

# Installation and Operation Guide V1.0 Firmware 1.5.76

Models:

4K-SC UHD-SC

HARDWARE ENCODER 4K60 10-bit H265 HEVC | H264 AVC



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## Contents

In	Itroduction
	Hardware Features Talon 4K-SC
	Hardware Features Talon UHD-SC
	Network Configuration
	Encoding Features
	Block Diagram

Weh	Interface	•

v	Ved Interface	
	Overview	_
	Dashboard	8
	System	
	Device Settings	_
	Storage 1	0
	Network	
	Network Settings	
	Dynamic DNS Configuration.	2
	Security	_
	Advisory Notice & Consent Banner	
	Management Whitelist	
	Secure Web Server (HTTPS)	4
	VPN	_
	Open VPN	_
	OpenConnect VPN.	_
	Date & Time	
	LCD, LED, Button Config	8
	Channel Setup	~
	Output Protocol	_
	Video Archiving2	0
	Streaming Protocols RTMP, RTMPS, UDP	
	RTP, SRT	
	RTSP, WebRTC	_
	Video Encoding Settings	
	Audio Encoding Settings	
	Status Page	
	Actions	.9
	Start / Stop	o
	Support	
	Firmware Updates	۱N
	Factory Restore.	_
	Factory Defaults	_
G	General Information	
	Enterprise and Security	34
	Opensource Listing	
	Safety and Compliance	
	$\overline{\mathbf{u}}$	

Simulcast RTMP(S)

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# Hardware Features 4K-SC



Power Switch Physical ON/OFF Switch Power / Boot LED Red at Power Up, turning blue once booting process is complete Status LED's Status LED's that can be configured in Talon UI - System - IO Configuration Multi Function Button Start, Stop, Reset Status Display Displayed information can be configured in Talon UI - System - IO Configuration 1 GigE Ethernet One Gigabit Ethernet RJ45 connection USB 3.0 Save to File for an MP4 copy of the live stream 12G-SDI Loopout Loopout of the SDI Input 12G-SDI Input SDI Input up to DCI60 HDMI 2.0 Input Non-HDCP compliant HDMI 2.0 input 12VDC Power Locking 12V Power Input

# In the box

- Talon Encoder
- Locking 12VDC / 36W Power Supply
- Mounting Brackets



# Hardware Features UHD-SC



Power Switch

Physical ON/OFF Switch

- Power / Boot LED Red at Power Up, turning blue once booting process is complete
- Status LED's Status LED's that can be configured in Talon UI System IO Configuration
- Multi Function Button Start, Stop, Reset
- 1 GigE Ethernet One Gigabit Ethernet RJ45 connection
- USB 3.0 Save to File for an MP4 copy of the live stream
- 12G-SDI Input
   SDI Input up to UHD60
- 12VDC Power Locking 12V Power Input

## In the box

- Talon Encoder
- Locking 12VDC / 36W Power Supply
- Mounting Brackets



### Network Configuration

# Important! Talon Encoders ship from the factory in DHCP mode. Please ensure your host PC and Talon are connected to the same network supporting DHCP.

- 1. Connect Talon to your network using a CAT5 or faster Ethernet cable
- 2. Connect Talon to power using the supplied 12V adapter. Ensure the barrel connector is fully engaged and locked
- 3. Power up Talon with the front power switch
  - Red "Power" LED will turn blue once the booting process is complete
  - The assigned IP address will display (4K-SC only). This might take up to a minute
- 4. Connect to Talon from your host PC
  - Option #1: Type the IP address into your web browser
  - Option #2: Download "Boss Pro" from <u>www.ospreyvideo.com</u> to find all Talons on your network
- 5. Default login credentials
  - Username: admin
  - Password: osprey

#### Setting up Talon without Network access or with Network without DHCP server using APIPA

- 1. Verify your PC is set to Automatic IP
- 2. Connect Talon directly to your PC with an Ethernet cable (ensure the PC doesn't have network connection though Wifi, USB, etc)
- 3. Follow above instructions beginning with step 2.

**APIPA -** Automatic Private IP Addressing (APIPA) is a feature of Windows-based OS – included since Windows 98 and Windows ME – that enables a Dynamic Host Configuration Protocol client to automatically assign an IP address to itself when there's no DHCP server available to perform that function.

).3 - Osprey Settings	BOSS Pro Device Name	Serial Number	IP Address	Description	— E Status	
墩	) Talon Encoder	TA21330049	172.16.10.163	Osprey Talon 4K-SC 1.4.59	Connected	Par
						admin
						нер

Coprey Talon Login

× +



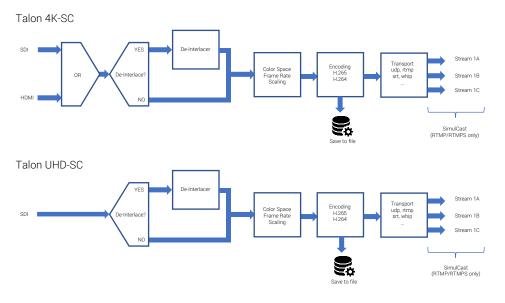
# **Encoding Features**

- Simultaneous Streaming and Recording in H.265 or H.264 of 12G-SDI or HDMI2.0\* Input
- Segmented recording to Network Share or USB Drive
- 16 Audio Channels of SDI or 8 Audio Channels of HDMI\*
- Up and Down Scaling up to 4K
- Frame Rate Conversion
- De-Interlacing
- Color Space support up to 10-bit 4:2:2
- Preservation of Ancillary Data from SDI Input

\* HDMI feature only available on Talon 4K-SC



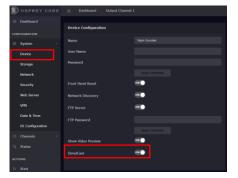
# Block Diagram



# Simulcast for RTMP and RTMPS

### Multiple Streams using Simulcast

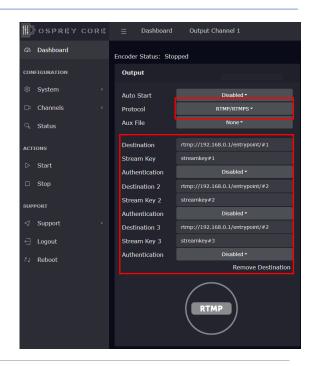
Simulcast must be enabled under Device - Simulcast



**RTMP** and **RTMPS** protocols allow for up to 3 transport streams to independent destinations. The Video and audio encode settings for all streams are identical.



Connection or link errors will stop all active streams





# Web Interface - Dashboard

#### Overview

A web server in Talon allows for system control and stream settings via web browser. All commonly used Windows, Mac and Linux web browsers are supported. Please ensure your device is connected to the same network as Talon (see Page 5 for further instructions). To connect to the interface simply enter the IP address of your Talon into the web browser. Default login for a factory default Talon is **user: admin** and **password: osprey**.

The Dashboard provides basic information about the status of your Talon and a video preview\* of your output channel.

Dosprey Core	$\equiv$ Dashboard Output C	hannel 1						¢
Dashboard								
CONFIGURATION	Device			Inputs		Thermal		
System      Channels	() ava. () read to be defined			<b>SDI:</b> 1080p30 H <b>DMI:</b> No Link				
C. Chuincia	FOND 1 2 1 HST			Network				
ං, Status		Serial Number: TA20220009 Hardware Model: Osprey Talon 4K-SC		MAC Address: C0:98:F4:35:B1:BB				
ACTIONS	USB Media: Not Present			IP Address: 1	72.16.15.26			
<ul><li>Start</li><li>Stop</li></ul>	Output Channel Status							
SUPPORT	Preview	Channel	Codec	Туре		Status		
⊲ Support <		CH1	AVC	udp	udp://172.16.10.180:7002	Started	() Edit	Stop
← Logout								
₹2 Reboot								

\* Preview will stop once an Encoder is started



# Web Interface - Device

### System Settings - Device Configuration

Name	change your device name
User Name	change user login name credentials
Password	change user login password credentials
Front Panel Reset	enable/disable front panel "ACTION" button reset feature
Network Discovery	Network Discovery allows computers and devices to find one another when they are on the same
	network. This service is turned 'on' by default. To stop Discovery services, select 'off'. Note that
	monitoring tools such as Osprey Boss require Discovery to locate Talon devices on the network.
	Osprey Boss will not be able to see any system that has Discovery turned off
FTP Server	on unit ftp server - default user: 'talon'. Remote access to USB storage drive
FTP Password	on unit ftp server - password: 'access'. Remote access to USB storage drive
Show Video Preview	disable "Dashboard Video Preview" to improve UI responsiveness and CPU usage
Simulcast	enable Simulcast for RTMP and RTMPS streaming protocols

### System Settings - Device Info

Generic system and firmware overview

CORE CORE		1		¢
Dashboard     Dashboar				
	Device Configuration		Device Info	
CONFIGURATION	Name	Talon Encoder	Hardware Model	Osprey Talon 4K-SC
© System ~				
Device	User Name		Serial Number	TA20220009
Storage	Password		System Time	Mon Jul 10 16:15:41 2023
Network			CPU Usage	
Security	Front Panel Reset	ON O	Available Memory	
Web Server	Network Discovery	ON O	Uptime	8 minutes, 27 seconds
VPN	FTP Server	ON O	Firmware Version	
Date & Time	FTP Password		Firmware Build Date	Mon Jul 10 08:54:04 CDT 2023
IO Configuration			API Version	
□: Channels <	Show Video Preview			
ු Status	Show video Preview			
	SimulCast	ON O		
ACTIONS				
▷ Start				



# Web Interface – USB Storage and Network Configuration

### System Settings - Storage

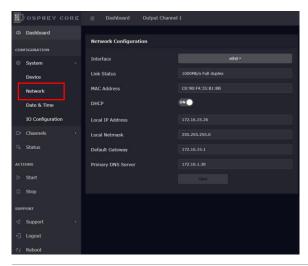
Please refresh the browser page after inserting a USB drive as the page doesn't dynamically refresh.

Always unmount the USB drive before unplugging it!!!

BOSPREY CORE	$\equiv$ Dashboard	Output Channel 1
Dashboard	USB Storage	
CONFIGURATION		
© System	Size	
Device	Available Storage	
Storage	Used Space	
Network		
Security		

### System Settings - Network Configuration

Interface	network port identification. If additional network devices are installed, they would be selectable here.
Link Status	Indicates link speed 10/100/1000Mbps (not network speed) and port status, full or half duplex.
MAC Address	Talon MAC ID
DHCP	enable/disable DHCP
Local IP Address	dynamic if DHCP is on. Otherwise, a new valid IP address can be entered here
Local Netmask	dynamic if DHCP is on. Otherwise, a new valid netmask can be entered here
Default Gateway	dynamic if DHCP is on. Otherwise, a new valid gateway can be entered here
Primary DNS Server	dynamic if DHCP is on. Otherwise, a new valid DNS can be entered here





# Web Interface - Network Configuration

### System Settings - Network Configuration

....

Interface	network port identification. If additional network devices are installed, they would be selectable here.
Link Status	Indicates link speed 10/100/1000Mbps (not network speed) and port status, full or half duplex.
MAC Address	Talon MAC ID
DHCP	enable/disable DHCP
Local IP Address	dynamic if DHCP is on. Otherwise, a new valid IP address can be entered here
Local Netmask	dynamic if DHCP is on. Otherwise, a new valid netmask can be entered here
Default Gateway	dynamic if DHCP is on. Otherwise, a new valid gateway can be entered here
MTU	maximum transmission unit in bytes – packet size maximum is 1500
Primary DNS Server	dynamic if DHCP is on. Otherwise, a new valid DNS can be entered here

SPREY CORE	$\equiv$ Dashboard Output Channel 1				
ශ Dashboard					
CONFIGURATION	Network Configuration				
© System -	Interface	eth0 •			
Device	Link Status	1000Mb/s Full duplex			
	MAC Address	C0:9B:F4:35:B1:BB			
Storage	DHCP	ON			
Network	DHCP				
Security	Local IP Address	172.16.15.32			
Web Server	Local Netmask	255.255.255.0			
VPN	Default Gateway	172.16.15.1			
Date & Time	MTU	1500			
IO Configuration	Primary DNS Server	172.16.1.30			
CP Channels <					
୍ତ Status		Save			



# Web Interface – DNS Configuration

### Dynamic DNS configuration

OSPREY CORE	$\equiv$ Dashboard Output Channe	11		¢:
Dashboard				
CONFIGURATION	Network Configuration		Dynamic DNS Configuration	
© System ~	Interface	eth0 *	Enabled	Enabled •
	Link Status	1000Mb/s Full duplex	Provider	
Device			Username	
Storage	MAC Address	C0:9B:F4:35:B1:BB	Password	
Network	DHCP	ON O	Passion	
INCHOIR			Hostname	
Security	Local IP Address	172.16.15.26	Update Period	
Web Server	Local Netmask	255.255.255.0		
VPN	Default Gateway	172.16.15.1		
Date & Time	Primary DNS Server	172.16.1.30		
IO Configuration		Save		
🗅 Channels 🛛 <				



## Web Interface – Advisory Notice & Consent Banner

US Government entities and many other governments and corporations require an approved use notification before granting access to publicly accessible systems.

Show Bannerenable or disableBanner Text:enter text for the banner here.Save:enables banner

Ħ	SOSPREY CORE	≡ Dashboard Output Channel	1		*
	Dashboard	Advisory Notice & Consent Banner		Management Whitelist	
co	NFIGURATION				
\$	System ~	Show Banner	Disabled •	Enable Whitelist	Disabled *
		Banner Text		Mangement IP address(s)	
	Device				Save
	Storage				
	Network				
	Security				
	Web Server				
	VPN				
	Date & Time				
	IO Configuration				

# Web Interface – Whitelist and Firewall

### Whitelist/Firewall

Blocks all incoming ICMP (ping) requests. Blocks incoming traffic on ports 80 (http) ,8080,8088,443 (SSL), 21 (FTP) and 22 (SSH) unless it originates from an address on the whitelist. RTMP and RTSP TCP ports are not blocked. Multiple addresses may be added to the list, separated by comma.

Defore applying care should be taken to not inadvertently lock all users out by typing in an invalid address.

11	OSPREY CORE		11		*
9	Dashboard	Advisory Notice & Consent Banner		Management Whitelist	
со	NFIGURATION	Advisory Notice & Consent Banner		management whitelist	
\$	System ~	Show Banner	Disabled *	Enable Whitelist	Disabled *
	Device	Banner Text		Mangement IP address(s)	
	Storage				
	Network				
	Security				
	Web Server				
	VPN				
	Date & Time				
	IO Configuration				



## Web Interface - Secure Web Server

Enabling Secure Server (HTTPS) adds a secure encryption layer to the Talon internal web server, along with certificate-based authentication.

### Secure Server (HTTPS)

Enabled Only HTTPS will be supported on the Web Interface. (Server certificate required) Disabled Only HTTP will be supported on the Web Interface. A certificate is not required.

NOTE: Once Secure Server is enabled Talon will reboot. When it finishes the reboot, the page you were on will not be accessible as it is not secure. You will need to change the URL to "HTTPS://" to login again.

When you change the URL, if you have selected "Self-Signed" for the certificate your browser may warn you that the site is not secure.

#### Certificate Type

Self-Signed:	Talon will self-generate an SSL Certificate to secure the website. While this will allow access via HTTPS, it is usually only a temporary solution for security as the certificate isn't signed by a Certificate Authority (CA). NOTE: When this option is chosen, users accessing the Web Interface for the first time will receive a warning in their browser not to proceed because a self-signed certificate cannot be validated by any outside authority. The accessing browser will always show following warning:			
	← → C ▲ Not secure https://172.16.15.18			
User Provided:	If your organization has their own private key, it can be installed. The server only requires the private key provided by the certification authority, and the security certificate. These are easily cut and pasted from the information provided by your signing authority.			
Key Certificate	Insert Private Key here. Insert Security Certificate here.			

	SOREY CORE	$\equiv$ Dashboard Output Channe	11	
	Dashboard			
co	NFIGURATION	Web Server Settings		
	System ~	Secure Server (HTTPS)	Enabled •	
\$	System	Certificate Type	User-Provided *	
	Device	Кеу		
	Storage			
	Network			
	Security			
	Web Server			
	VPN	Certificate		
	Date & Time			
	IO Configuration			
	Channels ‹			
Q,	Status			
			Save	



## Web Interface – Open VPN

A VPN creates a private network tunnel over the public internet, that securely connects and encrypts data between two networks. When properly connected via a VPN, a remote Talon can be administered as if it were on your home network, regardless of location. Talon has included two standalone VPN clients, both licensed under GPLv2. Between these two clients, access is available to most VPN users.

#### **Open VPN Configuration:**

OpenVPN is an open-source virtual private network system that can create secure point-to-point connections. It is offered in both client and server applications. OpenVPN is used by many manufacturers home and SMB routers, allowing users to create tunneled access into their own private networks. It can be configured as a Site-to-Site VPN or a Client to Server VPN. More information about the software is available at <a href="http://www.openvpn.net">www.openvpn.net</a>

Auto Start	ENABLED: When Auto Start is enabled, the VPN will connect as Talon boots without requiring user intervention. This is useful for lights-out operations where power may be interrupted. Or, for systems at locations which always require remote administration. CAUTION: Thoroughly test the VPN settings before enabling Auto Start.
	DISABLED: VPN will only start when "connect" is pressed
Configuration Information	Routers that support OpenVPN generally have a utility to configure the VPN client and download a .ovpn file. To configure the Talon, simply open the .ovpn file in a txt editor and paste the contents into the "Configuration Information" pane.
Save	Press "Save" to preserve the connection information. Unless it is saved, it will be lost at the next reboot.
Connect	The connect button uses the information in the .ovpn file to create a VPN tunnel. If the tunnel is successful, the Connect button will turn RED and the label will say "disconnect". Below the button the local address of the Talon will show as "Local" and the address of the remote connection will be shown as "Remote". Pressing "disconnect" will stop the VPN service.

SOSPREY CORE		11		¢
Dashboard				
CONFIGURATION	Open VPN Configuration		OpenConnect VPN Configuration	
System ~		Connect		Connect
Device	Auto Start	Disabled -	Auto Start	Disabled +
Storage	Configuration Information		Server Address	
Network			User	
Security			Password	
Web Server			Encryption Key	
VPN			Encryption Type	
Date & Time		Save		
IO Configuration			se de la companya de	
□ <sup>3</sup> Channels <			<u> </u>	
୍ତ Status				



# Web Interface – OpenConnect VPN

### OpenConnect VPN Configuration:

OpenConnect is a cross-platform multi-protocol SSL VPN client. It was selected for Talon because it is compatible with the Cisco AnyConnect®. OpenConnect is not officially supported by or associated in any way with Cisco Systems. It just happened to interoperate with their equipment.

Auto Start	ENABLED: When Auto Start is enabled, the VPN will connect as Talon boots without requiring user intervention. This is useful for lights-out operations where power may be interrupted. Or, for systems at locations which always require remote administration. CAUTION: Thoroughly test the VPN settings before enabling Auto Start.
	DISABLED: VPN will only start when "connect" is pressed
Server Address	URL or IP address of the VPN server
User	username for the VPN account
Password	password for the VPN account
Encryption Key	key provided by your VPN
Encryption Type	sha1, sha256 and pin-sha256 are the available options. Encryption Type must match the type assigned by the server.
Save	Press "Save" to preserve the connection information. Unless it is saved, it will be lost at the next reboot.
Connect	Selecting "Connect" will establish a tunnel connection via OpenConnect VPN. Upon successful connection the IP address of your connection will appear below the "Disconnect" button.

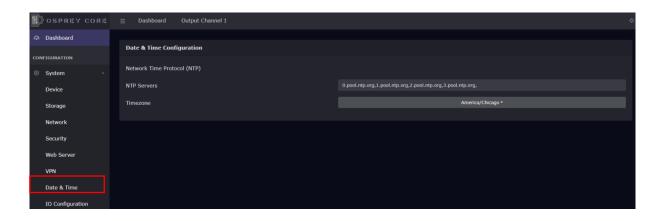
Sosprey core		11		\$
Dashboard				
CONFIGURATION	Open VPN Configuration		OpenConnect VPN Configuration	
System ~		Connect		Connect
Device	Auto Start	Disabled •	Auto Start	Disabled -
Storage	Configuration Information		Server Address	
Network			User	
Security			Password	
Web Server			Encryption Key	
VPN			Encryption Type	sha1 +
Date & Time		Save		
IO Configuration			<u> </u>	
□ <sup>1</sup> Channels <				
୍ତ Status				



## Web Interface – Date and Time

### System Settings - Date & Time

NTP Servers Timezone preselect time servers, additional time servers can be manually added separated by ',' your selected time zone





## Web Interface - I/O Configuration

### System Settings - I/O Configuration

The I/O configuration can be changed while Talon is actively encoding

Status LED Configuration - configure the front panel LED's

Disabled: LED will always remain off Channel Status: LED ON -> Talon is encoding, LED OFF -> Talon is idle VPN Status: LED ON -> VPN is connected SDI Signal: LED ON -> valid input on SDI port, LED OFF -> no input on SDI port HDMI Signal: LED ON -> valid input on HDMI port, LED OFF -> no input on HDMI port

LCD Configuration - configure the front panel LCD Screen. Three of below options can be displayed simultaneously.

MAC Address Device Name IP Address Channel Status (encoding started or encoding stopped) SDI Status (resolution and frame rate of SDI input will display) HDMI Status (resolution and frame rate of HDMI input will display) VPN Status Firmware Version Disabled (associated line will be blank)

#### **Button Configuration**

enable/disable front button start/stop function

tt))	OSPREY CORE	$\equiv$ Dashboard C	Dutput Channel 1				
	Dashboard						
CON	FIGURATION	Status LED Configurat	ion	LCD Configuration		Button Configuration	
	System ~	LED 1		Line 1	Device Name -	Action Button	
	Device	LED 2	HDMI Signal -	Line 2			
	Network	LED 3	Channel Status -	Line 3	IP Address •		
	Date & Time						
	IO Configuration						
	Channels <						
	Status						
	IONS						



# Web Interface - Channel Setup Output Protocol

### Channel Setup - Output



**Important:** The selection of the output stream protocol dynamically changes the available options for video and audio encoding. Therefore, the streaming protocol must always be set before proceeding to the video and audio settings.

Sosprey core	≡ Dashboard	Output Channel 1				¢
	Encoder Status: Sto	opped				
CONFIGURATION	Output		Video		Audio Pair 1	
© System ‹	Auto Start	Disabled -	Source		Enable Audio	Enabled -
🖙 Channels 🗸 🗸	Protocol	TS over UDP ▼	Output Resolution	1280x720 -	Codec	AAC-LC -
Channel 1	Aux File	MP4 File -	Framerate	29.97 fps <del>-</del>	Rate Control	Average (ABR) -
	Device Type		Codec	H264/AVC -	Bitrate	128 kbps •
୍କ Status	Path and	untitled	Target Bitrate		Sample Rate	
ACTIONS	Filename		Encoding Profile	Main 🕶	PID	
⊳ Start	Max File Size (MB)		Color Processing	4:2:0 8-bit <del>*</del>		
			Rate Control	Constant (CBR) -	Audio Pair 2	
□ Stop	Destination 1	192.168.0.1	Enable SkipFrame	Disabled -		
SUPPORT	Destination 1 Port		Deinterlacing	BOB -	Enable Audio	Disabled *
			Filler Data	Enabled -		
	TTL Video PID	64	QP Mode	Auto -	Audio Pair 3	
<li>← Logout</li>	PMT PID	10	Max QP			
∂⊋ Reboot	PMT PID	10	Min QP		Enable Audio	Disabled •
		$\langle \rangle$	GOP Mode	Low Delay P -		
		MPEG-TS	GDR Refresh	Disabled -	Audio Pair 4	
			Entropy Mode	CABAC -		
			GOP Size	60 Frames •	Enable Audio	Disabled -
			Metadata			

### Output Transport Stream

Auto Start	auto start of Talon at "Power Up"
Protocol	streaming protocols and native integrations - see pages 21 through 24 for setup information
AUX File	archive a copy of your stream in .mp4 – see page 20 for additional information
Device Type	select between saving to USB or Network Share – see page 20 for additional information

Protocol: When sending media over networks, protocol can mean Transport Protocol or Payload Format. For instance, TS over UDP refers to using the MPEG-TS payload format to deliver media via the UDP protocol. Selecting which protocol to use will dictate several other settings within the video and audio encoding sections. Selecting RTMP/RTMPS will limit the "codec" setting to "H.264". Selecting "TS over RTP" allows the selection of both "H.264" and "HEVC" for codec. Select "Protocol" first when setting up an encoder output and the rest of the Video and Audio settings will conform to your Protocol selection.

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## Web Interface - Video Archiving

### Channel Setup - Video Archiving

Save MP4 to USB using the USB3.0 port in the back of Talon

- Only FAT and FAT32 formatted devices are accepted
- · A correctly mounted drive will show in 'Dashboard',
- Unmount from 'Dashboard'
- Files are never automatically deleted from the drive, if the folder fills up the encode will stop with an error

Path and Filename	Path to file location: /folder/filename
Maximum File Size	file size in MB for each video segment

Output file format example:

ch1\_filename\_20230420-153253\_0.mp4

ch{channelnumber}\_{user\_provided\_filename}\_{year}{date}-{time}\_{indexnumber}.mp4

#### Save MP4 to Network Share

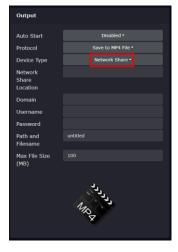
Network Share Location	Network URI: //ip_address/myshare
Domain	Domain name for authentication to the network share. If you
	do not have a domain name, use the local computer name
	you are connecting to.
Username	Account username with permission to access the network
Password	Password to account referenced above
Path and Filename	Path to file location: /folder/filename
Max File Size	file size in MB for each video segment

Output file format example:

ch1\_filename\_20230420-153253\_0.mp4

ch{channelnumber}\_{user\_provided\_filename}\_{year}{date}-{time}\_{indexnumber}.mp4







# Web Interface – Transport Protocols RTMP, RTMPS, UDP

### Channel Setup - Transport Protocols

RTMP/RTMPS (Real-Time Messaging Protocol)

Destination	server address of your endpoint
Streamkey	key assigned by your endpoint
Authentication	enable/disable stream authentication
User	username for authentication
Password	username for authentication

7002

Output	
Auto Start	Disabled *
Protocol	RTMP/RTMPS -
Aux File	
Destination	rtmp://192.168.0.1/entrypoint/
Stream Key	streamkey
Authentication	Enabled •
User	
Password	
	RTMP

Destination Stream URL Example:

rtmp://a.rtmp.youtube.com/live2

RTMP is a legacy protocol developed by Adobe® to transfer audio and video files between a streaming server and the Adobe Flash Player. With the phasing out of Flash, it has shifted its primary use case away from viewer-facing content delivery and toward ingesting live streams through RTMP-enabled encoders.

### TS over UDP (User Datagram Protocol)

Destination Destination Port TTL	IP address of your endpoint UDP destination port destination time to live. Maximum number of 'hops' that data exists on
Video PID PMT PID	a network before being discarded (to prevent endless loops) ID for your video transport stream PMT ID for your transport stream
Destination IP Example:	172.16.10.180

Output	
Auto Start Protocol	Disabled • TS over UDP •
Aux File	None *
Destination	
Destination Port	
Video PID	
PMT PID	
	MPEG-TS

UDP is a connectionless protocol with minimal mechanisms. It doesn't require recipients to let the sender know that all data packets have arrived, which can make it unreliable. This protocol is stateless and ideal for transmitting data to large numbers of clients. UDP features multicast support for service discovery and broadcasting. Its low rate of retransmission delays makes it the perfect match for real-time applications

Destination Port Example:



# Web Interface - Transport Protocols RTP, SRT

### Channel Setup – Transport Protocols

TS over RTP (Real-Time Protocol)

Destination	IP address of your endpoint
Destination Port	IP address of your endpoint
Video PID	ID for your video transport stream
PMT PID	PMT ID for your transport stream

RTP is designed for end-to-end, real-time transfer of streaming media. The protocol provides facilities for jitter compensation and detection of packet loss and out-of-order delivery, which are common especially during UDP transmissions on an IP network.

### TS over SRT (Secure Reliable Transport)

SRT Mode	selection of 'caller' or 'listener' mode
SRT Destination Address	IP address of your endpoint (visible only in caller mode)
SRT Port	port used to listen or transmit, default 2088
SRT Stream ID	stream identification
Latency	maximum accepted latency in ms. Should be set to >= 2.5 times
	round trip time (RTT), default 125
Encryption	enable/disable 128-bit encryption
Passphrase	encrypted transmission, 16-character alpha-numeric
Video PID	Video PID for transport stream

SRT Mode **'Listener**': The "agent" waits to be contacted by any peer caller. Note that a listener can accept multiple callers, but Talon does not support this ability; after the first connection, it no longer accepts new connections.

SRT Mode 'Caller': The "agent" (this application) sends the connection request to the peer, which must be listener, and this way it initiates the connection.

SRT is known for its security, reliability, compatibility, and low-latency streaming it is the preferred protocol for members of the SRT Alliance. This protocol does not rely on a single codec, which allows developers to pair it with any audio and video codecs they desire.



Output

Auto Start Protocol Aux File

Video PID PMT PID 172.16.10.180





# Web Interface – Transport Protocols RTSP, WebRTC

### Channel Setup - Transport Protocols

### RTSP (Real-Time Streaming Protocol)

Mount Point	mount point port
Host Port	host destination port
Authentication	enable/disable stream authentication
User	username for authentication
Password	username for authentication

Output	
Auto Start	
Protocol	
Mount Point	
Host Port	
Authentication	Enabled -
User	
Password	
	CQ RTSP

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RTSP is a legacy protocol, it cannot transmit live streaming data alone and require RTSP servers to work together with RTP and other protocols to accomplish their streaming tasks. It can deliver low-latency streaming to a select group of small audiences from a dedicated server.

### WebRTC

Due to the open-source nature of webRTC, this is only available though custom integrations currently supporting:











WebRTC is an open-source project that delivers video streams to viewers with real-time latency. Initially developed for text-based chat apps and VoIP usage. The WebRTC protocol is a low-latency streaming solution using WHIP.



## Web Interface - Zixi

### Channel Setup - ZIXI

While not a protocol, Zixi defines itself as a "software-Defined video Platform" (SDVP). Talon's implementation was built upon the Zixi SDK and serves as a Zixi Feeder. It can deliver to a Zixi Broadcaster, which can deliver to a decoder. The Talon cannot deliver Zixi directly to another decoder.

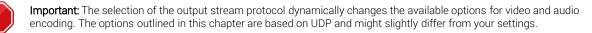
• • • •			
Server Address	IP address of the stream destination		
Server Port	port of the stream destination. The default is 2088	Output	
Session ID	unique name of the stream. This name can be created by the user	Auto Start	Disabled *
	or assigned by the Zixi Broadcaster.	Protocol	Zixi *
Latency	the latency setting or "smoothing" as it is sometimes referred to	Aux File	None -
	in Zixi, enables transmission of the output at the correct rate.	Server Address	zixi.yourserver.com
	Required when the receiving device is sensitive and can't lock	Server Port Session ID	2088 MYCHANNEL
	onto the stream. Default setting is 100ms. The available range is	Latency Max bitrate	
	between 100 and 1000ms.	Min bitrate	1000
Max Bitrate	specify the maximum expected bitrate for memory allocation.	Remote ID Password /	TA20220009
	Recommended: For CBR start with 10% higher than the stream	Secret	AES-128 *
	bitrate. For VBR use 2X the actual bitrate, which will prevent	Encryption Key	
	buffer overruns (especially with VBR streams). Default: 5000.	Video PID	
	Note – Overflows will typically occur when the Max Bitrate isn't	PMT PID	ZX
	sufficient.		<u>2</u> N
Min Bitrate	currently, min bitrate is not configured.		
Remote ID	the name that identifies the Feeder to the Broadcaster. Default is the set	rial number	of the encoder. Do
	not change unless Broadcaster configuration requires it.		
Password/Secret	this is the "Zixi Secret". By default, any publish point in Broadcaster can	be accesse	ed by any encoder.
	Zixi Broadcaster can provide a Feeder with a password which gives that	encoder p	riority over any other
	encoder connected to that publish point. If an encoder with the passwor	rd attempts	s to connect, the
	publish point will remove any other encoder connected to it and replace	it with the	password protected
	version.		
Encryption	enable/disable AES-128, AES-192 or AES-256 stream encryption		
Encryption Key	cut and paste the encryption key provided by your Zixi Broadcaster in th	e allotted s	pace.
Video PID	the Default PID is 600. Any ID greater than 0 but less than 8192 may be	used.	
PMT PID	the default PMT PID is 10. Other values can be used where specified by		ort stream.

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# Web Interface - Video Encoding Settings

### Channel Setup - Video



SOSPREY CORE	⊒ Dashboard	Output Channel 1				
Dashboard	Encoder Status: St	opped				
CONFIGURATION	Output		Video		Audio Pair 1	
System <	Auto Start		Source		Enable Audio	
🗅 Channels 🗸	Protocol	TS over UDP -	Output Resolution	3840x2160 <del>-</del>	Codec	AAC-LC -
Channel 1	Aux File	None *	Framerate	60 fps <del>*</del>	Rate Control	Average (ABR) *
0.00			Codec	H265/HEVC -	Bitrate	128 kbps <del>-</del>
୍କ Status	Destination 1	172.16.10.180	Target Bitrate		Sample Rate	48 kHz -
ACTIONS	Destination 1 Port	7002	Maximum Bitrate	8000	PID	
▷ Start			Encoding Profile	Main 4:2:2 10 *		
	Video PID		Color Processing	4:2:2 10-bit *	Audio Pair 2	
□ Stop	PMT PID		Rate Control	Variable (VBR) -		
SUPPORT			Deinterlacing	BOB -	Enable Audio	Disabled -
		$\langle \ \rangle$	QP Mode	Auto *		
✓ Support <		MPEG-TS	Max QP		Audio Pair 3	
← Logout			Min QP			
ැට Reboot		$\smile$	GOP Mode	Basic 🕶	Enable Audio	Disabled -
TE REDUCE			B-Frames	No B-frames •		
			GOP Size	60 Frames -	Audio Pair 4	
			Metadata			
					Enable Audio	Disabled -

Source	select your input video source
Output Resolution	for best quality and lowest latency it is recommended to match your input and output resolutions
Framerate	for best quality and lowest latency it is recommended to match your input and output framerate
Codec	select between HEVC (H.265) and AVC (H.264). Note that not all streaming protocols support HEVC.
Target Bitrate	Target Bitrate is set based on the rate control method used. For CBR, the Target Bitrate equals the
	bitrate to maintain throughout the encode. For VBR, it is the rate you want to average.
Maximum Bitrate	maximum Bitrate is only enabled when VBR is selected. Maximum bitrate to be >= 'Target Bitrate'
Encoding Profile	different profiles are available depending on the codec:
	HEVC - Main, Main 10, Main 4:2:2 10
	AVC - Baseline, Main, High, High-10, High 4:2:2
Color Processing	for best quality and lowest latency it is recommended to match your input and output color space.
	The options change depending on the selected codec and encoding profile.



# Web Interface - Video Encoding Settings

Sorrey core		Output Channel 1				¢	
Dashboard	Encoder Status: Stop	ped					
CONFIGURATION	Output		Video		Audio Pair 1	Audio Pair 1	
© System < Channels Channel 1 Q Status ACTIONS ▷ Start	Destination 1 Port	Disabled • TS over UDP • None • 172.16.10.180 7002 64	Source Output Resolution Framerate Codec Target Bitrate Maximum Bitrate Encoding Profile	SDI + 3840x2160 + 60 fpx + H265/HEVC + 5000 8000 Main 4:2:2 10 *	Enable Audio Codec Rate Control Bitrate Sample Rate PID	Enabled * AAC-LC * Average (ABR) * 128 kbps * 48 kbz * 500	
SUPPORT		600	Color Processing Rate Control Deinterlacing	4:2:2 10-bit • Variable (VBR) • BOB •	Audio Pair 2 Enable Audio	Disabled •	
<ul> <li>✓ Support</li> <li>← Logout</li> <li>?2 Reboot</li> </ul>		MPEG-TS	QP Mode Max QP Min QP GOP Mode B-Frames	Auto * 36 24 Basic * No B-frames *	Audio Pair 3 Enable Audio	Disabled •	
			GOP Size Metadata	60 Frames▼ Off +	Audio Pair 4 Enable Audio	Disabled *	
Rate Control	select between CBR, VBR, QP and Low Latency. Constant QP means that the bitrate can vary greatly to achieve the set QP. This can result in wild fluctuations of bitrate and is not recommended for live streaming.						
Enable SkipFrame	Encoder will drop frames in order to not exceed the selected Maximum Bitrate						
Deinterlacing	select the deinterlacing mode to encode progressive of an interlaced video input signal.						
QP Mode	'Auto' or 'Uniform', default is 'Auto'						
Max QP	Default '36', a higher number results in a lower bitrate and lower quality (delta between max QP and min QP should always be <12). Maximum is 51.						
Min QP	Default '24', a higher number results in a lower bitrate and lower quality (delta between max QP and min QP should always be <12).						
GOP Mode	Low Delay P/Low Delay B/Basic (IPPP)/Basic-B/Adaptive. Choose ' <b>Low Delay P</b> ' if you are unfamiliar with GOP settings.						
B-Frames	Number of B-frames between I-frames. 0 – 4. This feature is only available for certain GOP modes.						
GOP Size Metadata	5 – 240 frames, choose twice your encoding framerate as default OFF, CEA708, SMPTE-2038						

QP: The Quantization Parameter controls the amount of compression for every macroblock in a frame. Large values mean that there will be higher quantization, more compression, and lower quality. QP ranges from 0 to 51.

GOP: GOP parameters define the basic pattern of the video stream in terms of how the encoder uses I-, P-, and B- frames.B-Frame: A compressed video frame which is reconstructed based on its differences from the previous and the subsequent frame

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# Web Interface – Audio Encoding Settings

Talon supports up to 16 embedded Audio Channels of SDI (8 Stereo Pairs) or 8 Audio Channels of HDMI (4 Stereo Pairs)

Sosprey core	⊒ Dashboard	Output Channel 1				¢	
Dashboard Encoder Status: Stopped							
CONFIGURATION	Output		Video		Audio Pair 1		
© System ‹	Auto Start	Disabled -	Source		Enable Audio	Enabled -	
🗅 Channels 🗸	Protocol	TS over UDP -	Output Resolution	3840x2160 <del>-</del>	Codec	AAC-LC -	
Channel 1	Aux File	None *	Framerate		Rate Control	Average (ABR) •	
O Chatan			Codec	H265/HEVC -	Bitrate	128 kbps <del>-</del>	
ය, Status	Destination 1	172.16.10.180	Target Bitrate	5000	Sample Rate	48 kHz <del>*</del>	
ACTIONS	Destination 1 Port	7002	Maximum Bitrate	8000	PID		
⊳ Start			Encoding Profile	Main 4:2:2 10 -			
v start	Video PID		Color Processing	4:2:2 10-bit *	Audio Pair 2		
□ Stop	PMT PID		Rate Control	Variable (VBR) *			
SUPPORT		$\frown$	Deinterlacing	вов -	Enable Audio	Disabled -	
		$\langle \rangle$	QP Mode	Auto *			
✓ Support <		MPEG-TS	Max QP		Audio Pair 3		
← Logout			Min QP				
ැට Reboot		$\smile$	GOP Mode	Basic *	Enable Audio	Disabled -	
TE REDUCC			B-Frames	No B-frames •			
			GOP Size	60 Frames •	Audio Pair 4		
			Metadata	Off -			
					Enable Audio	Disabled -	

Enable Audio	enable/disable select audio channels. If encoding video only it is recommended to disable all audio
Codec	choose between AAC-LC and Opus
Rate Control	choose between Average Bitrate (ABR) and Variable Bitrate (VBR)
Bitrate	range 12kbps to 196kbps. For best encoding results match your input rate, if unknown 128kbps is
	recommended
Sample Rate	44.1kHz or 48kHz, 48kHz is recommended
PID	Audio Stream ID
PID	Audio Stream ID



# Web Interface – Channel Setup - KLV

SDI in-band KLV Metadata (Key-Length-Value) is enabled under Channel - Video – Metadata.

Sosprey core	E Dashboard Output Channel 1						
Dashboard	Encoder Status: Stopped						
CONFIGURATION	Output		Video		Audio Pair 1		
System <	Auto Start	Disabled *	Source		Enable Audio	Enabled *	
Channels ~	Protocol	TS over UDP -	Output Resolution	1920×1080 -	Codec	AAC-LC -	
Channel 1	Aux File		Framerate		Rate Control		
ු Status		172.16.15.18	Codec	H264/AVC -	Bitrate	128 kbps -	
Status	Destination 1		Target Bitrate	5000	Sample Rate	48 kHz *	
ACTIONS	Destination 1 Port		Maximum Bitrate	5000	PID		
▷ Start			Encoding Profile	Main •			
	Video PID		Color Processing	4:2:0 8-bit •	Audio Pair 2		
□ Stop	PMT PID		Rate Control	Variable (VBR) •			
SUPPORT	KLV PID	400	Deinterlacing	BOB •	Enable Audio	Disabled •	
✓ Support <	KLV Source	In-Band/Embedded *	QP Mode	Auto *			
	КLV Туре	synchronous -	Max QP		Audio Pair 3		
← Logout	KLV Mission ID		Min QP				
?⊋ Reboot	KLV Repetition		GOP Mode	Low Delay P *	Enable Audio	Disabled •	
	Rate		Entropy Mode	CABAC *			
		$\frown$	GOP Size	60 Frames*	Audio Pair 4		
		MPEG-TS	Metadata				
					Enable Audio	Disabled *	



## Web Interface - Status and Stream Start/Stop

The Stream 'Start' and 'Stop' buttons are always available in the main menu. It is recommended to start and stop your streams from the 'Status' page or from the 'Dashboard'. This allows for immediate monitoring of your stream data.

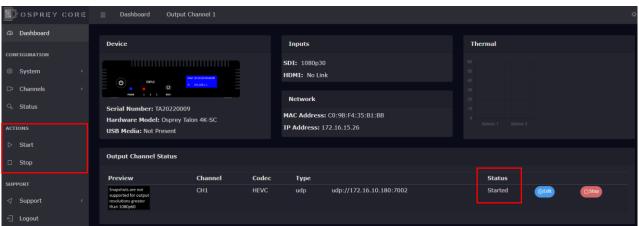
The status page provides information about your video inputs and live stream data

- Audio, Video and Metadata Bitrates
- Video Input resolutions and frame rates

#### Status Page

Sosprey core								÷			
Dashboard											
	Stream St	atus					Input Status				
CONFIGURATION											
	Channel	Status Inp		Duration			HDMI		No Link		
© System <		Started sdi1	udp	2 minutes, 41	L seconds		SDI		1080p30		
Channels <											
୍ତ୍ର Status	Video Stat	tus					Audio Status				
ACTIONS	Channel	Codec Video Bitrate	Current Vio	deo Bitrate	Metadata Bitrate		Channel	Codec	Audio Bitrate	Current Audio Bitrate	
		HEVC 5000	5576								
▷ Start							Pair 1-2	AAC-LC	128 kbps	171 kbps	
Stop											

#### Dashboard





# Web Interface - Firmware Update

As we constantly add features and maintain our Talon line of products, we suggest you keep your Encoder Firmware up to date.

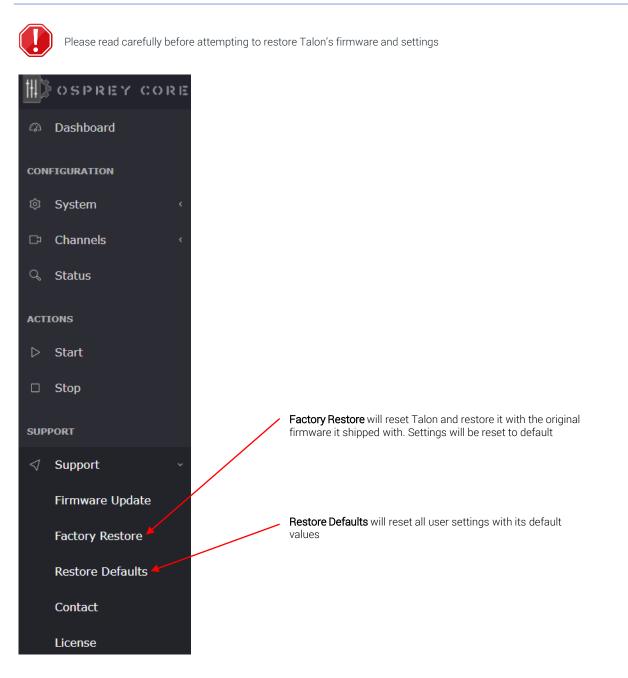
Firmware upgrade steps:

- 1. Download the latest firmware revision at <u>www.ospreyvideo.com/talon-software-and-firmware</u>
- 2. Go to 'Firmware Updates' on Talon Web Interface
- 3. Drop the downloaded firmware file into the 'Software Update Tool'
- 4. Update will start immediately and might take several minutes

DOSPREY CORE	
Pashboard	
CONFIGURATION	
Ø System <	
🖙 Channels 💦	
୍ୱ Status	
ACTIONS	
▷ Start	
Stop	Osprey Talon Software Update Tool
SUPPORT	Update the software / firmware for your device.
✓ Support ~	
Firmware Update	Software Update
Factory Restore	Click here, or drag and drop a software update image file to this area.
Restore Defaults	D Update not started.
Contact	
License	0 Log



### Web Interface - Restore





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## Enterprise and Security

To protect the Talon OS and to ensure data integrity, multiple security features are included by default. These require no user intervention and are active upon the first startup.

### NDAA compliant

Talon 4K series encoders are manufactured in the USA from globally sourced components. All parts are vetted to ensure NDAA compliance.

### Operating system firmware

All OS firmware is AES encrypted and RSA authenticated. No part of the operating system can be modified except by Osprey.

#### Trusted image/update control

The initial firmware, as well as all updates are encrypted, digitally signed and only available from Osprey. This ensures that only approved software can be loaded. Any attempt to load outside software will fail.

#### Certificate encrypted SSH

All SSH access is keyed and encrypted. Only Osprey can access the device via SSH.

### Telnet access blocked (no telnet client installed)

To comply with most secure networks, Telnet access is not enabled. There is no Telnet client on the Talon. Because of the Trusted Image, none can be installed.



# OpensSource Listing

Package	Version	Description	License
Linux Kernel	5.15.19		GPLv2
bash	51.8	Bourne Again Shell	GPLv3+
busybox	1.34.1	Lightweight common UNIX utilities	GPLv2 & bzipi2
alsa-conf	1.2.5.1	Advanced Linux Sound Architecture utilities	GPLv2+
alsa-utils	1.2.5.1	Advanced Linux Sound Architecture utilities	GPLv2+
apache2	2.4.52	Opensource web server	Apache-2.0
passwd	3.5.29	System user password management	GPLv2+
cronie	1.5.7	scheduled process management	GPLv2+
curl	7.78.0	Tool for transferring data using various network protocols	MIT
daemontools	0.76	supervisor and monitor services	PD
dhcpd	9.4.0	DHCP client	BSD
e2fsprogs	1.45.3	EXT2/3/4 filesystem utilities	GPLv2
ethtool	5.13	query and control network device drivers	GPLv2+
faad2	2.8.8	Freeware Advanced Audio (AAC) decoder	GPLv2
faac	1.30	AAC audio support	LGPLv2+
gst-interpipes	1.1.8	Tools for monitoring gstreamer	LGPL2.1
gst-perf	1	Tools for monitoring gstreamer	LGPLv2+
gst-shark	0.7.2	Tools for monitoring gstreamer	GPLv2+
gstreamer1.0		Multimedia Pipeline control	LGPLv2+
gstreamer1.0-plugins-bad	1.18.0	Multimedia Pipeline control	GPLv2+
gstreamer1.0-plugins-good	1.18.0	Multimedia Pipeline control	GPLv2+
gstreamer1.0-plugins-base	1.18.0	Multimedia Pipeline control	GPLv2+
i2c-tools	4.3	Accessing i2c devices	GPLv2+
init-ifupdown	1.0	Tools to bring network configuration	MIT
initscripts	1.0	Scripts for run level processing	GPLv2
iproute2	5.15.0	Linux TCP/IP traffic control	GPLv2+
iptables	1.8.7	Linux TCP/IP firewall	GPLv2+
libcrypto	1.1.1	Crypto library	Openssl+



# Safety and Compliance

### FCC Notice

The Osprey Talon has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures:

•Reorient or relocate the receiving antenna.

•Increase the separation between the equipment and receiver.

•Connect the computer into an outlet on a circuit different from that to which the receiver is connected.

•Consult the dealer or an experienced radio/TV technician for help.

If the above measures are unsuccessful, please consult the dealer or manufacturer of your radio or television receiver or speak with an experienced Radio/TV technician.

Shielded Cables: Connections between this device and peripherals must be made using shielded cables in order to maintain compliance with FCC radio emission limits.

**Modifications:** Modifications to this device not approved by Osprey Video could void the authority granted to the user by the FCC to operate the device.

#### Product Disposal Information

Dispose of this product in accordance with local and national disposal regulations (if any), including those governing the recovery and recycling of waste electrical and electronic equipment (WEEE).

**RoHS Compliant:** Osprey Video is committed to compliance with the European directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, Directive 2002/95/EC, the RoHS directive.

Osprey Video 400 Gerault Rd Flower Mound, TX 75028 United States of America