



**Telecast**  
Fiber Systems, Inc.

**Viper™ &  
Sidewinder™**

## Portable Fiber Optic Broadcast Production Systems

**Now with Ethernet**



*The Viper and Sidewinder are the world's most widely used fiber optic systems for television broadcast production, including mobile news, sports and entertainment.*

These systems are your solution to the size, weight and transmission problems of copper cable. Your reach is extended, so you can cover those previously impossible shots, regardless of distance.

### Family Members

The Viper evolved from the Sidewinder, and both share the same plug-in function modules for video, audio and intercom, as well as the same durable "Mussel Shell" enclosures. In portable applications use Reel-to-Shell, Shell-to-Shell or Reel-to-Reel. Choose the Viper 442 chassis for rack mount locations.

### You save costs right away

- Faster set up means greater productivity
- Smaller cables permit smaller vehicles
- Overweight penalties are gone forever
- Shipping savings alone can cover the cost

Why do TV networks around the world select Viper & Sidewinder?

Because they're the only fiber systems that:

- Put all your signals on one cable—video, audio, intercom, tally, phone, data and Ethernet
- Offer simple BNC & XLR convenience, in choices of reel-, shell- & rack-mount systems
- Provide the video/audio performance and quality necessary for television production.
- Let you upgrade from analog NTSC/PAL to HD/SDI production, just by changing modules.
- Are packaged in durable, lightweight units that you can use in your studios and in the field.
- Operate efficiently in extended temperature environments without fans or heaters.
- Give you the confidence of internal UPS emergency batteries, so you stay on the air.
- Have been field proven in the most rigorous events by the most demanding broadcasters, as well as in tactical battlefield operations.

### Features

- Multichannel Video & Audio
- HD/SDI and/or NTSC/PAL video
- Mic/line analog and/or AES audio
- RTS®, Clear-Com® or 4-wire intercom
- RS232/422 & CCU data + GPI paths
- Ethernet 10/100 or Gigabit for VoIP and laptop connections (Viper only)
- Reel, "Mussel Shell" & 442 rack mount
- Multimode or single mode fiber
- Convenient plug-in modules
- Battery or AC operated
- Anton/Bauer Snap-On® option
- Alarmed UPS protection
- Extra-low power consumption
- Wide temperature range
- Military tactical cable & connectors

### Benefits

- Quick, easy set-up & tear down
- Labor and cost savings
- Noise-free, electrically isolating
- Long distance, no repeaters
- Broadcast quality at any range

### Applications

- Studio and campus facilities
  - Room to room
  - Floor to floor
  - Building to building
- Mobile Field Production
  - News, Sports & Entertainment
  - Vehicle to: cameras, announce booth, RF tower, stadium/arena
- Pre-fibered Facilities
  - Sports venues, airports, malls, government buildings, etc.
- Studio-Transmitter Links
- Mobile & Fixed Satellite Links
- CATV/Telecomm Video Backhaul
- Metropolitan Video Links
- Government, military & security

# Faster set up in portable operations

## Flexibility and convenience

Use reel to reel, reel to mussel, mussel to mussel, reel to frame, mussel to frame, or frame to frame.

You can deploy the lightweight fiber cable by pulling it from the reel, or by carrying the reel as the cable pays out behind. Even with 1,000ft. (305m) of Tac-4 (four-fiber tactical military) cable, the reel only weighs about 33 pounds.

## Portable systems start with our Sidewinder Reel

The best fiber optic cable reel in the world. Our uniquely constructed OX-Frame™ reels are widely used in military battlefield operations, as well as remote broadcasting.

- Three sizes of stackable Reel
  - Small size holds 152 meters (500 ft) of Tac-4 cable
  - Medium size holds 305 meters (1,000 ft) of Tac-4 cable
  - Large size holds 610 meters (2,000 ft) of Tac-4 cable
- Smooth operation with sealed bearings and variable brake
- Sidewinder's hub-mounted electronics are plug-in modules
  - Same modules used in the Mussel Shell and in our Viper
  - Modularly reconfigure signal types and/or direction
- Fly-away cases hold your Reel and all equipment

and a portable Mussel Shell enclosure



- Weather resistant, durable, modular enclosure
- Houses UPS plus up to 8 transmitter and/or receiver modules
- Mix & match analog or digital video & dual audio or AES/EBU
- Standard BNC, XLR and D-sub signal connectors
- Quick hermaphroditic 4-pin connector, expanded beam option

or specify the rack mount Viper 442 Enclosure



- For placement in a vehicle, media center or other fixed location
- Houses up to 8 TX/RX modules, 4 used per Sidewinder link
- Low profile unit also includes UPS and auxiliary data
- Uses simple, standard ST type connectors

## Batteries or AC — Uninterruptable power

- All units operate on 12 to 24 VDC, battery or AC/DC adapter
- Anton/Bauer battery mount optional on Mussel Shell & Reel
- Alarmed rechargeable UPS included — 30 min. backup
- Consumes only about 10 watts fully loaded (4 modules)
- LED indicators show signal status and power status



*With the Sidewinder configuration, the modular electronics and optical connections are readily accessible inside the reel hub.*

## TAC-4™ Cable Assemblies

### Tougher than Coax

Telecast's TAC-series fiber cables and industry-standard "hermaphroditic" connectors are designed for military battlefield use—and have become the standard in field teleproduction. They stand up to temperature extremes, vehicle traffic and flexing better than coaxial or wire cables. Three sizes of Telecast OX-Frame™ reels give you the length you need.



### Add-on Extension Reels

Need longer lengths? Just add one or several reels of cable. Quick military hermaphroditic connectors mean you don't have to worry about which direction to deploy the cables—they are always compatible from either end. Plugs mate directly with each other, without the need for coupling barrels. Use these reels for Mussel Shell to Mussel Shell operations.

## Link to your Facility's Backbone Infrastructure

The Sidewinder makes an excellent extension to your permanently installed fiber optic backbone network, such your building, your campus, or your event venue. With your Mussel Shell or your 442 rack frame located at your central site, you tie in with the the reel unit at remote wiring closets or pedestals. From there you have full mobility anywhere in your facility.

Your fiber infrastructure now becomes an important part of your mobile production link. Move from node to node by merely plugging into your network with the quick fiber connector.

# Modular flexibility for your operations

## All the signals you need...on one cable

HD/SDI and NTSC/PAL video, AES and analog audio, intercom, data, camera control, and tally. Change your signals by simply changing modules. Upgrade to high definition at your own pace.

## Flawless signals...instantly

You don't have to spend your valuable set-up time tweaking and solving cable problems. The Sidewinder replaces your noisy coaxial and wire cables with noise-free fiber optic cable. No interference, no signal loss, no high frequency signal rolloff.

## Flexible configuration, exactly what you need

The Mussel Shell holds up to eight modules. In standard configurations, four are used for video, and four are used for dual audio modules. Thus, a typical Viper system would enable you to send three video channels plus six audio channels in one direction, and one video plus two channels of audio return. Plus two channels of bi-directional intercom, as well as four duplex data/GPI circuits. By swapping modules, you could, for instance, convert the Viper to transport two videos and four audio channels in both directions. And now the Viper offers you optional Ethernet. With WDM, this is all carried on a Tac-4 cable. By using CWDM, you only need two fibers, allowing you to efficiently employ existing fibers in your campus or cross-town infrastructures.

The Sidewinder hub assembly accommodates four modules: two for video, and two each for dual channel audio. Plus intercom and data.

## Wideband PAL/NTSC Analog Video

You demand the highest quality for your video signals, and the Sidewinder delivers it. Plug in the TX/RX103 module set and get 9 MHz wide video with S/N of 70 dB, exceeding the industry's comprehensive EIA/TIA-250-C(SH) standards.

## "Future Proof" with Hi-Def Digital Video

Transition to serial digital video with easy plug-in modules. Whether you need data rates as low as 19.4Mb/s, standard definition component SDI video transmission at 270Mbps, or uncompressed HD/SDI at 1.5Gbps, our TX/RX292 module set handles them all.



## Digitally Transmitted Analog Audio

Telecast digitally delivers clean, clear audio signals, too. Each module multiplexes and transmits or receives two independent mic or line audio channels—flat from 20Hz to 22kHz. Auxiliary intercom and data channels are also multiplexed onto the duplex TX/RX280 set. Add more audio pairs with the low cost TX/RX380 slave audio sets.

## AES/EBU Digital Audio

Support your digital AES/EBU audio needs with our TX/RX260 digital audio modules. Fits into any audio module slot.

## Expand flexibility with Ethernet

Take advantage of 10/100base or gigabit Ethernet connectivity for your remote operations. Use Ethernet for your browser based controls, extend your DSL Internet connection to your remote sites, and maintain the security of your dedicated network without intervening firewalls.

## Auxiliary Intercom, Data/CCU and Tally

Your Viper or Sidewinder is available with two channels of intercom, plus four channels of duplex data, digitally multiplexed onto your bi-directional TX/RX280 dual audio streams.

Four data circuits are available for camera, machine or robotic controls. Selectable data formats include RS422, RS232, Sony CCU, or GPI switch closure interfaces for tally, call, etc.

Side-mounted, plug-in intercom modules are available to handle two channels of Clear-Com® or 4-wire intercom, or one dual channel Telex RTS®. User controls for 2-wire intercoms include input gain, output gain, null, termination and belt pack power on/off. You can also translate between intercom types, so your Clear-Com user can communicate with the RTS user. Or you can interface to your truck using 4-wire, and drive 2-wire belt packs in the field.



# Specifications

## Video

### TX/RX103 Module Set (NTSC/PAL)

Interface	RS-170, NTSC, PAL
Input/Output impedance (Differential input, isolated from ground)	75 Ohms
Level, blanking level clamped to 0 V	1Vp-p
Freq. Response (30 Hz to 5.0 MHz)	±0.15 dB
(-3 dB point, min.)	9 MHz
Signal to Noise (weighted) Min/Typ	68 dB/71 dB
Differential Gain	< 2%
Differential Phase	< 1°
Luminance Nonlinearity	< 2%
Chrominance-Luminance Intermodulation Distortion	< 1.0%
Delay Inequalities	< 10 ns
Gain Inequalities	± 1 IRE
Line Time Distortion	< 0.5 IRE
Field Time Distortion	< 2 IRE p-p
Short Time Distortion	< 3 IRE p-p
Long Time Distortion	< 1 IRE peak
Dynamic Gain, Picture & Sync	< 1%

TX/RX259 Module Set For 270 Mbps SDI Video.  
Conforms to SMPTE-259M specifications; see TX/RX259 data sheet

TX/RX292 Module Set For SDI and up to 1.5 Gbps HD/SDI Video.  
Conforms to SMPTE-292M specifications; see TX/RX292 data sheet

## Audio

### TX/RX280 & TX/RX380 Module Sets

Digital Transmission	18-bit
Sampling Rate (samples/sec)	48k
Input Impedance (balanced)	5 kΩ & 600Ω
Output Impedance (balanced)	30Ω
Input Levels (max, Lo Z) dB	-22, +8 and +18
(max, Hi Z) dBV	-24, +6 and +16
Output Level, line, max.	+ 18 dBm standard, +24 dBm optional
Frequency Response (@ +8 dBm), 20 Hz to 22 kHz	±0.2 dB
Total Harmonic Distortion + noise	
20 Hz to 20 kHz (@ +8 dBm)	<0.05%
1 kHz (@ +18 dBm)	<0.01%
Signal to Noise Ratio, unweighted, 20 Hz to 20 kHz, RMS (ref. to +18 dBm clip Reference)	>90 dB

## Auxiliary (requires 2-way TX/RX280 audio paths)

Interface	2 ch. 4-Wire (bal.) or 2-Wire (RTS or Clear-Com)
Signal to Noise Ratio (ref. to +10 dBm)	70 dB
CCU/Data	
Interface	RS422, RS232, or Sony CCU (e.g., RM-M7, RM-P3)
Transmission Rate	0 to 150 kBits/sec
Contact Closure	
Port Input	Normally High TTL level
Logic 1=open remote contacts; connect to ground (Logic 0) to actuate	
Output	Form 1A SPST, "Normally Open" isolated contacts

## Electro-Optical (typ.)

Operating Wavelength	1300 nm	1550 nm
Transmitter (TX) Output into cable (dBm)		
TX103, TX280	-14 & -10	-12
TX259	-8 & 0	-8 & 0
TX292	-7.5 & 0	0*
Receiver (RX) Sensitivity (dBm)		
RX103 & RX259	-25	-27
RX292	-22	-22*
RX280	-30	-30

\* for HD/SDI over distance @1550nm, requires single mode fiber and DFB/CWDM laser

For performance details, please see individual module data sheets.

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Specifications subject to change without notice. Made in USA  
V1-SW-0106-2M

## Mechanical/Electrical/Environmental

Reel (incl. Sidewinder)	SM Reel	MD Reel	XL Reel
Dimensions (WxHxD):	12"x12"x12"	15"x16"x13"	18"x21"x14"
Weight, empty:	12 lbs	15 lbs	28 lbs
<u>Mussel Shell</u>			8-module
Dimensions (WxHxD):			14.5"x14"x3"
Weight (nominal, loaded)			10 lbs
<u>"442" Rack Mount Chassis</u>			
Dimensions, w/o mounting ears (WxLxD):		16.7" x 10.5" x 3.5"	
Weight		8 lbs	
Power Consumption, nominal (loaded with 4/8 modules)		10/20 watts	
No. of Video Module Slots Available (Mussel/442/Sidewinder)		4/4/2	
No. of Dual Audio Module Slots Available (Mussel/442/Sidewinder)		4/4/2	
Video Connectors (NTSC & HD/SDI)		BNC	
Audio Connectors (Analog & AES)		3-pin XLR, male or female	
Intercom Connectors (duplex, on intercom module)			
RTS module (one dual channel)		one 3-pin XLR, male	
Clear-Com module (two channels)		two 3-pin XLR, male	
4-wire module (two channels)		two 5-pin XLR, male	
Optical Connectors/attachment			
Inside Mussel Shell or Sidewinder reel hub — to modules		ST-type	
Cable Plug End	4-pin military hermaphroditic plug (MX or Delphi)		
Mussel Shell	4-pin military hermaphroditic receptacle (MX or Delphi)		
Rack Mount 442 Enclosure (see MCRV breakout below)		ST-type	
Power Connector		4-pin XLR	
Battery Mount (optional)	PAG or Anton/Bauer Snap-on™ Gold Mount		
Input Voltage Range		12 to 24 VDC (30 VDC max.)	
Operating Temperature Range		-40° to +70°C	
Humidity Range		0 to 95% non-condensing	

## Ordering Information

Viper and Sidewinder systems can be configured to fit your specific needs, ordered as component items. Order Mussel Shell or "442" rack mount frame, cable assembly on reel, Sidewinder Hub assembly chassis, video and audio modules, intercom plug-in modules and options separately. We will help you specify these.

- Mussel Shell (military optical receptacle) or Viper 442 Rack Mount frame (ST)
- Sidewinder Hub Assembly—fits in any size reel, holds 4 modules (2V+2A)
- Cable Assembly—Tac-4 Heavy Duty cable, military plug outside, 4 STs inside
  - SM Reel—Small reel, 500 ft. Single mode or Multimode
  - MD Reel—Medium reel, 1,000 ft. Single mode or Multimode
  - XL Reel—Large reel, 2,000 ft. Single mode or Multimode
 Specify hermaphroditic multipin connectors — MX expanded beam or Delphi
- Video and Audio Transmitter (TX) & Receiver (RX) Module Sets
  - TX/RX103—NTSC/PAL analog video module set; meets RS250-C-SH
  - TX/RX259—ITU-R 601 SDI digital video module set; 270 Mbps
  - TX/RX292—Wideband HD/SDI video; 19.4 Mbps to 1.5 Gbps
  - TX/RX280 (380)—Dual audio (expansion) module set; analog mic in, line out
  - TX/RX260—AES/EBU 2-way transceiver module set; digital audio in and out
  - TR900 or 950—10/100base or Gigabit Ethernet (Viper only, factory installed)
- Intercom Plug-in Modules (requires 2-way TX/RX280 audio for intercom/data)
  - ADDR-AUX-4W—2 channels of balanced, non-powered audio on 2 XLRs
  - ADDR-AUX-RTS—2 channels of Telex® RTS, power to belt packs, 1 XLR
  - ADDR-AUX-CC—2 channels of Clear-Com®, power to belt packs, 2 XLRs
- MCRV breakout assembly—military to ST—for vehicle entry panels, etc.
- Fly-Away Cases—Holds Reel and (N) Mussel Shells (N = 0, 1 or 2)
  - SHIP-SM-N (for Small Reel), SHIP-MD-N (Medium), SHIP-XL-N (Large)
- Power Accessories
  - SNAP-AB-1C Anton/Bauer Snap-On® Battery mount on Reel or Mussel Shell
  - ADAP-AC-02 AC/DC power cube adapter
- Consult factory for WDM or CWDM options — transmission on as few as 2 fibers

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