Elecard IPTV Player

Software Reference Design

Reference Manual

Version 1.4

Notices

Elecard IPTV Player Software Reference Design (SRD) Reference Manual

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1. Introduction

1.1 About This Document

1.1.1 Purpose

This document provides an overview of the installation, set up and use of the Elecard IPTV Player SRD. It includes information about the structure of the Elecard IPTV Player SRD, provides features a detailed description of the components and interfaces.

1.1.2 Topics Covered

The following lists the topics covered in this document:

- **Section 1: Introduction** – provides a general overview of the IPTV Player SRD and describes the purpose of the document.
- **Section 2: Getting Started** – describes how to install, uninstall, and run the IPTV Player Reference Design. This section also provides information on the IPTV SRD folder structure.
- **Section 3: Elecard IPTV Player Interface Description** – describes ActiveX Player interfaces.
- **Section 4: IPTV Player Sample** – describes sample included in the Elecard IPTV Player SRD.

1.2 Preface

Elecard IPTV Player SRD is a software reference design that allows programmers to quickly and effectively implement receiving of broadcast media streams as well as playback of media files stored on local PC. This software toolset includes Elecard IPTV ActiveX Player, which can be incorporated both into an application and a web-service. It represents simple and basic functionality of MPEG player (start, stop, pause, fast-forward, fast-backward, positioning, brightness, contrast, saturation, volume control and full screen). The SRD contains HTML sample page.

Note: *Elecard IPTV Player can be used to receive and playback streams broadcast by most popular Video on Demand Servers.*

The Elecard IPTV Player SRD package includes the following:

1.2.1 Documentation

Elecard IPTV Player SRD documentation consists of the following documents:

- Elecard IPTV Player SRD Reference Manual (this document)
- Elecard IPTV Player SRD Components Reference Manuals
- Elecard IPTV Player SRD Release Notes

1.2.2 Components

This section provides a quick overview of the DirectShow filters and other components included in the IPTV Player SRD package. For further details, see the Elecard IPTV Player SRD Components Reference documentation.

Table 1. Elecard IPTV Player SRD Components

Component	Description	File Name
Elecard AVC Video Decoder	Software-only decoding solution for ISO/IEC 14496 part 10 AVC / ITU-T Recommendation H.264 video streams.	eavcdec.ax
Elecard MPEG-2 Video Decoder	DirectShow filter for software-only decoding MPEG-2 video (ISO/IEC 13818-2) and MPEG-1 video (ISO/IEC 11172-2) streams.	em2vd.ax
Elecard MPEG-4 Video Decoder	Software-only decoding solution for MPEG-4 (ISO/IEC 14496-2) streams.	em4vdec.ax
Elecard MPEG Audio Decoder	DirectShow filter for the software-only decoding of MPEG-1, MPEG-2, MPEG-2.5 and LPCM audio streams.	emad.ax
Elecard AAC Audio Decoder	DirectShow filter for the software-only decoding of AAC and HE-AAC audio streams.	eaacd.ax
Elecard NWSource-Plus	DirectShow filter for receiving media data from the network. It receives the RTP and UDP packets and feeds the filter graph with stream data contained in these packets.	enwsplus.ax
Elecard RTSP NetSource	DirectShow filter that sets the connection with RTSP server sends request for starting, stopping, pausing the media broadcasting and positioning in the stream, receives media data from RTSP server.	ertspnws.ax
Elecard MPEG Demultiplexer	DirectShow filter for splitting of MPEG-1 System Streams (ISO/IEC 11172-1), MPEG-2 Program and Transport Streams (ISO/IEC 13818-1) into video and audio streams.	empgdmx.ax
Elecard MPEG Push Demultiplexer	DirectShow filter for the software-only splitting of MPEG-1 System Streams, MPEG-2 Program Streams and MPEG-2 Transport Streams into video and audio streams.	empgpdmx.ax
Elecard LATM Demultiplexer	DirectShow filter for demultiplexing of AAC LOAS/LATM stream into elementary AAC streams.	elatmdmx.ax
Elecard Graph Viewer	Elecard Graph Viewer is a utility for the presentation of graphs built by any application. Elecard Graph Viewer allows the viewing and changing the filter properties, building of the filter graph (filter adding, deleting and connection), controlling of the graph state (run, stop, pause) and positioning in the media stream.	ElGViewer.dll
Hotkeys.xml	XML file for hot keys configuring.	Hotkeys.xml
Settings.xml	XML file for DirectShow filters configuring and settings adjustment.	Settings.xml

1.2.3 Sample Applications

Elecard IPTV Player SRD sample is written in HTML and JavaScript languages. For further details, see the Sample Applications section.

1.3 System Requirements

The Elecard IPTV Player SRD has the following hardware and software requirements:

- SSE-enhanced CPU (Intel® Pentium III, Celeron, AMD® Athlon, Opteron etc.).
- 128 MB RAM
- Any VGA card
- Windows® 2000/XP/2003 Server/Vista

1.4 Technical Support

For technical support contact the Elecard Technical Support Team: tsup@elecard.com

2. Getting Started

2.1 Introduction

The following section details the procedures for the Elecard IPTV Player SRD installing, uninstalling and sample running.

2.2 Installing Elecard IPTV Player SRD

To install the Elecard IPTV Player SRD:

1. Run the Elecard IPTV Player SRD setup. To run, double click the executable file from the Elecard IPTV Player SRD setup package.
2. The *Elecard IPTV Player SRD setup* window will appear. Read the recommendations and warnings. Click **Next**.
3. The Release Notes will appear. Click **Next**.
4. The license agreement will appear. Read the agreement and if you accept the terms within, select the *"Yes I agree with the terms of this license agreement*"check box. Click **Next**.
5. Select the destination folder in which you want to install the Elecard IPTV Player SRD. Click **Next**.
6. Select the program group in which you want the Elecard IPTV Player SRD to be located. Click **Next**.
7. To complete installation, follow the onscreen instructions. When setup has finished installing all of the necessary files on your computer, the appropriate message box with the text "Elecard IPTV Player SRD has been successfully installed" will appear and the IPTV Player SRD is ready to use.

2.3 Uninstalling Elecard IPTV Player SRD

To uninstall the Elecard IPTV Player SRD application, click *Start→Programs→Elecard→Elecard IPTV Player SRD xx→Uninstall Elecard IPTV Player SRD* (xx – the IPTV Player SRD version number).

Follow the onscreen instructions to complete removal of the application.

2.4 Running the Elecard IPTV Player SRD sample

To run the Elecard IPTV SRD Sample, click *Start→Programs→Elecard→Elecard IPTV Player SRD xx→IPTV Player Sample.html*.

3. Elecard IPTV Player Interface Description

The following tables describe ActiveX Player interfaces.

Table 2. Elecard IPTV ActiveX Player Interface Methods

Public Methods	Description
OpenURL	Renders URL. Parameters: • **BSTR URLPath** – URL string (see the URL example below in the *Running Elecard IPTV Player* section) Return value: • **1** – the broadcast receiving is started successfully • **0** – some problem occurs during the broadcast receiving start
OpenFile	Renders the specified media file. Parameters: • **BSTR FilePath** – full path of the file Return value: • **1** – the file is opened successfully • **0** – some problem occurs during the file rendering
DisplayOpenURLDlg	Displays the dialog for URL opening. The dialog allows user to type a new URL or to select one of the previously opened URLs. If the **OK** button is pressed, the **OpenURL** method is called with the specified URL string. Return value: • **1** – the broadcast receiving is started successfully • **0 –** some problem occurs during the broadcast receiving start
DisplayOpenFileDlg	Displays the dialog for file opening. If the **OK** button is pressed, the **OpenFile** method is called with the specified path. Return value: • **1** – the file is opened successfully • **0 –** some problem occurs during the file rendering
PlayBackRun	Starts the graph.
PlayBackPause	Pauses the graph.
PlayBackStop	Stops the graph.
FastForward	Fast-forward method.
FastBackward	Fast-backward method.
ShowGraph	Opens Filter Graph Preview window.
DestroyGraph	Closes the opened file or URL.
AnnouncementListIsChanged	Checks if the announcement list is changed after the previous method call. Return value: • **VARIANT_TRUE** – the list is changed • **VARIANT_FALSE** – the list is not changed
GetAnnouncementInfoByPos	Gets information about the announcement according to the specified position in the announcement list. Parameters: • **nPos** — number of the requested announcement (from 0 to **AnnouncementListCount**) • **nType** — type of the requested information (in the 1.4 version only 0 (channel name) value is supported)
OpenAnnouncementByPos	Opens the selected announcement.

	Parameters: • **nPos** — number of the requested announcement (from 0 to **AnnouncementListCount**) Return value: • **VARIANT_TRUE** — the announcement opening is succeeded • **VARIANT_FALSE** — the announcement opening is failed
ActivationGuid	Allow user to specify the ActiveX activation key. Parameters: • **BSTR bstrActivationGuid** — activation key in the form of {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX}
DumpStreaming	Dumps the received stream to the specified file. Parameters: • **BSTR bstrDumpFile** — full path of the disk file. If the string is empty, the dump process is stopped. Return value: • **1** – the dump process is started successfully • **0** – some problem occurs during the dump process start
DisplayDumpStreamingDlg	Displays the dialog that allows user to specify the path of dump file for the received stream. If the **OK** button is pressed, the **DumpStreaming** method is called with the specified path. Return value: • **1** – the dump process is started successfully • **0 –** some problem occurs during the dump process start

Table 3. Elecard IPTV ActiveX Player Interface Read-only Properties

Read-only Properties	Description
Duration	Gets the stream duration.
AspectRatio	Gets the video aspect ratio.
SourceType	Gets the source type: • 0 – File • 1 – RTP/UDP • 2 – RTSP
PlayerState	Gets the player state: • 1 – stopped • 2 – paused • 3 – running • 4 – fast-forward • 5 – fast-backward
LCState	Gets the ActiveX Player activation state: • DEMO_MODE = 1, • EVALUATION_MODE = 2, • EVALUATION_EXPIRED_MODE = 3, • FULL_MODE = 4
DemuxerInitDone	Gets Push Demultiplexer Filter State (used in receiving mode): • -1 not ready yet • 1 - demuxer init done • 0 - demuxer init failed
Width	Gets video window width.
Height	Gets video window height.
AnnouncementListCount	Gets number of available announcements.

Table 4. Elecard IPTV ActiveX Player Interface Properties

Properties	Description
Position	Gets/sets current position.
Brightness	Gets/sets brightness value.

Contrast	Gets/sets contrast value.
Saturation	Gets/sets saturation value.
Volume	Gets/sets audio volume.
FullScreen	Enables/disables **Full Screen** mode (VARIANT_BOOL).
EnableRepeat	Enables/disables repeat feature (VARIANT_BOOL).
Mute	Enables/disables the **Mute** feature (VARIANT_BOOL).
AspectRatio	Gets/sets current aspect ratio value: • 0 = 0.0; • 1 = 1.0; • 2 = 1.333; • 3 = 1.777; • 4 = 2.21;
UseDecryptor	Enables/disables decryptor usage (VARIANT_BOOL).
HotKeysInFullScreenOnly	Enables/disables hot keys support in **FullScreen** mode only (VARIANT_BOOL) (TRUE by default).
LogFile	Gets/sets the name of the log file.
RTSPRate	Sets the fast rewind rate in the RTSP mode.
ClosedCaptions	Enables/disables support of Closed Captions.
CheckAnnouncements	Enables/disables the announcement list.

4. IPTV Player Sample

4.1 Introduction

This section describes the sample included in the Elecard IPTV Player SRD package.

4.2 Description

IPTV Player HTML page is a sample that demonstrates full functionality of Elecard IPTV ActiveX Player.

Figure 1. Sample GUI

4.3 Features

IPTV Player Sample implements the following features:

- Playback of local media files (start, stop, pause, fast-forward, fast-backward, positioning
- Playback of media files from network:
  - UDP/RTP mode (Start, Stop)
  - RTSP mode (start, stop, pause, fast-forward, fast-backward, positioning)
- Playback using announcement list
- Ability to dump received stream to disk file
- Support of Closed Captions
- Support of DVB subtitles
- Full screen mode support
- Hot keys support (in **Full screen** mode)
- Multimedia keys support
- Brightness, Contrast, Saturation and Volume adjustment
- Support of basic functionality via shortcut menu

4.4 Running Elecard IPTV Player

Open the ***IPTV Player Sample.html*** page and set a media stream for playback by choosing either **Open file** or **Open URL** buttons. Use **Open URL** for connecting to RTSP server. The media file address should be typed in the following way:

```
elecard_rtsp://server_address:port[/data_path]
```

or

```
rtsp://server_address:port[/data_path]
```

where:

- *server_address* – server IP or DNS name.
- *port* – server port number for RTPS commands (unsigned integer value from 1 to 65535; 554 - default value).
- *data_path* – media file for playback.

For example:

```
elecard_rtsp://192.168.1.124:554/movie.mpg
```

Note: *You can use Elecard NWServer for unicast/multicast streaming without RTSP controlling.*

To receive streams over the network via UDP/RTP the URL address should be typed as described below.

For multicast:

```
elecard://mcast_group:port/type
```

where:

- *mcast_group* – multicast IP address (e.g. 234.5.5.5)
- *port* –unsigned integer value from 1 to 65535
- *type* – type of stream transport (udp or rtp)

For example:

```
elecard://234.5.5.5:10201/udp
```

For unicast:

```
elecard://server_address:port/type
```

where:

- *server_address* – data source server IP or DNS name
- *port* – unsigned integer value from 1 to 65535
- *type* – type of stream transport (udp or rtp)

For example:

```
elecard://192.168.57.14:10201/udp
```

Note*: The Demo version of IPTV Player supports only media multiplexed into MPEG-2 Transport Stream received from network.*

After a media file is opened you can use the “play”, “pause”, “stop”, “fast-forward” and “fast-backward” buttons, and the file positioning slider to control and navigate the file playback. The

contrast, brightness, saturation, and volume sliders are used to control the image characteristics and volume level respectively. You can also watch movie in full screen mode. In this mode the multimedia buttons and hot keys are available.

4.5 Hot Keys

Hot keys are available only in FullScreen mode. The following table demonstrates the combination of keys for each action:

Table 5. Simple IPTV Player Hot Keys

Hot Key	Description
SPACEBAR	Toggles between **Play/Pause**.
CTRL+R	Activates **Play** mode.
CTRL+P	Activates **Pause** mode.
CTRL+S	Activates **Stop** mode.
CTRL+G	Shows current filter graph.
LEFT ARROW	Fast Backwards.
RIGHT ARROW	Fast Forwards.
UP ARROW	Increases the sound volume.
DOWN ARROW	Decreases the sound volume.
M	Mutes the sound volume.
ALT+ENTER	Toggles the **Full Screen** mode On/Off.