plug CH3BFC-NOC- NOC-08-XX	 SMPTE Hybrid 304M plug to STs and Molex CH3BFC-304M-2ST- 08-XX	 SMPTE Hybrid 304M plug to opticalCON Plug CH3BFC-304M- NOC-08-XX
 Camera Remote Cable (specify camera model) CHCR-XXX	 Camera Remote Cable, 10 foot (specify remote model) CHBR-XXXX	 Camera Signal Breakout Cable CH3CS-BO-XX	 Camera Signal Cable 26-pin Multicore CH3CS-26P	 Universal Camera Control Panel CHRCP-2050A	 Universal Camera Control Panel w/FFT-LCD Display CHRCP-2050-LCD

Specifications

Video, Digital (bi-directional)

Interface	SMPTE 259M, 292M
Data Rate	270 Mb/s or 1.5 Gbits/s
Input Level	800 mV (peak to peak)
Input/Output Impedance	75 Ohms
Output Impedance	75 Ohms
Bit-Error Rate (@ -22 dBm)	10-12
Jitter (pathological data)	< 0.2 UI
Rise/Fall Times	< 270 ps

Video, Analog (bi-directional)

Interface	RS170, NTSC, PAL
Frequency Response	
30 Hz-4.2 MHz	±0.25 dB
8MHz	-3 dB
Video Signal to Noise Ratio	≥ 70 dB
Differential Gain	< 2%
Differential Phase	< 2°

Ethernet

Data Support	10BaseT/100BaseT
Connector	Twisted Pair RJ45
Cable compatible	UTP 100-ohm Cat5
Input/Output Impedance	10 kΩ/30 Ω

Audio

Number of Channels	1-to-4
Type	Balanced, line level
Impedance	>15K Ω
Maximum Input Level	24 dBu

Quantization	24 bits, 128x (oversampled)
Sample Rate	48ks/sec
Frequency Response	±0.1 dB, 20 Hz to 20 KHz

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
Max Gain (RTS or Clear-Com)	≥ 24dB
Min Gain (RTS or Clear-Com)	≤ -45dB

Electro-Optical

Operating Wavelengths	1310 nm/1550 nm
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:	MX or opticalCON
Remote Power:	
Short Range Power	SMPTE 304M or opticalCON Long
Range Power	SMPTE 304M
Optical Connector Options - Base Station:	
Unpowered (Tac fiber):	ST or opticalCON
Remote Power (Hybrid fiber):	
Standard Power	SMPTE 304M, opticalCON, or STs & Molex

Distance Limit *see note below

Tactical Fiber (Local Power at Camera):

Standard laser	15dB optical loss (≥ 5 km*)
Optional DFB laser	19dB optical loss (≈ 30 km*)

SMPTE 311M Hybrid Fiber:

Standard Internal Power Supply w/PowerWafer	
.....	≈ 300m (984 ft): 95W @ 12VDC*
Long Range: HDX w/PowerPlus	
LP	≈ 2km (6562 ft): 100W Cont./150W Peak*

Mechanical/Environmental

Dimensions (WxLxD)	
Camera Unit	2.5" x 6.5" x 2.2"
Base Station	17.5" x 9" x 1.75"
Power Wafer	5" x 6.12" x 2.2"
PowerPlus LP (100W)	5" x 6" x 2.5"
PowerPlus HP (150W)	5" x 6" x 3.7"
HDX	13" x 3.5" x 8.5"

Weight

Camera Unit	1.5 lb
Base Station	5.0 lb
PowerWafer	1.5 lb
PowerPlus	LP: 2.3 lb.....HP: 2.5 lb
HDX	10.5 lb

Power Consumption

Camera unit	8 watts@10-18VDC
Base Station (Tac Fiber)	10 watts@10-18VDC
Temperature Range	-25° to +55°C
Humidity Range	0 to 95% RH, Noncondensing



A BELDEN BRAND

Represented by:

* The maximum cable length varies due to optical cable quality, dirt/dust/contamination on connectors, and the number of inline connectors. Hybrid cable power range may depend on the size of the hybrid cable, as well as the power draw of the camera, lens, viewfinder, and other accessories are also factors.

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