PNOscan is a high resolution music keyboard capture system, designed to integrate into an acoustic piano or other musical instrument to provide an accurate, detailed midi rendering of a musical performance.

The system in no way mechanically contacts any moving part of the keyboard, retaining 100% of the instruments feel and character.

Please take a moment to read this guide and understand the PNOscan functions.

Front Panel

*POWER* - Press to power PNOscan system ON or OFF. When power is ON the button will light up red.

*MIDI* - This button is reserved for future functionality. However, the button will flash green when there is midi being output from PNOscan system.

*PEDALS* - This button is used to calibrate the pedal sensors during installation and for future maintenance of piano and record system. See page 2 for pedal setup. This button lights up green to indicate pedal activity.

*KEYBOARD* - This button has 4 functions associated with it.

1 - During normal use pressing this button will cycle through 3 mode options,

A - Record mode, midi output is optimized for acoustic record and playback on Pianomation

B - Sound card mode, midi output is optimized for playback through sound card. Useful for silent practice mode or connection to outboard midi devices.

C - MUTE mode, Stops midi output from PNOscan and sends out an "all events off" to the attached devices.

You can identify the mode you are in using the button lights.  

SEE PAGE 2
User modes and button lights,

Record mode (Mode A), Green keyboard button light flashes once every 2 seconds.

Sound card mode (Mode B), Green keyboard button light flashes twice every 2 seconds.

Mute mode, (Mode C), Green keyboard button light flashes continuously.

Other user mode light indications,

The first green lighted button labeled MIDI flickers anytime midi is being outputted from PNOscan. Both keyboard and pedal activity will cause this button to light.

The first button will always indicate power on or off. When lighted, the PNOscan system is on.

Setup and calibration,

When the PNOscan system is first installed the electronics must be setup and calibrated to the piano. When setup is completed correctly, the setup is very reliable and the system should not require additional calibration often.

The requirement for recalibration can be caused by significant changes in the piano action regulation.

To enter setup mode the user must power the system off from the front panel power button.

1 - Hold the keyboard button firmly depressed and then press the power button momentarily. Continue holding the keyboard button until the keyboard button flickers rapidly. Release the button after the flicker stops. This takes about 4 seconds.

2 - You are now in keyboard setup mode. The system has cleared previous data and is waiting for new input from the user. Starting at the bass end of the keyboard play key 1 followed by key 2. Continue this chromatic, single key pattern until all 88 notes have been played one time.

As each note is played, hold the key down until you hear the piano voice from the speaker. Once the sound is heard you can move to the next key.

If you are using the QRS Ancho or Petine with a sound card option, be sure to set the source to MI. If you are not using Ancho or Petine controllers you can connect the PNOscan to any standard midi sound device to use this audible setup aid.

If you don't have a midi sound source for setup you can use the keyboard button light to tell you when to release a key and move to the next. Each time you press a key the midi button light will light up indicating that you can move to the next key. Depending on where the PNOscan midi interface is located, it may require a second person to assist in the setup, as you need to press keys down and have view of the light.

When playing the keys be sure to play just one note at a time. Be careful not to bump adjacent keys during this process.

Also use care to play the keys through their entire travel and don’t press the key past it’s natural down position. When piano keys are played and reach the bottom of their travel, they are stopped but a felt pad which can be crushed if you press too hard. This will cause in-accurate calibration for the scan system.

Once all keys have been played, keyboard setup is complete and you can use the PNOscan system or move to the pedal calibration.

See page 3 for pedal setup,
While PNOscan system is powered on, press the Pedal button. When the green light starts to flicker release the button. The green light will continue flickering. You are now in pedal setup mode.

Depending on the installation of PNOscan, there can be up to 3 pedals connected to the system. Sustain, Soft Shift and Sustenuto. When in pedal setup mode, all connected pedals can be calibrated at this point.

1 - Press the sustain pedal to it's full down position and then release the pedal.
2 - Press the soft shift pedal to it's full down position and then release. (Skip if no soft sensor is installed).
3 - Press the sostenuto pedal to it's full down position and then release. (Skip if no soft sensor is installed).

4 - After all connected pedals have been pressed down, once again press the Pedals button to exit pedal setup mode.
5 - Power the PNOscan system off from the front panel power button to save the setup.
6 - Power PNOscan system back on and press the sustain pedal. The Pedals button light will turn on at the point the sensor see's the pedal moment. This is referred to as the trigger position.
7 - If the trigger position seems early or late when compared to the piano damper moment you can adjust the sensors physical position to fine tune the trigger point for each pedal.

Depending on how the installation was done, the sustain sensor is generally located inside the piano cabinet at the damper trays treble end.

The sensors can be recognized as a small circuit board with a green light which glows when power is on. This board can be raised or lowered to change the trigger point. Moving the sensor closer to the tray will cause an earlier trigger and further away will cause a later trigger event. This hardware adjustment is generally not required, but keep in mind a small adjustment in the sensors location can make a significant change in trigger position. If you change the sensors placement, move it in small incremental stages until you achieve the desired effect.

During normal play, when a pedal is pressed the Pedals light will turn on and the MIDI light will flicker indicating a pedal moment was sensed and the midi message was transmitted.

See page 4 for connections to PNOscan.
REAR PANEL and CONNECTIONS

Important Note: Position of black stripe on cables and it's orientation. Always maintain this orientation.

Pedals - Connects to the pedal sensor cable.

Keyboard - Connects to the key sensor cable

MIDI Out - Standard MIDI OUTPUT. Connect to midi input of Ancho, Petine or any other midi compatible device.

MIDI IN - Standard MIDI INPUT. Used for system feedback with QRS controllers. Note that the purpose of this MIDI INPUT is for PNOscan configuration communication and serves no general use for MIDI.

DC POWER INPUT - Connects AC wall adaptor to PNOscan system. Do Not Substitute With Other Adaptors. Use only the factory supplied AC adaptor.

Some important notes about PNOscan system.

Key sensor circuit boards are static sensitive. Avoid discharge into system by discharging your body before touching the cables or printed circuit boards.

Sensor height, relative to the bottom of the sharp keys when in the down position is critical to record performance. When holding a sharp key down, the distance from the sensor lens and the key bottom needs to be between 1/8 and 1/4 inch. Should a technician re-regulate your piano, be sure to provide them with this information.

If any of the cables become disconnected, be sure to reconnect with all black lines facing up and toward the right side of the connectors on the printed circuit board. If these cables are connected incorrectly, the Keyboard button light will flash as if the system were in MUTE mode and will appear locked up. If pedals are not connected correctly the pedal sensor lights will not be lit.

Remember to use the scan mode that's best for your purpose. Record mode for playback on the QRS Pianomation system and Sound card mode for silent practice with Petine and Ancho or external midi device.

Please check www.qrsmusic.com periodically for updated information about PNOscan.
As system up-grades and latest information become available, QRS will post the information for PNOscan customers.
Required connections

Note: To use your Petine or ancho controller for MIDI record the controller must have the required jumper configured inside the unit. This is not a modification to be performed by end users. This can be performed in the field by a QRS certified technician or order from the factory preconfigured for record function.

The special adaptor cable required for record function is available through your QRS dealer. Part# 99140.
When upgrading from Standard Playback to Record, a certified Pianomation technician must install a jumper inside the Petine controller and add the MIDI IN/OUT cable shown below.

Optional Record System must be installed.

MIDI Adapter Cable 99140

<table>
<thead>
<tr>
<th>Source</th>
<th>Display</th>
<th>File Extension</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Record</td>
<td>SrC</td>
<td>mid</td>
<td>Record and play MIDI files using the internal memory.</td>
</tr>
</tbody>
</table>

Nine recordings can be stored and played back from internal memory locations rP1 through rP9.

Songs are recorded in these memory locations using rc1 through rc9. Individual songs may be re-recorded or erased.

All 9 songs can be saved to CompactFlash so new sets can be recorded. See Copy Internal Record.

**Set up Petine to record.**

While playback is stopped, press the Petine’s ADJ Dial twice within one-half second to enter the Setup Menu.

- Petine will open to the source section of the Setup Menu and display the current source. S

- Press the ADJ Dial once so that the dot begins to flash. S

- Rotate the ADJ Dial to display an “ “ and access to the MIDI Input Select function. P

- Press the ADJ Dial to stop the flashing. D

- Rotate the ADJ Dial to move the dot to the right display segment. P

- Press the ADJ Dial so the dot flashes. P

- Rotate the ADJ Dial to display “rc ” for the Record option. P

- Press the Petine’s ADJ Dial twice within one-half second to exit the Setup Menu.

**Record and Playback from the Petine Controller.**

- Press the remote control’s F1/SOURCE button repeatedly until “SrC” displays. Or…

- On the Petine controller, press the ADJ Dial twice within one-half second.

- Rotate the ADJ Dial so that the dot is in the far right display segment.

- Press the ADJ Dial once so that the dot is flashing.

- Rotate the ADJ Dial until “Sr C” appears. Press the ADJ Dial twice within one-half second to exit.

- After a few seconds the display changes to “rP1 ”, “Record Playback Track 1”.

- Use the remote control’s <<TRACK>> buttons or the Petine controller’s ADJ Dial to navigate through the 9 playback and the 9 record display screens. Go to “rc x” to record or to “rP x” to playback, where “x” is equal to 1 through 9.

- Use the <<TRACK>> buttons or the ADJ Dial to go to one of the nine Record location.

- Press PLAY on the remote control or press the ADJ Dial on the Petine controller. The tempo rate, in beats per minute, will display and the dots will flash at the tempo rate. An audible click will be heard through the speakers. Recording will begin when the first piano key is pressed.

- Press STOP on the remote or press the ADJ Dial on the controller to save the recording.

- Use the <<TRACK>> buttons or the ADJ Dial to go to a Playback location.

- Press PLAY on the remote control or press the ADJ Dial on the Petine controller. A flashing dot appears and recording will begin to play.

- To erase a recorded song, re-record and press STOP before pressing a piano key.
Record a Song and Play it Back

**Record Using the Petine Controller**

An optional record system must be installed with the QRS MIDI adapter cable connected to Petine.

See the “RECORD SOURCE” section of the manual.

A Special Jumper connection is required inside Petine.

If Petine is in playing a song, indicated by a flashing dot in the far right display segment, press the SEL Dial. 

Tap the ADJ Dial twice, quickly, within one-half second to enter the Setup Menu.

Rotate the ADJ Dial clockwise to move the dot to the far right segment.

Press the ADJ Dial once so that the dot begins to flash.

Rotate the ADJ Dial until “SrC” appears in the display.

Tap the ADJ Dial twice, quickly, within one-half second to save the selection and exit the Setup Menu.

Rotate the ADJ Dial clockwise to display “rc1”, record song location one.

Press the ADJ Dial so the dot flashes then play the piano to begin recording.

Press the ADJ Dial once when finished playing the piano to save the recording.

The recording has been saved.

Press the ADJ Dial once to playback the recording.

**Record Using the Remote**

1. Press the STOP button to halt play.

2. Repeatedly tap the F1/SOURCE button until “SrC” displays.

3. The first record playback location displays.

4. Tap the TRACK>> button once to display the first record source location.

5. Press PLAY. An audible click will be heard from the speakers and three dots flash at the metronome rate displayed. Use the Master Volume buttons to change the metronome rate.

6. See the Setup Menu settings to silence the audible click. Recording begins as soon as a piano key is pressed.

7. When finished playing, press STOP to save song.

8. The newly recording is ready for playback.

9. Press PLAY to playback the new recording.
External MIDI Input / Output Source

When upgrading from Standard Playback to Record, a certified Pianomation technician must install a jumper inside the Petine controller and add the MIDI IN/OUT adapter cable as shown below.

<table>
<thead>
<tr>
<th>Source</th>
<th>Display</th>
<th>File Extension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External MIDI Input/Output</td>
<td>5rl</td>
<td>mid</td>
<td>MIDI IN and MIDI OUT capability when the <strong>optional</strong> MIDI adapter cable is connected to Petine.</td>
</tr>
</tbody>
</table>

Set up Petine to play from an external MIDI player or computer.

While playback is stopped, press the Petine’s ADJ Dial twice within one-half second to enter the Setup Menu.

- Petine will open to the source section of the Setup Menu and display the current source.
- Press the ADJ Dial once so that the dot begins to flash.
- Rotate the ADJ Dial so that the dot is in the far right segment.
- Press the ADJ Dial so that the dot is flashing.
- Rotate the ADJ Dial to move the dot to the right display segment.
- Press the ADJ Dial so the dot flashes.
- Rotate the ADJ Dial to display “FP” for the File Player option.
- Press the Petine’s ADJ Dial twice within one-half second to exit the Setup Menu.

Play Petine from an external MIDI player or computer.

- Press the remote control’s F1/SOURCE button repeatedly until “5rl” displays.
- On the Petine controller, press the ADJ Dial twice within one-half second.
- Rotate the ADJ Dial so that the dot is in the far right segment.
- Press the ADJ Dial once so that the dot is flashing.
- Rotate the ADJ Dial until “5rl” appears.
- Press the ADJ Dial twice within one-half second to exit.
- After a few seconds the display changes to “---” with a flashing dot at right. Petine will now respond to MIDI data received into MIDI IN cable.
- Rotate the ADJ Dial to adjust the volume.
- Press STOP in the remote or Press the ADJ Dial on Petine to halt playback.
## Recording

**PNOscan and the QRS Ancho controller**

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stop Play</strong></td>
<td>Press the <strong>Stop</strong> button to stop play.</td>
<td></td>
</tr>
<tr>
<td><strong>Select the Record Source</strong></td>
<td>Press the Record button to select the Record source. Volume is automatically set to 064.</td>
<td><img src="image.png" alt="Record Button" /></td>
</tr>
<tr>
<td></td>
<td><em>Skip to the next step, to Record a Song, if the Record source is already selected.</em></td>
<td></td>
</tr>
<tr>
<td><strong>Record a Song</strong></td>
<td>Press the Record button to activate Record. The Rec/Tempo LED will begin to flash at the metronome rate.</td>
<td><img src="image.png" alt="Rec/Tempo LED" /></td>
</tr>
<tr>
<td></td>
<td>An audible click track will be heard through the speakers. Press the <strong>SEL</strong>ect button and rotate the <strong>ADJ</strong>ust dial to lower the click track volume. Vo0 = OFF.</td>
<td></td>
</tr>
<tr>
<td><strong>Save the Recording</strong></td>
<td>Press the <strong>Stop</strong> Button to save the recording to Ancho’s internal memory.</td>
<td><img src="image.png" alt="Save Recording" /></td>
</tr>
<tr>
<td><strong>Play Recorded Song</strong></td>
<td>Press the <strong>Play</strong> button to play the recorded song.</td>
<td><img src="image.png" alt="Play Button" /></td>
</tr>
<tr>
<td><strong>Erase the Song</strong></td>
<td>Press <strong>Play</strong> and without pressing a piano key press <strong>Stop</strong>.</td>
<td><img src="image.png" alt="Erase Button" /></td>
</tr>
<tr>
<td><strong>Record Locations</strong></td>
<td>There are 9 record locations.</td>
<td><img src="image.png" alt="Record Locations" /></td>
</tr>
</tbody>
</table>

All 9 recorded songs can be saved, as a group, to a CompactFlash card. See the Copy Record option in the Compact Flash Utilities section of this manual.

### MIDI Adapter Cable - MIDI IN

**MIDI Adapter Cable**

Part # 99140

Connect to MIDI OUT of PNOscan

**MIDI IN**

**MIDI OUT**

To Processor

FeMale
MIDI Input Source

Set up Ancho to trigger the internal soundcard voices by playing the piano keys.

An optional record system must be installed with the QRS MIDI adapter cable and jumper connected to Ancho.

Press the Stop button to stop play.

Rotate the ADJjust dial to display “SETUP” in the center of the display.

Press the SELect button to enter the Setup menu.

Press the SELect button again so that the cursor arrow begins to flash.

Rotate the ADJjust dial so that the “MIDI-SRC” appears.

Press the SELect button so that the cursor arrow stops flashing.

Rotate the ADJjust dial to point toward the current MIDI-SRC selection.

Press the SELect button again so that the cursor arrow begins to flash.

Rotate the ADJjust dial so that the “RecStrip” appears.

Press the SELect button twice within one-half second to save the new setting and exit the Setup menu.

Play a Soundcard voice from the piano keyboard.

Press the Stop button to stop play.

Rotate the ADJjust dial to point toward the source section of the display.

Press the SELect again so that the cursor arrow begins to flash.

Rotate the ADJjust dial so that the “MI” source appears.

Press the SELect button to select the MIDI Input source.

Ancho is ready to trigger the internal soundcard voice from the piano keys.

Use the << TRACK >> buttons on the remote or the controller to change the voices. See the General MIDI Sounds list.

To set up for silent piano see “Silent Piano” in the Audio Configuration section of this manual.
Ancho Owners Manual

Copy Recorded Songs to a CompactFlash Card

Ancho’s internal Record Source holds nine single track recordings. The Optional Record Strip is required. When you are satisfied with all nine recordings, use this function to copy them to a CompactFlash card.

Press the STOP button to halt play.
Insert a CompactFlash card into the reader.

| 0 0 1 ^ M R C < ■ 0 0 : 0 0 V 0 6 4 |

Rotate the SELect Dial so that “SETUP” displays in the screen.

| 0 0 1 ^ M R C < SETUP V 0 6 4 |

Press the SELect button to enter the Setup Menu.

| MAIN - VOL < 0 6 4 |

Press the SELect button again so that the arrow begins flashing.

| MAIN - VOL < 0 6 4 |

Rotate the ADJjust dial so that the arrow points to C-FLASH.

| C - FLASH < U p - D m o E x |

Press the SELect button to stop the arrow from flashing.

| C - FLASH < U p - D m o E x |

Rotate the ADJjust dial to point the arrow toward the current C-FLASH setting.

| C - FLASH : U p - D m o < E x |

Press the SELect button so that the arrow begins to flash.

| C - FLASH : U p - D m o < E x |

Rotate the ADJjust dial to display “Rc-Cpy”.

| C - FLASH : Rc - C p y < E x |

Press the SELect button to stop the arrow from flashing.

| C - FLASH : Rc - C p y < E x |

Rotate the ADJjust dial to point the arrow toward Ex.
Press the SELect button to execute the command.

| C - FLASH : Rc - C p y E x < |

Wait for the read/write process to finish and then press the SELect button when “Scc” displays.

| COPY REC R D - S O N G 0 0 9 r |

| COPY REC R D - S O N G ( S c c ) |

Press the SELect button twice, quickly within one-half second, to save the new setting and exit.