# PowerVu® Video Subtitling

## DESCRIPTION

Video Subtitling is a standard PowerVu system feature provided along with other PowerVu system services at the uplink via PowerVu Command Centre (PCC) system software. Scientific-Atlanta Inc. and Screen Subtitling Systems (SSS) of the United Kingdom have entered into a relationship to provide a complete video subtitling system solution for broadcasters, programmers, and specialty networks.

Screen Subtitling Systems is a market leader in the supply and support of multi-language subtitling equipment to major broadcasters and production companies worldwide. Screen Subtitling Systems offers a broad range of subtitling systems for both subtitle preparation and transmission, along with design, support, and training, and can provide solutions for broadcast subtitling requirements.

Video subtitling allows the ability to display the dialogue of foreign-language programming as captions at the bottom of the television screen in a language understood by the viewer. The S-A and SSS video subtitling solution provides a cost-effective method of language transfer which eliminates the cost of a separate subtitling decoder. It uses standard subtitle files and transmission technology allied to SSS Imitext™ encoding.

This MPEG-2 compatible feature is multi-standard, allowing display in NTSC or PAL systems. All PowerVu receivers incorporate this technology as a standard feature allowing use in commercial, headend, and business applications.

### *Video Subtitling at the PowerVu Uplink*

Video subtitling is provided by Screen Subtitling Systems Imitext video subtitling equipment and connected to Scientific-Atlanta's Model D9110 Digital Video Encoder via auxiliary RS-232 ports. Each PowerVu Encoder can accept up to three Imitext video subtitling encoder outputs for a maximum of six independent subtitle languages (i.e., two languages per RS-232 port). Multi-language video subtitling is available on both the PCC-2000 and PCC-3000 uplink systems.

Imitext-encoded video subtitling data supplied to the PowerVu Encoder is transmitted as part of the compressed MPEG-2 video stream and is not a VBI service. It is configurable via the PCC system software for selection and display at the downlink (i.e., receiver).

### *Video Subtitling at the PowerVu Downlink*

Availability of multi-language subtitling depends on the current PCC / Screen Subtitling Systems Imitext configuration, the current receiver video subtitles language setting, and the currently installed receiver operating software versions. PowerVu receivers include software developed by Screen Subtitling Systems, and licensed to Scientific-Atlanta. Since the software used in the PowerVu system does not rely on the transmission and reception of character codes, the system accommodates virtually any font or character, and supports European, Middle Eastern, and Asian languages.

Video subtitles can be displayed by the receiver in virtually any language and any character set with no cost implications. As many as six independent language subtitles can be configured for transmission from each encoder with their own timing and characteristics. Any receiver can be configured to select any one of the six language subtitles at a time. Each subtitle can consist of one or multiple lines of text that will be displayed at the bottom of the TV screen attached to the receiver. Video subtitle text can be displayed as either white or yellow

characters against a variety of backgrounds. The positioning of the subtitle text is dependent upon the operator-selectable settings of the SSS equipment, e.g., centered at bottom of screen, left side of screen, right side of screen, etc.

### Files and Format

Subtitle files can be prepared in a variety of formats, according to the language or the equipment used by the subtitle provider, whether it's the broadcaster or programmer or an out-sourced subtitle translator.

A typical subtitle file contains the subtitle itself (comprising one or two lines of text), the in and out cues for each subtitle, defining the points in the program at which the subtitle should appear and disappear, and the file identifier to allow identification, archiving, etc.

Files are generally divided into three categories:

*Proprietary* files are formatted to be specific to that manufacturer's equipment, e.g., Screen Subtitling Systems' .pac file format.

*Generic files*, which are independent of the manufacturer of the subtitling equipment. This allows any subtitle provider to supply files to any user. An example of a generic file format is the EBU teletext format with the .stl extension. It should be noted that generic file formats are not available for all languages.

*Word process*or or related files, which allow the text only (not the time code) to be prepared on a word processor and then imported into the subtitle transmission system. The ASCII file format with the .txt extension is an example of this type of file.

Screen Subtitling Systems supports an open file policy, providing the ability to read almost any file format as a standard feature at no extra cost and allowing users the widest possible choice of subtitle formats.

### Network Servers

The amount of subtitle data required for a multi-language, multi-channel operation can grow at an extremely rapid rate, quickly making manual storage and retrieval unworkable. The Screen SRU-2 is therefore supplied as standard, with a range of network server retrieval utilities to allow centralized storage of subtitle files.

While Scientific-Atlanta and Screen Subtitling Systems do not generally provide the actual servers, consultation is available on the most appropriate and economical architecture.

### System Redundancy

The diagram shows a simple non-redundant system. If a backup is required, however, Screen Subtitling Systems can provide additional SRU-2 Imitext systems to allow transmission to continue following scheduled downtime or a system problem.

Changeover can either be simply via an RS-232 switch to bring the standby system on line, or through a more sophisticated software solution which allows the output data to be routed under software control to the required PowerVu encoder.

### Automation

The SRU-2 has the capability to interface with a wide range of station automation systems.

Earlier serial data controlled systems such as Sony, Odetics, and Probel are run with a software utility on the SRU-2 itself, allowing schedule download, event staging, and monitoring, using a conventional RS-422 connection.

More recent automation systems and the advanced generation of traffic control systems such as Alamar and SunUp use a network connection. Screen Subtitling Systems addresses this requirement by providing the ASC interface controller (a 2U box) which provides the routing from the Automation system up to eight SRU-2s.

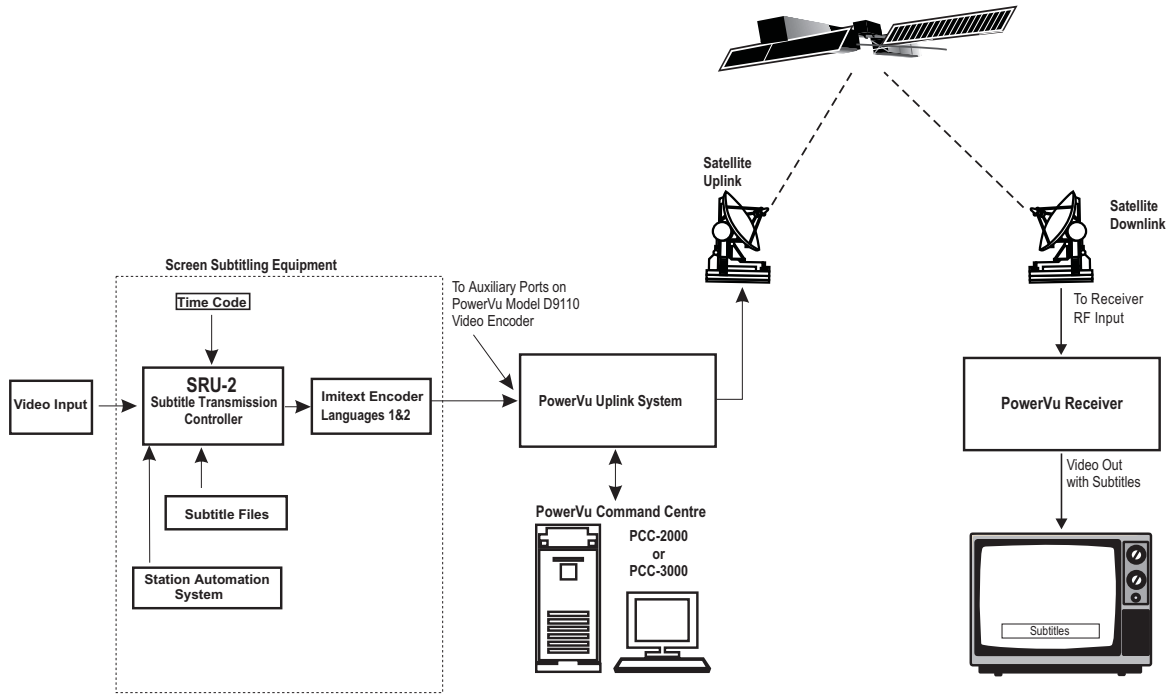
### Setup and Operation

The majority of the system set-up is carried out at the factory prior to shipment. The correct fonts are loaded onto the Imitext encoders according to the customer's preferences and the communications between the SRU-2 and the encoders are set up to reflect the languages to be used.

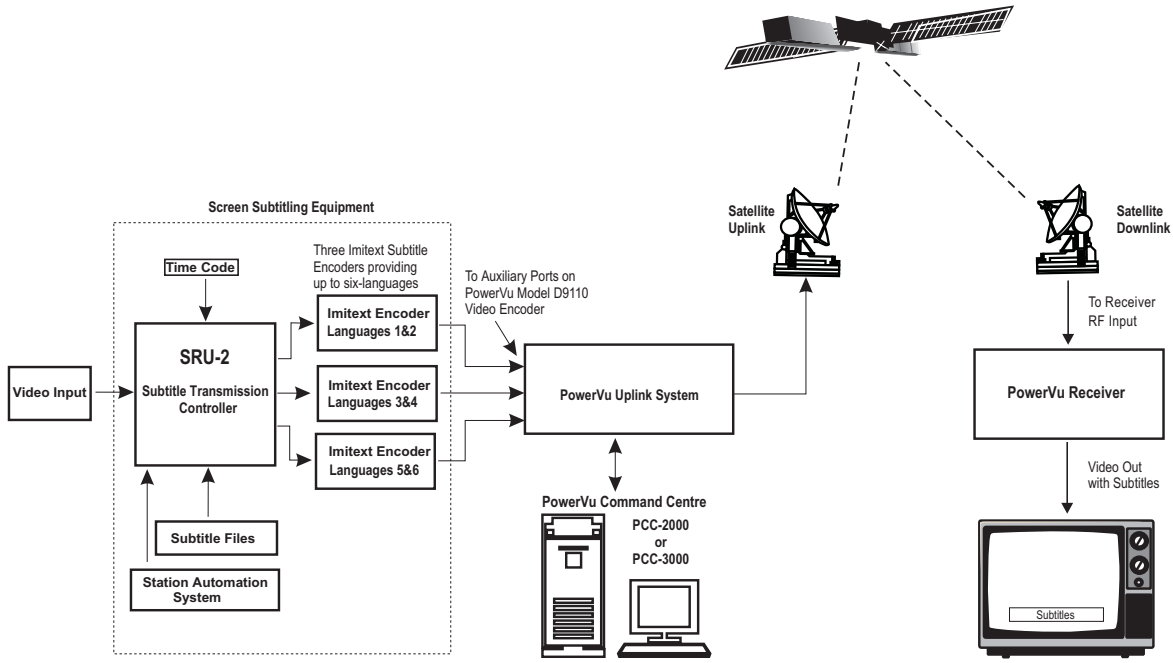
Manual operation of the SRU-2 is possible and is often used to familiarize the operator with the system operation before switching over to automated system control. This familiarization also allows operators to manually intervene if the need arises.

Transmission is simply a matter of selecting the desired file from the SRU-2 library or the appropriate network server drive, preparing it for transmission, and enabling the transmission system. If multi-language transmission is required, a multi-language transmission file is assembled from the required single-language files and cued to air. The subtitle data is sent to the Imitext encoders and then the PowerVu encoder under program timecode control. Once the file is transmitting, the SRU-2 can be used to prepare the next file for transmission without interrupting the live file, which continues to transmit as background activity.

## Typical Two-language Video Subtitling System Configuration




## Typical Six-language Video Subtitling System Configuration



# Video Subtitling

## *Font Download*

New fonts and / or character sets can be downloaded to the Imitext encoders from the SRU-2 any time the system is not transmitting. This allows character sets to be updated, changed, or amended and is particularly useful for Asian language transmissions, where additional characters are regularly created to describe new words and concepts.

## *The PowerVu Advantage*

The video subtitling system solution provides automated time-coded playback of single or multiple language subtitles. Integrating video subtitling as part of your encoder configuration can substantially enhance your digital subtitling capability. Its system flexibility improves the commercial nature of your programming.

**For more information on video subtitling system solutions and downlink system applications , contact:**

Satellite Television Networks
Scientific-Atlanta, Canada Inc.
120 Middlefield Road
Scarborough, ON M1S 4M6
Tel: (416) 299-6888
Fax: (416) 299-7145
Website: www.sciatl.com

**For more information on video subtitle preparation and transmission equipment, contact:**

Screen Subtitling Systems Ltd.
The Old Rectory, Church Lane,
Claydon, Ipswich, Suffolk,
IP6 0EQ United Kingdom
Tel: +44-1-473- 831700
Fax: +44-1-473- 830078
email: sales@screen.subtitling.com
Website: www.screen.subtitling.com



42A436A