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Introduction

Overview
This document details the physical and logical connections required to enable a variety of hardware control surfaces and mixing consoles to control and be controlled by Pyramix Virtual Studio using the optional Enhanced MIDI Control protocol.

Scope
The Pyramix Enhanced MIDI Control option supports hardware control surfaces capable of full or partial HUI or MackieControl emulation using a subset of the Merging Technologies Oasis protocol.

Supported and Validated Controllers
Mackie MCU in HUI mode and MackieControl mode
Yamaha DM1000 in HUI mode
Yamaha DM2000 in HUI mode
Raditec SAC2-k in HUI mode (MackieControl is not working properly)
Tascam US-2400 in HUI (MackieControl is specifically configured for certain DAWs other than Pyramix)
Tascam DM-3200 in HUI mode

Setup

Requirements:
Components required for operating a HUI or compatible controller with Pyramix:

- A compatible control surface.
- Pyramix 5.0 SP2 or higher with Enhanced MIDI Control option authorized.
- A physical MIDI connection between the Pyramix workstation and the controller.

Keys
Valid Remote Control Support (PSO-RCTR) and Remote Control - MIDI EMC (PSO-RCT-EMC) keys are required. If these are not present on your system, please contact your Merging Sales Partner in order to obtain the appropriate keys.

MIDI Connection
Wherever possible it will be generally preferable and more convenient to use USB or ethernet for the physical MIDI connection. Some controllers will require a specific driver to be installed on the workstation in order to communicate with Pyramix.

When no USB or ethernet connection is available on a controller an additional MIDI interface will be required. Please be aware that some third party interfaces may lead to a freeze in Pyramix, depending on the driver and the firmware version of the MIDI device. The following devices have been tested with Pyramix:

- Edirol UM1, UM2 OK
- Yamaha UX-256 OK
- M-AUDIO UNO Not working

Pyramix Settings

In order to set up Pyramix to communicate with the control surface, first go to Pyramix Settings > All Settings > Remote Control > Controller then press the Add function button. Enter a suitable name for the external controller in the Name field, such as "My Controller". Then choose the OASIS driver from the Driver drop-down list.
Here is a typical dialog example:

![Pyramix Controller Properties dialog](image1)

Click on **Properties** and select **EMC** in the drop-down menu as shown below:

![Oasis Configuration dialog](image2)
Then click on the **Oasis Configuration** dialog **Properties** button and choose the appropriate **Midi In/Out Port** and the connected **Controller type**. Each bank of 8 faders requires a dedicated MIDI port. The first fader bank, i.e. the right most one should be assigned to the first MIDI port.

*EMC Midi I/O Configuration dialog*

**Channel Shift Step(s)**

The number typed in the box is the number of channels that will be Shifted to the Left or Right by the Channel Shift keys.

**Bank Shift Step(s)**

The number typed in the box is the number of channels that will be Shifted to the Left or Right by the Bank Shift keys.

**Mapping**

EMC is factory mapped according to the HUI / MC specifications.

No manual mapping from within Pyramix is required or possible. However, for adventurous people with patience and some understanding of MIDI and XML, it is possible to duplicate then edit one of the included XML files to fine tune mapping according to personal taste and specific controllers. (In the EMC drop-down Pyramix will show any XML mapping file that it finds in:

**C:\Program Files\Common Files\Merging Technologies\Controllers**

Details of the factory mapping can be found in the: **EMC Mapping Table on page 20**
Control Surface Set-up

Activating HUI Mode
Pyramix and the HUI compliant controllers generally communicate using the Mackie HUI protocol. In many controllers, Mackie HUI mode is activated by selecting a Remote Layer and choosing ProTools as the target.

Please refer to the documentation for your specific control surface.

Control Surface Paradigm

Definitions

- **Bank**: A group of 8 faders.
- **VPot**: Stands for “Virtual Potentiometer” (derived from the operating element used in analog rotary controls) A VPot is a rotary control operating a digital shaft-encoder. Pressing a VPot knob often operates a switch giving an extra function, typically Automation Release (AR) in the table on page 18. Please see VPot Press/Release Modes below.

VPot Horizontal and Vertical Modes

When **ANY** strip is **SELected** Horizontal mode is engaged. When **NO** strip is selected Vertical mode is engaged.

**Horizontal Mode**
All VPots act on selected strip

**Vertical Mode**
VPots act on the strip they are vertically associated with.

VPot Functions

Each strip has a dedicated select (**SEL**) button. When a strip is selected all the VPots in a bank are assigned to that strip and the LCD is updated, after a short time, with the name of the current VPot functions. These functions depend on the current VPot mode (Pan, Aux, Eq etc.). In this mode the VPots are assigned horizontally to the selected strip. The order of VPot assignment in this horizontal mode is also available in a vertical mode. This is the target of 8 special buttons named "VPot functions". When no strips are selected the VPot control parameter depends on the selected VPot function (1 to 8) button.

**Example**
Assume we have 8 Aux sends in a mixer of 8 strips. Select the first strip and the VPot controls are assigned to Aux 1-8 of the first strip. If you deselect the strip, the VPots control the Aux1 send on each mixer strip. If you wish to control Aux send 5 of each of the 8 strips press the **Fct5** button.

VPot Press/Release Modes

When a VPot is pressed, a Automation Release command is interpreted by the Pyramix automation engine. (Resulting action is similar to **Touch Up**, i.e. when a touch sensitive fader released.)

Automation Write occurs automatically when a new value from a VPot is detected, i.e. when it is turned. This is similar to **Touch Down** when a touch-sensitive fader is touched.

Modifiers

When **Shift**, **Ctrl** and/or **Alt** modifiers are used while pressing a VPot the switch directly operates a related button in the Pyramix mixer, around the mixer element controlled by the VPot.

**Example**
Aux 1 gain is assign to a VPot. By pressing the VPot and with the Alt key held down, the pre-fader (PF) button of this strip’s Aux1 will change its state.
Note: The various available controllers differ slightly in the buttons physically present and their functions. Please see the tables on the next page for details of supported controller mappings.
### Controllers Modifiers Mapping

**Note:** You may find these tables clearer to read if you zoom in.

<table>
<thead>
<tr>
<th>Controller</th>
<th>Mackie MCU</th>
<th>Raditek SAC-2k</th>
<th>Tascam US-2400</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mode 1</td>
<td>Pan/Surround</td>
<td>Assignment</td>
<td>Pan</td>
</tr>
<tr>
<td>Mode 2</td>
<td>Send</td>
<td>Assignment</td>
<td>Inserts/Sends</td>
</tr>
<tr>
<td>Mode 3</td>
<td>EQ</td>
<td>Assignment</td>
<td>Eq</td>
</tr>
<tr>
<td>Mode 4</td>
<td>Instrument</td>
<td>Assignment</td>
<td>Dynamics</td>
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</tr>
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<tbody>
<tr>
<td>Function 1</td>
<td>F1</td>
<td>Function</td>
<td>Sn/dIns 1</td>
</tr>
<tr>
<td>Function 2</td>
<td>F2</td>
<td>Function</td>
<td>Sn/dIns 2</td>
</tr>
<tr>
<td>Function 3</td>
<td>F3</td>
<td>Function</td>
<td>Sn/dIns 3</td>
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<tr>
<td>Function 4</td>
<td>F4</td>
<td>Function</td>
<td>Sn/dIns 4</td>
</tr>
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<td>Function 5</td>
<td>F5</td>
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<tr>
<td>Function 6</td>
<td>F6</td>
<td>Function</td>
<td>LowMid</td>
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<tr>
<td>Function 7</td>
<td>F7</td>
<td>Function</td>
<td>HiMid</td>
</tr>
<tr>
<td>Function 8</td>
<td>F8</td>
<td>Function</td>
<td>High</td>
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<td>Shift</td>
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<td>Modifier 2</td>
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<td>X/Alt</td>
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<td>Midi</td>
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<tr>
<td>Bank -</td>
<td>&lt; Bank</td>
<td>Fader Banks</td>
<td>17 to 24</td>
</tr>
<tr>
<td>Bank +</td>
<td>Bank &gt;</td>
<td>Fader Banks</td>
<td>25 to 32</td>
</tr>
<tr>
<td>Channel -</td>
<td>&lt; Channel</td>
<td>Fader Banks</td>
<td>1 to 8</td>
</tr>
<tr>
<td>Channel +</td>
<td>Channel &gt;</td>
<td>Fader Banks</td>
<td>9 to 16</td>
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<th>Yamaha 02R96</th>
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<td></td>
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<td>Mode 1</td>
<td>Pan</td>
<td>Encoder Mode</td>
<td>Pan</td>
<td>Encoder Mode</td>
</tr>
<tr>
<td>Mode 2</td>
<td>Assign 3</td>
<td>Encoder Mode</td>
<td>Aux</td>
<td>Encoder Mode</td>
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<td>Assign 3</td>
<td>Encoder Mode</td>
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<td>Aux 1</td>
<td>Aux Select</td>
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<td>Aux 3</td>
<td>Aux Select</td>
<td>Aux 3</td>
<td>Aux Select</td>
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<tr>
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<td>Aux Select</td>
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<td>Function 7</td>
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</tr>
<tr>
<td>Function 8</td>
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<th>Modifiers</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Modifier 1</td>
<td>Back</td>
<td>Transport</td>
<td>Fader/Aux</td>
<td>FaderMode</td>
</tr>
<tr>
<td>Modifier 2</td>
<td>Forward</td>
<td>Transport</td>
<td>User Defined</td>
<td></td>
</tr>
<tr>
<td>Modifier 3</td>
<td>User Defined</td>
<td></td>
<td>User Defined</td>
<td></td>
</tr>
<tr>
<td>Modifier 4</td>
<td></td>
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</tr>
</thead>
<tbody>
<tr>
<td>Bank -</td>
<td>5</td>
<td>Effects/Plug-ins</td>
<td>User Defined</td>
<td>Left Narrow</td>
</tr>
<tr>
<td>Bank +</td>
<td>8</td>
<td>Effects/Plug-ins</td>
<td>User Defined</td>
<td>Right Narrow</td>
</tr>
<tr>
<td>Channel -</td>
<td>6</td>
<td>Effects/Plug-ins</td>
<td>User Defined</td>
<td></td>
</tr>
<tr>
<td>Channel +</td>
<td>7</td>
<td>Effects/Plug-ins</td>
<td>User Defined</td>
<td></td>
</tr>
</tbody>
</table>
Controller Specific Notes

**SAC-2k**

SAC controllers now work in HUI mode. The SAC-2k should be set to “Proto” mode.

**Yamaha**

**Driver**

Before attempting to set up a Yamaha console please download and install the required USB driver from the Yamaha Pro Audio Web site. For the DM2000, DM1000, 02R96 and 01V96 this can be found at:

http://www.yamahaproaudio.com/

**DM1000**

**DM1000 Settings**

Detailed steps for activating this mode in a DM1000 include:
• Press **DISPLAY ACCESS [SETUP]**, then [F4] (below the LCD) to access the **MIDI/HOST** setup page.

• Check the **TO HOST SERIAL** parameter is set to **PC**.

  **Note:** If this parameter is set to **MAC** the Pyramix workstation may crash when connected to the DM1000

• Now move the cursor to the port parameters for **DAW**, select **USB** and next to it **1 - 3**.

  **Note:** DM1000 V2 will require four ports. DM1000 V1 only needs three, and these must be the first three. I.e. ports 1-3

  **Note:** Pyramix currently only allows three ports to be selected in the **EMC Midi I/O Configuration** dialog. Functionality is the same as DM2000 V1. The fourth will carry Selected Channel data in the future.

Certain controls are assignable from the control surface itself. Press the **User Defined Key** button (from the DM1000 default 1-16 layer) and assign your dedicated function from the list available. All listed items beginning with **DAW** are usable.
We recommend having the following controls in a dedicated bank:

- DAW PLAY
- DAW STOP
- DAW CTRL
- DAW ALT
- DAW BANK +
- DAW BANK -
- DAW AUTO WRITE
- DAW AUTO READ
- DAW AUTO OFF
- DAW REC

DM2000

The transport buttons and many others will not work by default in remote with Pyramix. You first have to go to the MACHINE CONTROL [DISPLAY] MACHINE page of the DM2000 and check the DAW transport option.

DM2000 Settings

Detailed steps for activating this mode in a DM2000 include:
• Press DISPLAY ACCESS [SETUP], then [F4] (below the LCD) to access the MIDI/HOST setup page.

DM2000 DISPLAY ACCESS [SETUP] : MIDI/HOST setup page

• Check the TO HOST SERIAL parameter is set to PC.

Note: If this parameter is set to MAC the Pyramix workstation may crash when connected to the DM2000

• Now move the cursor to the port parameters for DAW, select USB and next to it 1 - 3.

Note: DM2000 V2 will require four ports. DM2000 V1 only needs three, and these must be the first three. I.e. ports 1-3

Note: Pyramix currently only allows three ports to be selected in the EMC Midi I/O Configuration dialog. Functionality is the same as DM2000 V1. The fourth will carry Selected Channel data in the future.

• Press DISPLAY ACCESS [REMOTE], then [F1] (below the LCD) to access REMOTE Page 1.

02R96 DISPLAY ACCESS [REMOTE] : REMOTE page

Note: Screenshot is from an 02R96. DM2000 is identical except for the name and there will be four Remote Layer tabs
• Cursor to the TARGET parameter and use the INC / DEC keys or the Parameter Wheel to highlight (choose) ProTools from the list. Press Enter to confirm.

• Press LAYER [REMOTE 1].

02R96

The transport buttons will not work by default in remote with Pyramix. You first have to go to the MACHINE CONTROL [DISPLAY] MACHINE page of the 02R96 and check the DAW transport option.

Note: This screenshot is from a DM2000. 02R96 screen is identical except there is no CHASE CONTROL column since this has no relevance in an 02R96

02R96 Settings

• Detailed steps for activating this mode in a 02R96 include:

DM2000 MACHINE CONTROL DISPLAY MACHINE page

DM2000 DISPLAY ACCESS [SETUP] : MIDI/HOST setup page

Note: This screenshot is from a DM2000. 02R96 screen is identical apart from the name and the number of Remote Layer and Plug-in entries.

• Press DISPLAY ACCESS [SETUP], then [F4] (below the LCD) to access the MIDI/HOST setup page. Check the TO HOST SERIAL parameter is set to PC-2.
**Note:** If this parameter is set to **MAC** the Pyramix workstation may crash when connected to the 02R96

- Now move the cursor to the port parameters for **DAW**, select **USB** and next to it 1 - 3.

**Note:** 02R96 V2 will require four ports. 02R96 V1 only needs three, and these must be the first three. I.e. ports 1-3

**Note:** Pyramix currently only allows three ports to be selected in the **EMC Midi I/O Configuration** dialog. Functionality is the same as 02R96 V1. The fourth will carry Selected Channel data in the future.

- Press **DISPLAY ACCESS [REMOTE]**, then [F1] (below the LCD) to access the **REMOTE** page.

![02R96 DISPLAY ACCESS REMOTE: REMOTE page](image)

- Cursor to the **TARGET** parameter and use the **INC / DEC** keys or the **Parameter Wheel** to highlight (choose) **ProTools** from the list. Press **Enter** to confirm.

- Press **LAYER [REMOTE]**.

**Note:** Apart from the functions set out in the tables below, the 02R96 also supports the following functions:

- **Cursor Down** zooms in to the Timeline
- **Cursor UP key** zooms out.
- **SHIFT (locate memory 5) + Play** gives Reverse Play
- **SHIFT (locate memory 5) + REW** gives Rew with audio
- **SHIFT (locate memory 5) + FF** gives FF with audio

**Tascam US-2400**

This controller has a special button named **F-Key**. This key modifies the behavior of many other buttons on the surface.

**Examples:**

- Aux 4: select Fct4 of the VPot (in horizontal VPot mode only).
- Aux 4 + F-Key: select Aux mode on the VPot.
- Sel: the select function.
Sel + F-Key: collapse the strip.

As this controller has insufficient extra buttons, the Ctrl and Alt buttons are not present. The F-Key partially replaces some of missing functions you can have with Ctrl and Alt.

Currently the Aux 1-6 buttons LEDs turn on/off strangely in function of the VPot function chosen. This is being investigated via discussions with Tascam.

**Tascam DM-3200**

Steps to add the HUI controller are as follows:

![DM-3200 MACHINE CTRL page](image)

Under the MACHINE CTRL tab add a HUI Emulate device from the SUPPORTED DEVICES section and switch on the TRA column as the picture.
In the DM-3200 EXT.CTRL page add a HUI Emulate device from the SUPPORTED DEVICES section.

**Note:** The midi port (5-6 in the above example) should be the same in the Pyramix EMC Midi I/O Configuration dialog.

**Machine Control Section Mapping**

- **Transport**: Pyramix Transport
- **Shift + Play**: Play reverse
<table>
<thead>
<tr>
<th>Ctrl + Stop</th>
<th>Automation Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ctrl + Play</td>
<td>Automation Play</td>
</tr>
<tr>
<td>Ctrl + Record</td>
<td>Automation Write</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SET</th>
<th>Chase</th>
</tr>
</thead>
<tbody>
<tr>
<td>In</td>
<td>Goto In point</td>
</tr>
<tr>
<td>Out</td>
<td>Goto Out point</td>
</tr>
<tr>
<td>Shift + In</td>
<td>Set the In point</td>
</tr>
<tr>
<td>Shift + Out</td>
<td>Set the Out point</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt; Locate</th>
<th>Goto previous marker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locate &gt;</td>
<td>Goto next marker</td>
</tr>
<tr>
<td>Machine Sel</td>
<td>Toggle machine</td>
</tr>
<tr>
<td>Mc List</td>
<td>Set marker</td>
</tr>
<tr>
<td>&lt; Nudge</td>
<td>Nudge cursor</td>
</tr>
<tr>
<td>Nudge &gt;</td>
<td>Nudge cursor</td>
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</tbody>
</table>
EMC Mapping Table

**Horizontal Mode**

*Note:* You may find these tables clearer to read if you zoom in.

With Strip Selected

<table>
<thead>
<tr>
<th>Mode</th>
<th>Action</th>
<th>VPot1</th>
<th>VPot2</th>
<th>VPot3</th>
<th>VPot4</th>
<th>VPot5</th>
<th>VPot6</th>
<th>VPot7</th>
<th>VPot8</th>
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<tbody>
<tr>
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<td>Turn</td>
<td>Pan</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Shift + Push</td>
<td></td>
<td></td>
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<td>Push</td>
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<td>F/R</td>
<td>Shift + Push</td>
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<td>Div</td>
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<th>Ratio (comp)</th>
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<th>Release</th>
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<td>Ratio (exp)</td>
<td>Attack</td>
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<td>AR Ratio (comp)</td>
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*Note: AR = Automation Release*
## Vertical Mode

**NO Strip Selected**

### EMC Enhanced Midi Control Mapping - Vertical Mode (NO strip selected)

All actions effective on corresponding strips (VPot 1 for Strip 1, VPot 2 for Strip 2, etc.)

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AR = Automation Release

### Common Controllers Buttons

### EMC Enhanced Midi Control Mapping - Common Controllers Buttons

All actions effective on corresponding strips (Mute 1 for Strip 1, Solo 1 for Strip 1, Mute 2 for Strip 2, etc.)

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