

PANAVISION® SSR-1 SOLID STATE RECORDER



The Panavision® SSR-1 is a small, lightweight, solid-state recorder designed for use on the Genesis® digital camera, as a stand-alone unit, and coming soon, the Sony F23. The SSR-1 mounted on Genesis is particularly suited to handheld and Steadicam™ work, or tight shooting situations like the inside of a car. The SSR-1 design, connectors and controls make it easy to integrate into current workflows based on the SRW-1 HDCAM SR recorder.

KEY FEATURES

- Small
- Lightweight
- Low power consumption
- Mounts on Genesis for cable-free, camera-controlled operation
- Uncompressed 4:4:4 or 4:2:2 recording
- 21 minute capacity in 23.98 fps 4:4:4 SP mode
- 43 minute capacity in 23.98 fps 4:2:2 LP mode

A VIRTUAL VTR

In many ways, the SSR-1 behaves just like a smaller version of an SRW-1 videotape recorder.

Either the SRW-1 or the SSR-1 can connect directly to the Genesis multi-pin connector top or rear port for on-board, cable-free recording controlled by the camera record button. Both units can be fitted on to an external adapter for recording at a distance from the camera.

Both devices can record 1080PsF 4:4:4 at the customary fixed speeds formats including 23.98PsF, 25PsF, and 29.97PsF, along with Genesis selectable variable speeds from S1 to S30 fps.

However there are important differences between the SSR-1 and a videotape recorder:

- The SSR-1 is about half the size, and less than half the weight of the SRW-1
- Because the SSR-1 is a solid state recorder, you can access all recorded takes instantly—there is no need to shuttle or cue tape
- There is no danger of recording over a previous take when you hit record
- You don't need to have a pre-roll before the beginning of a scene

- You need not worry about playback damaging the footage; there are no moving parts.
- The SSR-1 consumes considerably less power than a videotape recorder.
- The SSR-1 records everything uncompressed, allowing the option of seamless transfer to HDCAM SR, with its mild compression, or to other data formats, with or without compression
- The SSR-1 has a built-in down-converter for NTSC or PAL output even when it is mounted on Genesis. The SRW-1 cannot do so when docked on the camera.
- The SSR-1 also provides a HD-SDI 4:2:2 output for monitoring when mounted to the Genesis. The SRW-1 has no such output when docked.



Genesis with on-board SRW-1 (top) and SSR-1

SOLID STATE VS. HARD DISK

Panavision selected solid state, rather than hard disks, as the best technology for the next generation of digital recording devices, for the following reasons:

- Solid state storage is smaller, lighter and quieter than hard disks
- Solid state storage does not have moving parts, and is therefore less vulnerable to damage in the rugged environments of contemporary filmmaking
- Solid state storage consumes less power and creates less heat than hard disks

THE SSRD DOCKING STATION

The SSRD is a small lightweight docking station for the SSR-1.

It provides HD-SDI output with embedded audio from the SSR-1. The SSRD can be used for playback of SSR-1 on the set or in the post house. For example, a production might shoot with several SSR-1 units, transferring the footage from one while shooting with another. The SSR-1 can also record when mounted on the SSRD.

The SSRD docking station will behave like a standard Sony VTR when connected to a controller via its 9-pin remote connector. This compatibility with the Sony protocol makes for a simple integration of the SSR-1 into existing post-production facilities and workflows.

SSRD SPECIFICATIONS

- 11-17V DC input, 4 pin XLR
- 2 BNC HD-SDI Dual Link input
- 2 BNC HD-SDI Dual Link output
- 9-pin serial remote / RS422 / Sony P2 protocol for transport control

SSR-1 RECORDING FORMATS

The SSR-1 always records the signal as is, without adding any form of video compression. This means that subsequent transfers to other devices are made without any loss of data whatsoever. The SSR-1 can record in a variety of formats:

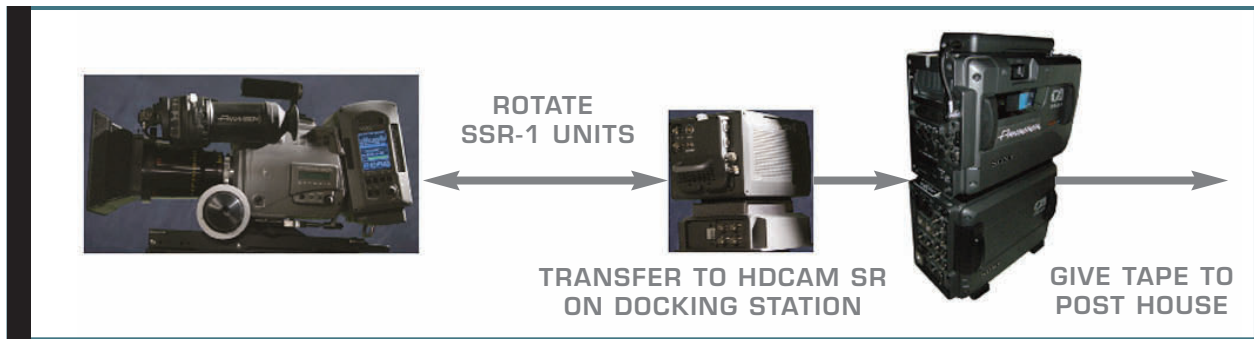
- 4:4:4 RGB—This SP mode records the full bandwidth signal from Genesis
- 4:2:2 YCrCb—Using this SP mode yields twice the recording time of 4:4:4 RGB
- Dual 4:2:2 YCrCb—This mode is only available when the SSR-1 is on the docking station, and enables the recording of two different 4:2:2 streams, typically for 3D applications
- 4:4:4:4 RGB plus Alpha channel—This mode is only available when the SSR-1 is on the docking station, and allows the addition of an Alpha channel for subsequent keying in post-production special effects.

WORKFLOWS

Each new digital filmmaking tool brings new workflow possibilities. Panavision foresees a range of applications for the SSR-1. Many filmmakers will want to use the SSR-1 when shooting Steadicam, handheld or scenes in cramped spaces.

is full, it is swapped with the empty one on the docking station. This approach will allow productions to integrate the SSR-1 into existing HDCAM SR workflows.

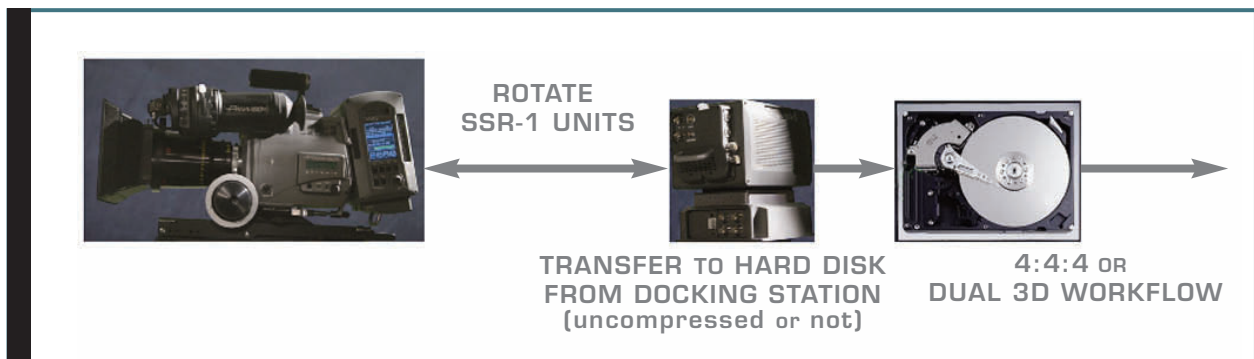
Panavision expects that some projects will elect to shoot with both the SRW-1 and the SSR-1.



A workflow with two swapped SSR-1s

One possible workflow is to shoot with two SSR-1 units. While one SSR-1 is mounted on the camera, the other is put on the docking station and transferred to an HDCAM SR recorder, and then erased. Some may choose to use a separate down-converter during the tape transfer to make simultaneous NTSC or PAL copies. Once the SSR-1 on the camera

In this case, the production could also transfer the SSR-1 to HDCAM SR videotape, along with simultaneous down-conversion, either on the set or at the post house. This workflow would unify all the project dailies in the same HDCAM SR videotape format.



A workflow for hard disk post

Some projects may elect to shoot with the SSR-1 at 4:4:4, or perhaps in two 4:2:2 streams for 3D work, and then transfer the footage onto hard disk or other data storage medium for a different workflow, with or without compression. This approach would also require rotating two or more SSR-1 units between shooting and transferring.

One important consideration of all SSR-1 workflows is ensuring that the unit's footage has been transferred before clearing the memory for the next shoot.

The SSR-1 contains a database of clips shot with start and stop timecodes that can be exported as an Excel .csv file to Macintosh or PC computers via the Ethernet connector. This database can serve as a form of camera report, and can also be used for editing or post-production.

SSR-1 SPECIFICATIONS

WEIGHT

About 2.7 kg / 6 lbs

DIMENSIONS

240mm x 135mm x 120mm
(L,W,H—9.5 x 5.3 x 4.7 inches)

POWER

11-17V DC, 40 Watts maximum
in record, 6W in low power standby

VIDEO FORMATS

- 4:4:4, 4:2:2, Dual 4:2:2, 4:4:4:4
- 1080/23.98PsF, 1080/24Psf, 1080/25PsF, 1080/29.97PsF, 1080/30PsF

- 1080/60i, 1080/50i, 1080/59.94i
- At present, Genesis Select frame 1-30 (future 1-60)

AUDIO CHANNELS

- 16 from HD-SDI signal
- 2 from Analog inputs

CAPACITY

- 62400 frames in LP mode 4:2:2 only
43 minutes @ 24 fps, 41 minutes @ 25 fps, 34 minutes @ 30 fps
- 31200 frames in SP mode 4:4:4, Dual 4:2:2, 4:4:4:4
21 minutes @ 24 fps, 20 minutes @ 25 fps, 17 minutes @ 30 fps

SSR-1 CONNECTORS

- Docking multi-pin connector—Dual link HD-SDI input and output
- HD-SDI output—1 BNC with 4:2:2 monitor signal
- SD output—1 BNC with NTSC/PAL composite video
- Genlock input—1 BNC for tri-level sync
- Audio input—2x Line level balanced
- Timecode input—1 BNC
- Network—100BaseT Ethernet
- Accessory—8 pin Lemo software-definable functions: 2 GPI input (assignable functions), 2 GPO output (assignable status)



SSR-1 USER INTERFACE

- Dedicated Record buttons for quick start on Operator side and rear
- Three tally indicators
- Keyboard lock switch to prevent accidental button pushes
- 3.5 inch Color TFT LCD display, 320x240 pixels
- Thumbwheel for navigation through LCD menus
- 4 "soft buttons" with different functions for different menus

SSR-1 CONTROLS

- Standard VTR controls: Play, Stop, Rewind, Fast Forward
- Cue previous clip, Cue next clip, Cue first clip, Cue last clip
- Jog Frame forward and reverse, Input video select
- Display rotate, display brightness, keyboard lock

SSR-1 MENU FUNCTIONS

- System frame rate: 23/24/25/29/30
- System format: 444/422/Dual 422
- Timecode source and mode: HDSDI/Internal/LTC in—Preset/Regen
- Reference selection: Auto/Input/External
- Select frame: on/off

- Monitor output selection: Auto/Link A/Link B/422
- Video test: on/off
- Video output: PB/PB-EE
- Down-converter mode: letterbox/edge crop/squeeze
- Down-converter format: PAL / NTSC
- Audio channel selection: off/ch 1&2/ch 5&6/ch 9&10/ch 13&14
- Audio Test: on/off
- Display format: position/timecode
- SSR initialize: SP or LP

SSR-1 CONTROL

- via Genesis when docked
- 9-pin Sony P2 protocol when on Docking Station

SSR-1 FUNCTIONS CONTROLLED BY GENESIS CAMERA

- Record on/off
- Record review
- Frame rate selection
- Format (422/444) selection
- Select frame fps
- Tally light control
- PB/EE control

