



NavCam3D "Quantum of Solace"

## NavCam

...**is** a revolutionary wire system for camera movement that integrates the precision of motion control, the consistent performance of automated machinery, and the versatility of a stabilized wire rig.

...**provides** filmmakers with unprecedented flexibility and control in both two and three dimensional camera motion.

...**combines** FTSI's award-winning Navigator™ motion control and safety system with an exceptionally stable proprietary rigging configuration, providing fast and simple setup and deployment and the most comprehensive suite of programming and import/export tools and features in the industry.

...**produces** high performance results for both live and recorded applications in film, television, commercial, sports, and gaming productions.

### versatile

- Fly 2D or 3D in any shape or size space, indoor or outdoor, from any number of points
- Replicate crane, dolly, and aerial shots using the same rig, and seamlessly blend multiple motion paths together

### programmable

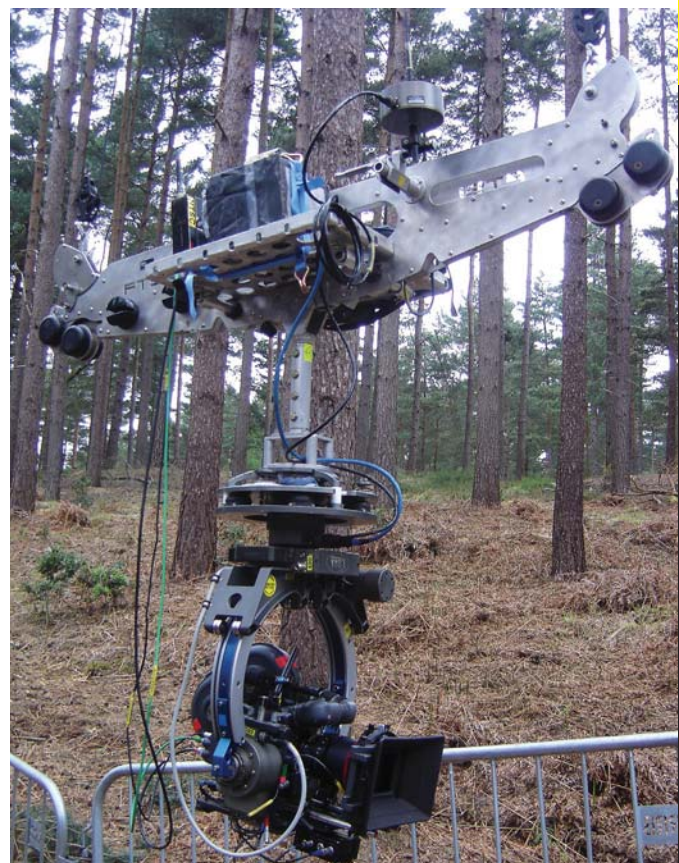
- Record flight profiles live via joystick teach-and-learn, by auto-splined keyframe recording, or by direct input
- Pre-visualize flight path and through-the-lens view within the Navigator programming environment, live or offline

### compatible

- Control camera pan/tilt/roll and focus/iris/zoom functions in sync with the flight path program to produce mo-co shots
- Generate, store, and export frame-by-frame 3D motion data for integration with VFX and motion capture systems
- Import and export motion parameters from Maya, Lightwave, and Motion Builder

### reliable

- Operate with unparalleled safety under the supervision of Navigator's life safety rated control system
- Eliminate operator error using critical motion envelope restriction and automatic collision control features



NavCam2D: "Harry Potter and the Deathly Hallows"

### 3d flight system specifications



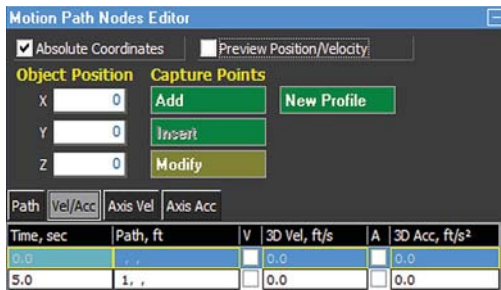
<b>payload</b>	250lbs/110kg
<b>speed</b>	50fps/15mps
<b>envelope</b>	200'W x 200'L x 200'H / 60m x 60m x 60m
<b>setup</b>	crew of four, 4-8 hours depending on conditions
<b>usage</b>	--"one setup" camera platform for dolly and crane replacement --large area motion control shots --camera and stunt motion coordination using FTSI stunt equipment --dynamic live broadcast, stadium, concert, and commercial shots --unique 360 degree perspective and motion profiles for 3D filming

### 2d flight system specifications



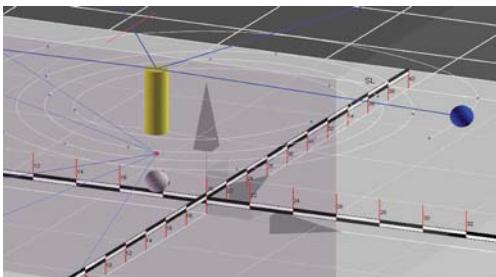
<b>payload</b>	250lbs/110kg
<b>speed</b>	75fps/23mps
<b>envelope</b>	200'H x 5000'L / 60m H x 1525m L
<b>setup</b>	crew of three, 4-8 hours depending on conditions
<b>usage</b>	--high speed linear chase camera --rapid perspective coverage for sports broadcasts --trackless dolly shots --long range pull back and zoom in shots --helicopter replacement for flight restricted areas

### Integration options



<b>heads</b>	direct control of Libra V and Filmotechnic Flighthead
<b>FIZ</b>	serial communication and control of Preston FiZ controller
<b>data</b>	--2D & 3D camera, pan, tilt, and roll coordinates -- real time streaming or file output, position vs. frame or time --full SMPTE integration
<b>pre-vis</b>	import and export motion/position data for Maya, Lightwave, and Motion Builder

### programming features



<b>manual</b>	-- live manual joystick and wheel operation, all functions --teach/learn recording and timescale modification
<b>program</b>	--spline and bezier flightpath curve generation --multiple show and motion cue programming and playback --automatic lens pointing/object tracking tool
<b>safety</b>	--integrated emergency stop and collision control system --soft flight envelope restriction and conditional motion

### equipment rental

NavCam is available exclusively through Fisher Technical Services Rentals  
1-702-997-1939 • rentals@ftsrentals.com • www.ftsrentals.com

*For the last seven years, FTSR has been bringing its decades of automated rigging and entertainment control systems expertise onto movie and television sets to achieve shots that were previously impossible. In that time, we've complimented our ever expanding arsenal of high speed, high horsepower winches with software features that simplify the creative control of that equipment.*

*The result: the FTSR Navigator control system has become the ultimate unified toolset for flying and tracking cameras, coordinating stunt wire performances, and controlling mechanical effects, enabling Grip, Stunt, Special Effects, and Visual Effects departments to fully realize a project's creative vision. We've flown, tracked, towed and manipulated stunt performers, cameras, lighting fixtures, cars and a variety of other effects, individually and synchronously, with precise control and unlimited repeatability, using these built-in features:*

**Fast, Stable Flying Camera Rigs:** FTSR's winches can be easily rigged in a variety of formats, from single winches to highly stable 3D motion dollies. All of the rigs are capable of long travel distances with smooth, graceful motion and unparalleled top speeds and acceleration.

**Space Device:** The Space Device is Navigator's completely native and fully integrated 3D programming and visualization environment. It allows for easy programming of objects moved in a 3D space by multiple winches, such as flying camera dollies and stunt performers.

**Rehearse Here, Shoot There:** Object motion paths in the Space Device exist independently of the rigs they're used on, so changing the mechanics of a camera rig doesn't mean re-programming the shot. This architecture also makes it easy to transfer motion paths from one rig to another.

**Quicker Than Gravity Rigs:** Camera rigs can be assembled so that they are fully captured in all dimensions and therefore don't rely on gravity. These rigs can descend quicker than gravity would normally pull them down and decelerate quicker than gravity would stop them naturally. This is also helpful for filming in a zero-G environment.

**Every Rig Is A Motion Control Rig:** The Navigator control system's high positional accuracy and repeatability turns everything it controls into a motion control rig, resulting in camera rigs that control the dolly and head motion on a size and

speed scale never before achieved, and that are fully synchronized with the Navigator stunt and mechanical effects rigs on the set.

**Maya Import/Export:** Motion data from Maya can be easily imported into Navigator whether it's a camera dolly's path in 1, 2 or 3 dimensions; the pan, tilt and roll of the camera head; or the manipulation of a mechanical effect. This allows productions to save time by capitalizing on pre-vis and match move data, replicating exactly what was seen in Maya. If necessary, Navigator can tailor the motion data to suit the physical realities of the motion axes and set. Then, Navigator can export the new motion data back to Maya.

**Camera Head Control:** Navigator can natively control the popular Libra and Flight Head camera heads while simultaneously allowing DP's and camera operators to manipulate the head using their control wheels. Other types of camera heads can also be integrated into Navigator.

**Teach & Repeat Camera Head Control:** Navigator can record a DP's camera head wheel inputs natively. The recorded motion can be edited, smoothed, scaled, and played back with high repeatability. As the camera head motion is being played back, the DP can tweak the head's motion live via the camera head's control wheels. This resulting camera head motion can be separately recorded and replayed. The motion data can also be exported for the VFX team in a Maya-compatible format.

*more >*

**Auto Tracking Camera Head:** The Space Device can automatically compute the motion required for a camera head traveling in three dimensions and tracking a target that is also moving in three dimensions. As with any other camera head motion, the DP can modify the framing on the fly from the head's control wheels and the resulting motion can be saved and used in future playback.

**Live Data Stream:** Any data that the Navigator control system tracks can be streamed live to other control systems. For example, the flying camera dolly and camera head position data can be streamed to the VFX team while the camera is moving.

**SMPTE Timecode Reading & Generation:** Navigator can read and generate SMPTE Timecode for synchronizing with your audio and camera departments, or for synchronizing the triggering of motion with other production elements.

**Limitless Control Systems:** The Navigator control system is based around a de-centralized architecture of smart devices, which means that there are no hardware or software limitations on the number of winches, space objects or interfaces that can be controlled and no limit on the number of operators that can interface with them. If your production demands additional equipment as shooting progresses, integrating it is a seamless process.

**Diverse Hardware Solutions:** FTSR stocks winches from 3 to 75 HP; interface hardware for camera heads, I/O systems and industrial control protocols; and the safety and control systems needed to seamlessly integrate all of this hardware.

**Integrated Safety:** Navigator's native Emergency Stop system and conditional logic rules create a system that is fully redundant, highly flexible, modular and very set friendly. These systems are used worldwide, 365 days a year, for dozens of performances a day, keeping thousands of performers, technicians and audience members safe.

**Fast Custom Solutions:** FTSR prides itself on finding solutions to seemingly insurmountable problems. If you come across a situation that our stock hardware inventory and software toolset can't handle, you'll be pleasantly surprised at how fast custom solutions can be turned around.

## FTSR Filmography

<http://www.imdb.com/company/co0274409/>

1. **Resident Evil: Afterlife** (2011)
2. **Red Dawn** (2010)
3. **Harry Potter and the Deathly Hallows: Part I** (2010)
4. **The Zookeeper** (2010)
5. **Priest** (2010)
6. **The Last Airbender** (2010)
7. **The Twilight Saga: Eclipse** (2010)
8. **Iron Man 2** (2010)
9. **Clash of the Titans** (2010)
10. **Percy Jackson & the Olympians: The Lightning Thief** (2010)
11. **The Wolfman** (2010)
12. **When in Rome** (2010)
13. **Bolden!** (2010)
14. **Avatar** (2009)
15. **Where the Wild Things Are** (2009)
16. **Zombieland** (2009)
17. **G.I. Joe: The Rise of Cobra** (2009)
18. **Star Trek** (2009)
19. **Drag Me to Hell** (2009)
20. **Race to Witch Mountain** (2009)
21. **Paul Blart: Mall Cop** (2009)
22. **Quantum of Solace** (2008)
23. **Max Payne** (2008)
24. **Hancock** (2008)
25. **The Happening** (2008)
26. **The Incredible Hulk** (2008)
27. **You Don't Mess with the Zohan** (2008)
28. **Indiana Jones and the Kingdom of the Crystal Skull** (2008)
29. **The Invasion** (2007)
30. **The Bourne Ultimatum** (2007)
31. **Vacancy** (2007)
32. **Spider-Man 3** (2007)
33. **Crank** (2006)
34. **The Dukes of Hazzard** (2005)
35. **Sky High** (2005)
36. **Spider-Man 2** (2004)

### For Information

Get loads more information about our projects: [www.fishertechnical.com](http://www.fishertechnical.com).

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**Call us here: 866-942-4098**  
**702-251-0700**

# CHC-1

## Camera Head Controller



**SYSTEM**

### Control. Shoot. Repeat.

The CHC-1 controller provides a fully integrated control interface for both pulsetrain and serial controlled camera heads, focus/iris/zoom controls, and FX devices. The unit features both single-ended and quadrature opto-isolated pulsetrain outputs, dual RS-232 and RS-485 outputs, three ethernet connections, four dry contact relay outputs for bloop lights and other devices, four dry contact inputs for triggers, and both 24V and 5V auxilliary power outputs. In addition, device-specific outputs are available for the Libra and FilMOTECHNIC gyrostabilized camera heads products, as well as the Preston FiZ controller. All inputs and outputs can be utilized and controlled on multiple devices simultaneously in real time.

When used in conjunction with FTSI's award-winning Navigator motion control package, operators can program, record, adjust, and speed scale any controlled output to any device and interrelate all motion and timing, providing extremely fast and accurate motion control programming, as well as integrate with FTSI's full line of motion control, camera flight, stunt rigging, hydraulic devices, and winch machinery.

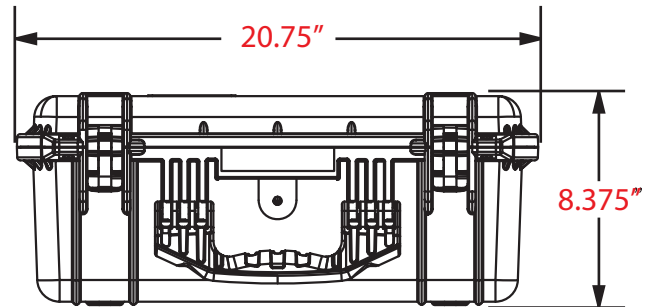
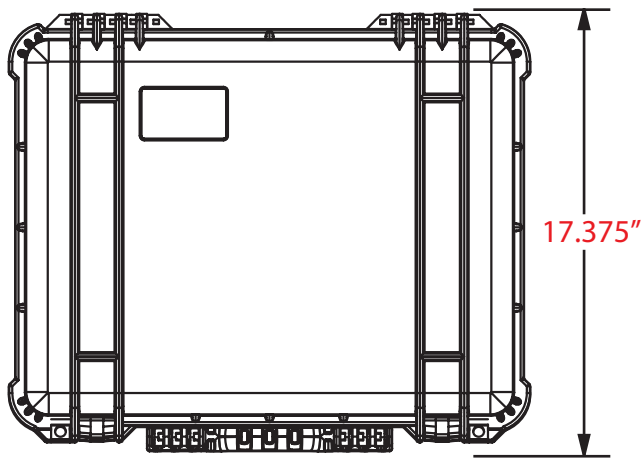


**Navigator**  
automation system

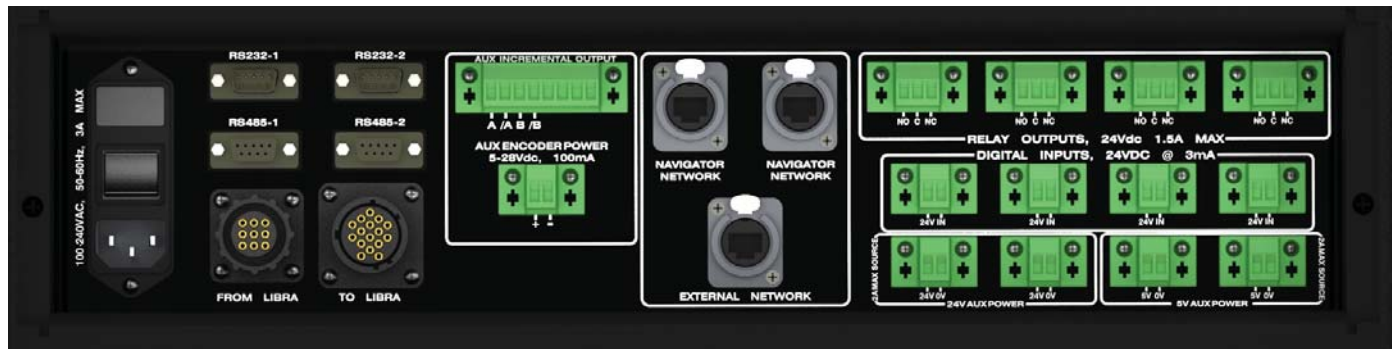
# CHC-1

## Camera Head Controller

**FTSI**  
AUTOMATION



SYSTEM



Connection Panel

### Specifications

- Dedicated Libra head pan/tilt/roll control and record
- Driver for Filmotechnic "Flight Head" through RS485
- Two RS232 and two RS485 outputs for serial devices
- Additional quadrature or step/direction output
- Dual Navigator real time network control connections
- Fully optoisolated inputs and outputs
- Four 1.5A dry contact relay closures for other devices
- Four 24VDC inputs for triggers and switches
- Four additional power outputs for other devices (5/24VDC)

### Key Features:

- Pan/Tilt/Roll moves can be recorded directly from the camera console in real time.
- Camera position can be synchronized or automatically targeted with any object or device under Navigator control.
- Frame-by-frame camera and object position data can be exported to data files for VFX
- Camera position can be modified and corrected on-the-fly by the camera head operator during motion
- Bloop lights, FX, and other devices can be triggered at specific points in time through the aux outputs
- Built into a ruggedized, water-tight case