Matrox MicroQuad

Development Library

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Introduction

This chapter describes the Matrox MicroQuad Development Library (MveTetraLibrary).

Matrox MicroQuad Development Library

Matrox MicroQuad provides a development library (MveTetraLibrary) that contains programming information (in *.h*, *.dll*, and *.lib* files) for Matrox MicroQuad so that you can integrate the functions of the MicroQuad interface within your own application. All the functions needed to control the Matrox MicroQuad unit are provided in MveTetraLibrary. To download the latest version of MveTetraLibrary, visit the Downloads section of our website at www.matrox.com/video/support.

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Using the Matrox MicroQuad Development Library

This chapter describes the Matrox MicroQuad Development Library interfaces and methods.

MveTetraLibrary.h

The *MveTetraLibrary.h* file provides all the functions needed to control the Matrox MicroQuad unit.

IMvMQController

Interface used to control the Matrox MicroQuad unit.

Public Methods

Connect Connects the **IMvMQController** interface to the Matrox MicroQuad unit.

Disconnect Disconnects the **IMvMQController** interface from the Matrox MicroQuad unit.

GetSerialNumber Gets the serial number of the Matrox MicroQuad unit.

GetFirmwareVersion Gets the firmware version of the Matrox MicroQuad unit.

GetFpgaVersion Gets the FPGA version of the Matrox MicroQuad unit.

GetNbOfInputs Gets the number of SDI inputs that are available.

SwitchInput Displays the selected SDI input in full screen view or quadrant view.

GetCurrentInput Gets the selected input, and indicates whether it is in full screen view or quadrant view.

GetCustomLabelMaxLength Gets the maximum length of the HDMI label.

SetCustomLabel Sets the HDMI label of the selected input.

GetCustomLabel Gets the HDMI label displayed for the selected input.

GetNbOfOutputAudioPair Gets the maximum number of output audio pairs available.

GetNbOfInputAudioPair Gets the maximum number of input audio pairs available.

SetAudioPair Enables or disables an audio pair.

GetAudioPairs Gets the state of the selected audio pair.

SetVUMeterAudioPair Sets the VU meters for the selected audio pair of the currently selected SDI input.

GetVUMeterAudioPair Gets the VU meters that are displayed for the selected audio pair of the currently selected SDI input.

ShowHDMILabels Shows or hides the HDMI labels for the SDI inputs on the HDMI display device.

IsHDMILabelsDisplayed Indicates whether or not the HDMI labels are displayed.

ShowSelectionBox Shows or hides the selection box around the selected input in quadrant view.

IsSelectionBoxDisplayed Indicates whether or not the selection box is displayed.

LockAudioToInput Locks the audio output on the HDMI display device to input channel 1 (SDI 1).

IsAudioLockOnInput Indicates whether or not the audio output on the HDMI display device is locked to input channel 1 (SDI 1).

ShowVUMeters Shows or hides the VU meters on the HDMI display device.

IsVUMetersDisplayed Indicates whether or not the VU meters are displayed.

IMvMQControllerFactory

Object used to create the **IMvMQController** interface.

Public Methods

CreateMQController Creates the **IMvMQController** interface.

IMvMQController::Connect

Connects the **IMvMQController** interface to the Matrox MicroQuad unit.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

Remarks

- By connecting remotely, control of the Matrox MicroQuad unit is obtained.

IMvMQController::Disconnect

Disconnects the **IMvMQController** interface from the Matrox MicroQuad unit.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::GetSerialNumber

Gets the serial number of the Matrox MicroQuad unit.

Parameters

out_pstrSerialNumber Pointer to the string containing the serial number of the Matrox MicroQuad unit.

Returns

- MV_NOERROR, if completed successfully.

IMvMQController::GetFirmwareVersion

Gets the firmware version of the Matrox MicroQuad unit.

Parameters

out_ui8FirmwareMajor Indicates the major firmware version number.

out_ui8FirmwareMinor Indicates the minor firmware version number.

Returns

- MV_NOERROR, if completed successfully.

IMvMQController::GetFpgaVersion

Gets the FPGA version of the Matrox MicroQuad unit.

Parameters

out_ui8FpgaTrack Indicates the FPGA track number.

out_ui8FpgaBuild Indicates the FPGA build number.

out_ui8FpgaVersion Indicates the FPGA version number.

Returns

- MV_NOERROR, if completed successfully.

IMvMQController::GetNbOfInputs

Gets the number of SDI inputs that are available.

Parameters

out_ui8NbOfInputs Indicates the number of SDI inputs that are available.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::SwitchInput

Displays the selected SDI input in full screen view or quadrant view.

Parameters

in_ui8InputIndex Index of the input to display.

in_bIsFullScreen If true, displays the selected input in full screen view. If false, displays the selected input in quadrant view.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.

IMvMQController::GetCurrentInput

Gets the selected input, and indicates whether it is in full screen view or quadrant view.

Parameters

iout_ui8InputIndex Index of the selected input.

out_bIsFullScreen If true, the selected input is in full screen view. If false, the selected input is in quadrant view.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

Remarks

- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.

IMvMQController::GetCustomLabelMaxLength

Gets the maximum length of the HDMI label.

Parameters

out_ui8MaximumLength Indicates the maximum length of the HDMI label.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::SetCustomLabel

Sets the HDMI label of the selected input.

Parameters

in_ui8InputIndex Index of the input for which the HDMI label is defined.

in_ui8NbCharacter Number of characters in the HDMI label for the selected input.

in_pstrCustomLabel Pointer to the string containing the HDMI label of the selected input.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- The length of HDMI labels is limited to a maximum number of characters. Call ***IMvMQController::GetCustomLabelMaxLength*** to get the maximum length for the HDMI label.
- If the string for the HDMI label exceeds the maximum length, it will be truncated.
- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.

IMvMQController::GetCustomLabel

Gets the HDMI label of the selected input.

Parameters

in_ui8InputIndex Index of the input for which the HDMI label is defined.

out_pstrCustomLabelInput Pointer to the string containing the HDMI label of the selected input.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- The length of HDMI labels is limited to a maximum number of characters. Call ***IMvMQController::GetCustomLabelMaxLength*** to get the maximum length for the HDMI label.
- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.
- Verify that the HDMI label passed to ***IMvMQController::SetCustomLabel*** has been created and that it has space for the termination character '\0'.

IMvMQController::GetNbOfOutputAudioPair

Gets the maximum number of output audio pairs available.

Parameters

out_ui8NbAudioPair Indicates the number of output audio pairs available.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::GetNbOfInputAudioPair

Gets the maximum number of input audio pairs available.

Parameters

out_ui8NbAudioPair Indicates the number of input audio pairs available.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::SetAudioPair

Enables or disables an audio pair.

Parameters

in_ui8AudioPairIndex Index of the input audio pair.

in_bIsSelected If true, the audio pair is selected.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- The total number of audio pairs that can be selected is limited. Call ***IMvMQController::GetNbOfOutputAudioPair*** to get the maximum number of audio pairs that can be selected.
- The input index range is from 1 to [MAXNBOFAUDIOPAIR], where [MAXNBOFAUDIOPAIR] is obtained from ***IMvMQController::GetNbOfInputAudioPair***.

IMvMQController::GetAudioPairs

Gets the state of the selected audio pair.

Parameters

in_ui8AudioPairIndex Index of the input audio pair.

out_bIsPairSelected If true, the audio pair is selected.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- The audio pair index range is from 1 to [MAXNBOFAUDIOPAIR], where [MAXNBOFAUDIOPAIR] is obtained from ***IMvMQController::GetNbOfInputAudioPair***.

IMvMQController::SetVUMeterAudioPair

Sets the VU meters for the selected audio pair of the currently selected SDI input.

Parameters

in_ui8InputIndex Index of the input for which the VU meter is defined.

in_ui8AudioPairIndex Index of the input audio pair.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.
- The audio pair index range is from 1 to [MAXNBOFAUDIOPAIR], where [MAXNBOFAUDIOPAIR] is obtained from ***IMvMQController::GetNbOfInputAudioPair***.

IMvMQController::GetVUMeterAudioPair

Gets the VU meters that are displayed for the selected audio pair of the currently selected SDI input.

Parameters

in_ui8InputIndex Index of the input for which the VU meter is defined.

out_ui8AudioPairIndex Index of the input audio pair.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.

IMvMQController::ShowHDMILabels

Shows or hides the HDMI labels for the SDI inputs on the HDMI display device.

Parameters

in_bShow If true, the HDMI labels are displayed on the HDMI display device. If false, the HDMI labels are hidden.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::IsHDMILabelsDisplayed

Indicates whether or not the HDMI labels are displayed.

Parameters

out_bHDMILabelDisplayed If true, the HDMI labels are displayed on the HDMI display device.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::ShowSelectionBox

Shows or hides the selection box around the selected input in quadrant view.

Parameters

in_bShow If true, the selection box is displayed around the selected input in quadrant view. If false, the selection box is hidden.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::IsSelectionBoxDisplayed

Indicates whether or not the selection box is displayed.

Parameters

out_bSelectionBoxDisplayed If true, the selection box is displayed around the selected input in quadrant view.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::LockAudioToInput

Locks the audio output on the HDMI display device to input channel 1 (SDI 1).

Parameters

in_ui8InputIndex Index of the input that locks the audio.

in_bLock If true, the audio output on the HDMI display device is locked to input channel 1 (SDI 1).

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.
- MV_E_NOT_SUPPORTED, if you try to lock the audio output on the HDMI display device to an input channel other than input channel 1 (SDI 1).

Remarks

- When the audio is unlocked, the audio that is output on the HDMI display device corresponds to the audio channels of the selected SDI input.
- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.
- For this release, you can only lock the audio output on the HDMI display device to input channel 1 (SDI 1).

IMvMQController::IsAudioLockOnInput

Indicates whether or not the audio output on the HDMI display device is locked to input channel 1 (SDI 1).

Parameters

in_ui8InputIndex Index of the input of the audio that is locked.

in_bLock If true, the audio output on the HDMI display device is locked to input channel 1 (SDI 1).

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.
- MV_E_OUT_OF_RANGE, if the input index is not within the range.

Remarks

- For this release, you can only lock the audio output on the HDMI display device to input channel 1 (SDI 1).
- The input index range is from 1 to [MAXINPUT], where [MAXINPUT] is obtained from ***IMvMQController::GetNbOfInputs***.

IMvMQController::ShowVUMeters

Shows or hides the VU meters on the HDMI display device.

Parameters

in_bShow If true, the VU meters are displayed on the HDMI display device. If false, the VU meters are hidden.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQController::IsVUMetersDisplayed

Indicates whether or not the VU meters are displayed.

Parameters

out_bVUMetersDisplayed If true, the VU Meters are displayed on the HDMI display device.

Returns

- MV_NOERROR, if completed successfully.
- MV_E_DEVICE_NOT_PRESENT, if communication between the **IMvMQController** interface and the Matrox MicroQuad unit failed.

IMvMQControllerFactory::CreateMQController

Creates the **IMvMQController** interface.

Parameters

out_ppIMvMQController Pointer that receives the IMvMQController interface.

Returns

- MV_NOERROR, if completed successfully.

The following is a sample code demonstrating how to implement the **IMvMQControllerFactory** interface.

```
    // Create the IMvMQControllerFactory interface.
hr = CoCreateInstance(
        CLSID_IMVMQControllerFactory,
        NULL,
        CLSCTX_INPROC_SERVER,
        IID_IMvMQControlFactory,
        (void **)&m_pJMQControllerFactory);

if(m_pJMQControllerFactory)
{
    // Create the IMvMQController interface and connect to the Matrox
    // MicroQuad unit.
        HRESULT hr = m_pJMQControllerFactory
                ->CreateMQController(&m_pJMQController);
        if(m_pJMQController)
        {
            hr = m_pJMQController->Connect();
            …
            hr = m_pJMQController->Disconnect();
        }
}
```

Your notes

www.matrox.com/video