MultiDyne
Video & Fiber Optic Systems

HUT System
Hybrid Universal Transmission Extender for SMPTE-Based HD Camera Chains

Don't let SMPTE hybrid fiber/copper cables limit where you put your cameras.

HUT-CP Powered Camera Adaptor

HUT-B CCU Adaptor

HUT-C Unpowered Camera Adaptor

Features

- Operate cameras on plain single mode fiber
- Take advantage of installed fiber backbones
- Extend distance without sacrificing performance
- Plug & Play operation
- Carry less hybrid cable
- Choice of optical connectors
- Choice of hybrid connectors
- Can provide power for cameras up to 1km
- Supports camera chains from Sony, Ikegami, Hitachi. Panasonic & Grass Valley*
- Optional optical repeating/remapping
- Rugged Design
- Designed and manufactured in New York.
- SEVEN year warranty

Applications

- Remote broadcasting
- Sports
- Shared control rooms
- Campus facilities
- Arenas and stadiums

7 Year Warranty
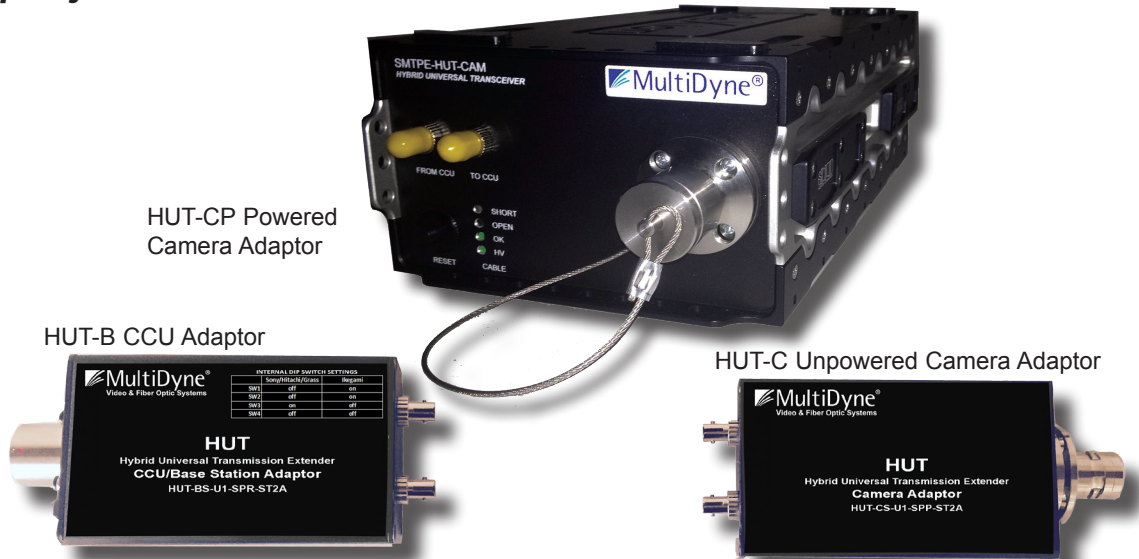
EXTEND CAMERA RANGES
The HUT system frees camera chains from the limitations of hybrid copper/fiber cabling, permitting cameras to be seperated from their CCUs by distances of over 10Km using inexpensive, conventional single mode fiber, which has many advantages over SMPTE hybrid cable:

- Eliminate RF, EMI and grounding issues.
- Faster set and strike times saves time and money.
- Reduced weight makes for lighter OB trucks, B-units and cable shipments.

CONNECT ANYWHERE EASILY
The plug and play system allows camera chains to connect via a facility's fiber infrastructure or on tactical fiber cable in the field, using industry-standard connectors such as STs, LCs, SCs, or OpticalCON.

CAMERA TRICKS
The HUT system works by "spoofing" (or "tricking") the camera and CCU into seeing a physical copper connection between them when connected only by single mode fiber cable.

LOCAL OR REMOTE POWER
After a long run of single mode fiber, HUT-enabled camera systems can be configured in one of two ways:

- Power the camera with the HUT-CP over 1Km of hybrid cable‡. Power is sufficient for handheld cameras or cameras installed in sleds with long lenses and other high-power accessories.
- Power the camera locally with 12VDC.

ROUTE AND MULTIPLEX CAMERAS
Once the hybrid cable is removed, a camera chain can be easily routed through optical routers, such as the LightningSwitch.

Use MultiDyne's FiberSaver systems to multiplex up to nine cameras onto just one strand of single mode fiber.

PASSIVE OR ACTIVE OPTICS
While typically passive to the camera chain optics, the HUT system is also available with active optics, which can be used to:

- multiplex a camera chain on to a single fiber strand.
- boost the optical range.
- "remap" the camera & CCU optics to different wavelengths.

Supported Camera Systems

Sony	HDC-1000/2000/3000 series camera chains with SMPTE fiber connections, HDFX-100/200 fiber/triax adaptors
Ikegami	All HDK series camera chains with SMPTE fiber connections
Hitachi	CH-HD, SK-HD, Z-HD series camera chains with SMPTE fiber connections
Panasonic	AK-HC3800 camera chain
*Grass Valley	LDK and LDX series. Base/CCU end only (HUT-B).

Applications

Example 1:
Camera powered via SMPTE hybrid cable

Average Overall Optical Budget of 10 dB: approx. 14.4 miles (20Km), dependent on camera/CCU specs

"HUT-CP" at camera

"HUT-BS" at CCU

1Km (3280 feet) of 14mm Hybrid cable‡
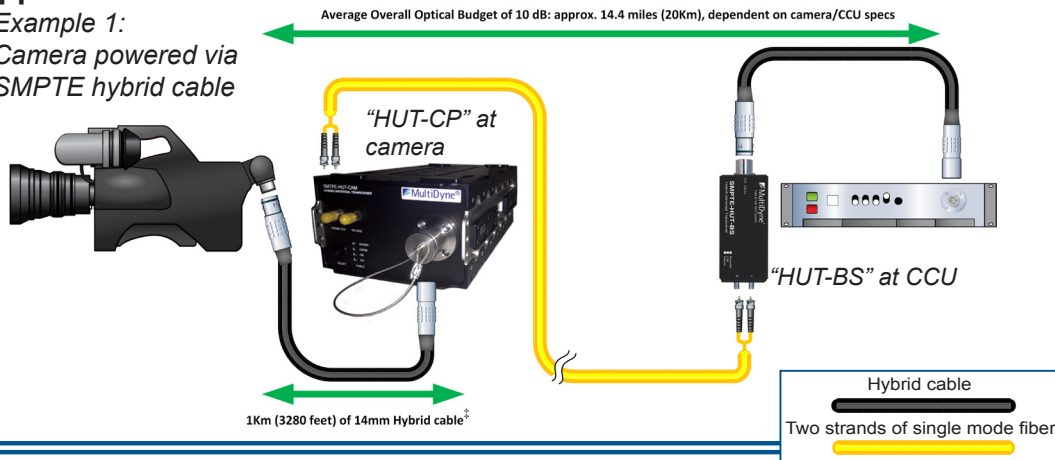
Example 2:
Camera powered locally (AC/DC adaptor)

"HUT-CS" at camera

"HUT-BS" at CCU

12VDC Power Supply

Hybrid cable
Two strands of single mode fiber
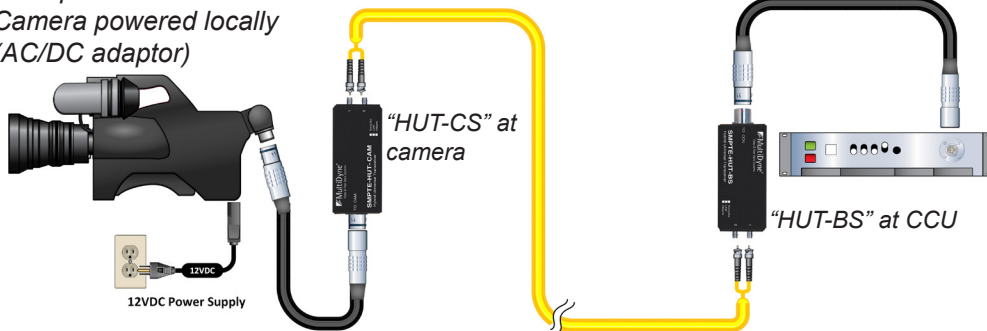
OPTIONS

Optical power tri-color LED option provides valuable at-a-glance system status.
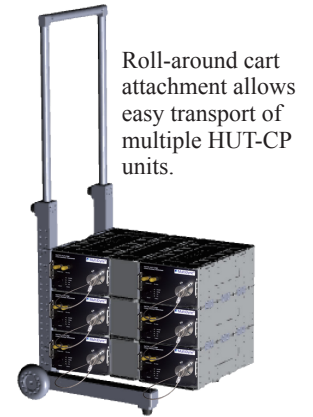
Roll-around cart attachment allows easy transport of multiple HUT-CP units.

Specifications

Electro-Optical
Fiber type ....Single mode
Output power (Active only, ⑤)................................A & E: -7dBm, F-thru-W: -1 dBm
Receive sensitivity (Active only, ⑥).............. Standard (S): -18dBm, Enhnaced (E): -32dBm

Mechanical/Environmental
Dimensions (LxWxH), Weight
HUT-CP ....9" x 5.5" x 2.5", 10 lbs.
HUT-BS, -BA, -CS, -CA .... 7" x 2" x 2.5", 0.5 lb.

Connector
Electrical .... IEC 320 (3-pin)
Hybrid Optical ....SMPTE 304M, Fischer FOH2, Tajimi OPS, OpticalCON
Optical only .... ST, SC, SC/APC, MX, OpticalCON
....others by request
HUT-CP Input Voltage...110-240 VAC
Output Max Load .... up to 260W
Power Consumption .... 25W (standby)
Temperature Range .... 0°C to +70°C
Humidity Range...0 to 95% non-condensing

‡Note: the length of hybrid cable that can be supported between the powered HUT and the camera is a function of many variables including thickness of the hybrid cable, number of connections, number and current draw of camera accessories and lens size/type/servo.

Ordering Information:

CAMERA SIDE OPTIONS

Powered Camera Adaptor:
HUT-CP-②-③-④⑤⑥⑦

Unpowered Camera Adaptor:
HUT-C①-②-③-④⑤⑥A

BASE/CCU SIDE

Base/CCU Adaptor:
HUT-B①-②-③-④⑤⑥A

①: Active "Spoofing" or Passive
S ....Spoofing circuitry
A ..... Adaptor (passive fiber breakout only)

②: Compatibility/"Spoof"
U1 ... Sony HDC, Ikegami, Hitachi, Grass*
P1 .... Panasonic HC-3800
S1 ....Sony HSC (Q2 2015)
NA.........No spoof. Passive fiber breakout.
                             Only with HUTCP/BP

③: Powered/"Wet" hybrid fiber connector
SPP..............................SMPTE 304M Plug
SPR .... SMPTE 304M Receptacle
FH2 .... Fischer FOH2-2
TOP...Tajimi OPS
D2R..... Neutrik OpticalCON (indoor only)

④: "Dry" single mode fiber connector(s)
ST2....................................2 ST connectors
SC2 .... 2 SC connectors
SA2 .... 2 SC/AP connectors
MX2........................ Mini Expanded Beam
D2R.............................. OpticalCON Duo
D4R...............................OpticalCON Quad
ST1........... 1 ST connector (Active WDM)
SC1 ....1 SC connector (Active WDM)
SA1 .....1 SC/AP connector (Active WDM)
           Contact MultiDyne for other options

⑤: Wavelength: Passive (default) or Active
X ...... Passive: no active optical conversion
A....................................... 1310nm WDM
E....................................... 1550nm WDM
F-thru-W ....1271nm-thru-1611nm CWDM
Y............................. single fiber A/E WDM
Z............................. single fiber E/A WDM

⑥: Receive (RX) Optics:
X ....Passive: no RX options
M.....Passive, integral optical power meter
                                        (HUT-CP only)
S .... Active, standard RX sensitivity
E ..Active, enhanced RX sensitivity (DFA)

⑦: Mechanical configuration
F .... Fiber conns on front panel, AC on rear
R.....................All connectors on rear panel
A .... Wet connector on front, "dry"
            connector(s) & AC (if applicable) on rear

* Grass Valley (GV) LDX/K cameras are not compatible with HUT-CP. GV CCUs are compatible with HUT-BS and HUT-BA units.   Contact MultiDyne or your authorized dealer for more information.

Typical System: Sony/Ikegami/Hitachi camera chain, powered remotely with HUT-CP (Example 1, above):
HUT-CP-U1-SPP-ST2XXF: HUT-CP powered camera adaptor for Sony HDC, Ikegami, & Hitachi. "Wet" SMPTE 304M plug to 2 STs. Fiber connectors on front.
HUT-BS-U1-SPR-ST2XXA: HUT-BS spoofing CCU adaptor for Sony HDC, Ikegami, & Hitachi. "Wet" SMPTE 304M recept to 2 STs.

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