

QRS Music Technologies, Inc.

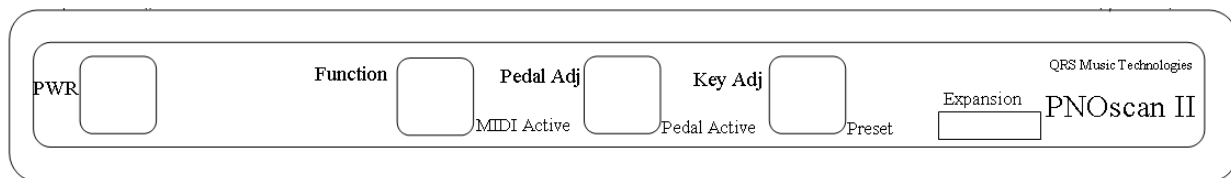
PNOscan III

User Guide

Item # 79317

Manual # OM79217

Manual Rev. 20170301



If the PNOscan system is part of a PNO³ playback system you don't need the box shown above.



Welcome

Congratulations on your purchase of the QRS PNOscan III key sensor and MIDI system. The PNOscan III system represents the best value and highest performance key sensing and MIDI transmit system available today.

What does the PNOscan III do? The PNOscan III is a simple MIDI interface for your acoustic piano. The PNOscan III allows you to use your piano as a MIDI controller. The PNOscan III MIDI OUT jack can be connected to any synthesizer, sequencer, or computer having a MIDI IN jack, in ways never before possible on an acoustic or digital piano.

With the PNOscan III system installed under the keys of your keyboard instrument, you will enjoy the great benefit of the latest high tech designs. Benefits such as absolute high resolution key sampling, with no mechanical contact with keys or action, highly accurate DSP algorithms for outstanding performance

After the initial installation the PNOscan III system was electronically setup to the piano action. As your piano action wears it may be necessary to repeat this setup procedure periodically. If the piano action is regulated or repaired, follow the Keyboard Setup instructions below to re-calibrate the system.

⇒ See the Keyboard and Pedal Setup sections on page 7 of this manual for details.

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Connecting and using PNOscan III with computer software

You will need a “USB A Male to 5-Pin MINI B Male” cable to connect the PNOscan III to your computer. *This cable is typically found with digital cameras.*

This cable is not supplied with the system. Connect the USB A Male plug into your computer’s USB socket and the 5-Pin MINI B Male plug into the connector that is attached to the piano. *See page 4 for this cable location.*

Your computer will supply power to PNOscan III and should recognize PNOscan III as a USB device. The PWR button will illuminate to indicate that the system is ON.

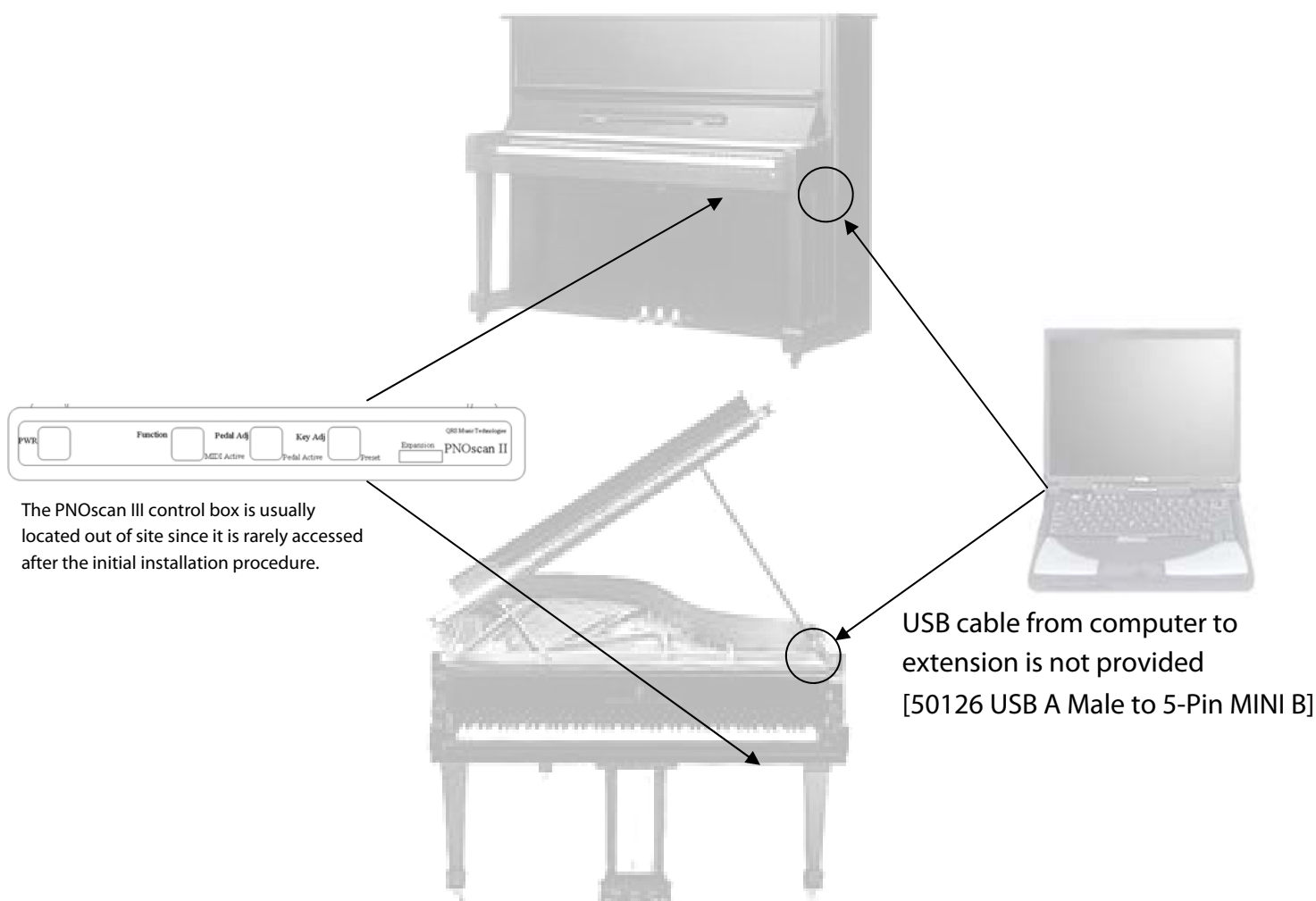
The Function button will blink when a key is pressed.

The PNOscan III is a MIDI Output device (it will not generate sounds on its own).

Open your music software and select the “USB Audio Device” as your “Input Driver”.

You are now ready to record from the acoustic piano to your computer’s music software.

USB Connector & PNOscan III Locations

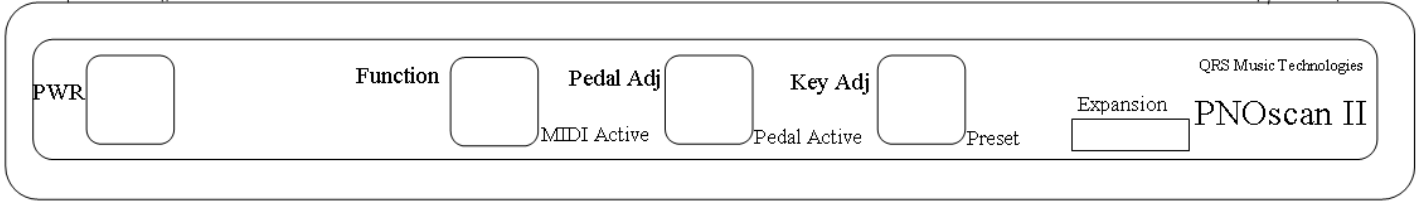




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TUSB

Operating Modes

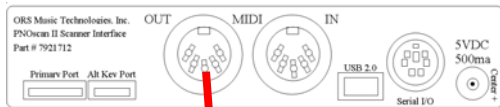


Repeatedly tap the Key Adj button to select one of the following Patch Changes:

The voices below are not internal to the PNOscan III. PNOscan III is sending "patch change" messages to the device connected to the MIDI OUT port of the TUSB.

1. **Preset 1** - Patch Change 1 = **Grand Piano** - Light blinks once, then a pause.
2. **Preset 2** - Patch Change 5 = **Electric Piano** - Light blinks twice, then a pause.
3. **Preset 3** - Patch Change 20 = **Church Organ** - Light blinks tree times, then a pause.
4. **Preset 4** - Patch Change 51 = **String Ensemble 2** - Light blinks four times, then a pause.

Tapping the Power button places the unit in System Mute mode:



Your MIDI Sound Module

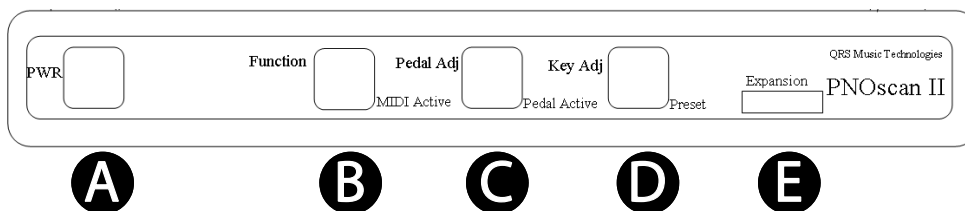
If you are installing the PNOscan in a PNO³ playback system you don't need the TUSB box. Just plug the 10-pin ribbon cable into the "PNOscan IO" port on the PNO³ processor. Record setup is done in the PNO³ software.





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TUSB Front Panel



A Power

- Press and hold for about 2.5 seconds to power the system off.
- Pressing when the system is off, powers the system on.
- Pressing this button for less than 2 seconds places the system in mute mode and sends a "all notes off" command out the MIDI Out and USB ports.

This button also has multi function lights:

- **Orange** indicates that power is being received from the AC wall adaptor or from the USB port.
When both power sources are present the USB port will always be the primary source for system power unless the host PC cannot deliver the needed current. In this case the AC adaptor will take over.
- **Green-Flicker** indicates that the USB host has recognized PNOscan III.

B Function

Used in conjunction with other buttons to access the setup functions.

- **Green flicker** indicates that data is being outputted.

C Pedal Adjust

Used to access the pedal setup mode.

- **Green light** indicates that pedal motion is detected.

D Keyboard Adjust

Used to access keyboard setup mode.

- **Green light** indicates the active mode of system.
- There are three modes; QRS, Mute and MIDI Sound Module

E Expansion

Normally not connected. Future uses include connection to control surface and other integration.

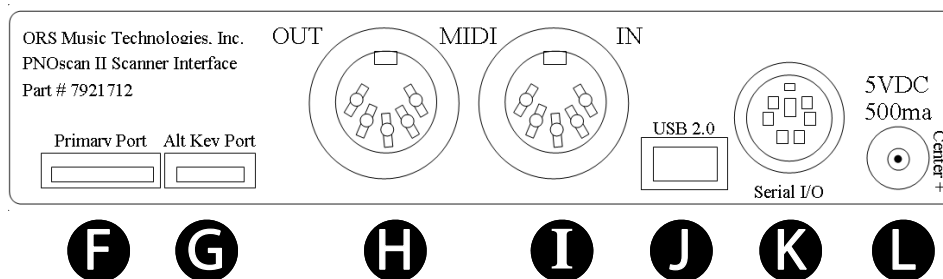
B Alternately Flashing **D**

Alternately flashing Function and Key Adj lights indicate that a ribbon cable is disconnected or plugged in upside-down at either the TUSB interface or the cable coupler. At the TUSB, the silver-contact side is toward the bottom of the TUSB box. At the cable coupler, the silver-contact side of the cables should face the circuit board.



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TUSB Rear Panel



F Primary Port

Connection to the soft pedal board is made here. This accepts the 10-Pin Flex Cable.

G Alt Key Port

This port accepts a 6-Pin Flex Cable from the Key Scan Assembly. This port is normally not connected, although it can be used along with the Primary Port if desired. When only the Primary Port is used then the Key Scan Assembly gets connected to the Soft Pedal Board.

H MIDI OUT

Standard MIDI output connection. Connects PNOscan III to sound modules, QRS Pianomation or other MIDI device.

I MIDI IN

Standard MIDI input connection. Normally not connected. Used in more complex setups when communication to QRS diagnostic programs are needed.

J USB

Connect a host computer to this port for convenient use of the PNOscan III system and computer software. USB 2.0 compliant.

An extension cable [7921754] is provided and may already be connected to this port. On a Grand piano this cable terminates near the prop stick for the lid. On an Upright piano this cable terminates under the keybed on the treble side of the piano.

You will need a USB A male to 5-pin Mini B cable [50126] to connect this extension cable to a computer.

K Serial I/O

Normally not connected. This port is for use with future development.

L 5 Volt Input

Connect the AC wall power adapter here. Use only the supplied adapter.



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Keyboard Setup: To make the setup process easier, connect the MIDI Output of PNOscan III to a soundcard equipped QRS Pianomation controller or to a MIDI sound module. As you depress each piano key during setup you will need to hold the key down until the system accepts the key's down position. To indicate the position has been accepted, the PNOscan III system outputs a midi note. Alternately if you don't have a MIDI device connected, you can reference the green light on the Function button. Each time a key position is accepted this button will light.

1. Press and hold the "Key Adj" button.
2. While holding the "Key Adj" button, press and hold the Function button.
3. Hold both buttons in until the 'Key Adj' light flashes, then release both buttons.
 - The system is now in keyboard adjust mode and all previous key calibration values in memory have been erased.
4. Once in the setup mode, start with key # 1, pressing the key firmly through its entire travel. Hold the key down until you either hear the note play through the speaker or until the Function button lights momentarily.

⇒ **It is very important that you hold the key down until it is accepted as a position. This is normally instantaneous but sometimes takes a couple of seconds.**
5. Repeat this process for each key until all 88 notes have been accepted.
 - After this process no further action is required from the user and the keyboard setup is complete.

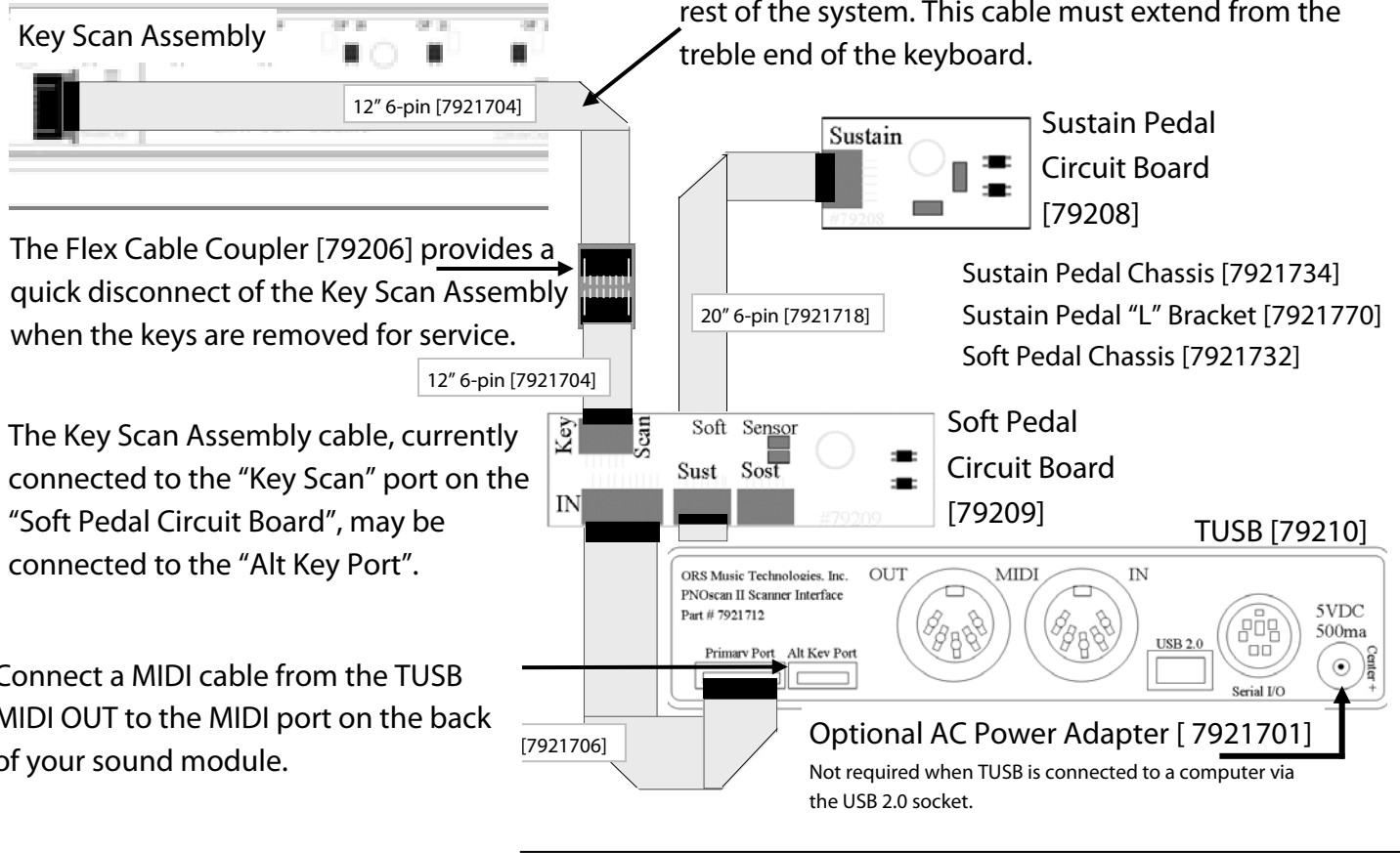
Pedal Setup: Use the following sequence to setup the pedals.

- *The standard configuration includes a soft shift pedal and a sustain pedal. The **Sostenuto sensor is optional**. If used, this pedal adjusts in the same way as the soft shift. The pedal press sequence is: Sustain, Sostenuto and then Soft Shift.*
1. While holding the "Pedal Adj" button, press and hold the "Function" button.

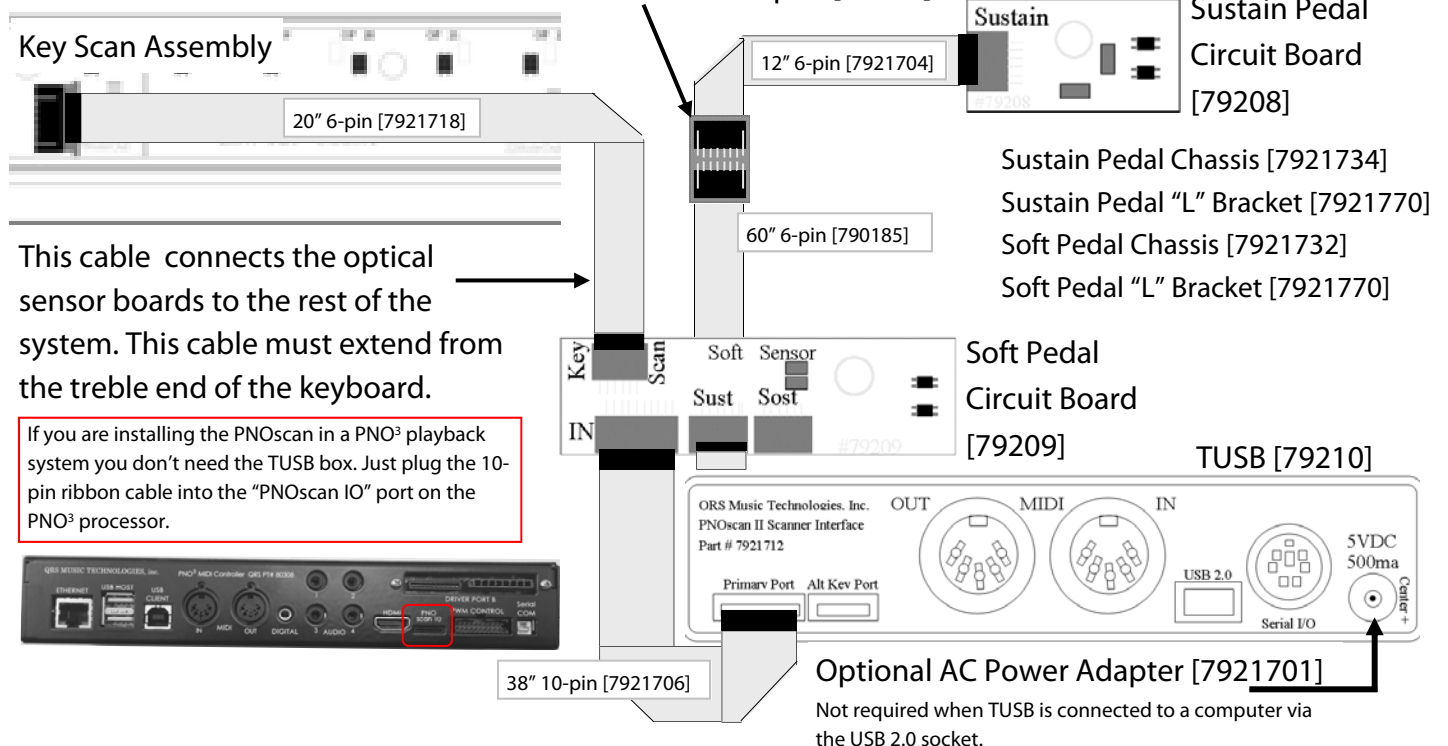
Hold both buttons until the "Pedal Adj" button starts flashing, then release both buttons.

 - *The system is now in pedal setup mode and all previous pedal values in memory have been erased.*
 2. While watching the "Function" button, firmly press the sustain pedal fully down and hold. You should have seen a quick green flash as the pedal was depressed. Release the pedal.
 3. Again, watch the "Function" button and firmly press the soft shift pedal fully down and hold. You should have seen a quick green flash. Release the pedal.
 - ***Be sure you see the quick flash for both pedals. If you do not see this flash, exit the setup procedure by pressing the Pedal Adjust button, then reenter pedal setup mode and start again.***
 4. While watching the "Function" button, slowly depress the sustain pedal. As the pedal moves down you will see the Function button start to flash. **Hold this pedal position**.
 - *The flashing light indicates you are in the range of the optical sustain sensor and the trigger point where midi sustain event will occur can now be set. Typically this point should be at the same exact point where the actual dampers start to lift.*
 5. With the "Function" button still flashing, repeatedly tap a piano key. Continue depressing the sustain pedal until the strings sustain. Press the "Pedal Adj" button to lock-in and save the settings and exit the adjust mode. Release the pedal, the setup procedure is complete.

Connection Diagram- Grand Piano



Connection Diagram- Upright Piano





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Troubleshooting

No MIDI Output from TUSB Interface

The Function and Key Adj lights are alternately flashing.

Alternately flashing Function and Key Adj lights indicate that a ribbon cable is disconnected or plugged in upside-down at either the TUSB interface or the cable coupler. At the TUSB, the silver-contact side is toward the bottom of the TUSB box. At the cable coupler, the silver-contact side of the cables should face the circuit board.

The Key Adj light is flashes steadily.

The system is in Mute Mode

The PWR light is red

Indicates a USB failure - Call your dealer or QRS Technical Support

Accessories		
QRS Part #	Description	Purpose
50126	USB A Male - 5 Pin Mini B	Connects PNOscan III to a computer.
7921701	AC Power Adapter Input: 100-240 V / 50-60 Hz 0.2A Output: 5V DC 1.0A / Center Positive	Required whenever using the MIDI Output. Not necessary when connected to a computer via a USB cable.
Educational Piano Software		
Go to http://www.epiano.com/qrs/index.php		

PNOSCAN III™ LIMITED WARRANTY

PNOScan III Electronics Limited Warranty

QRS Music Technologies, Inc. ("QRS") warrants to you for the Warranty Period that there are no defects in the materials of this Product (as identified at the end of this warranty certificate). The "Warranty Period" expires (except as explained below) Two (2) years from the date of your purchase of the Product. In order to determine the date of your purchase of the Product, you will need to provide to us a credit card receipt, a purchase agreement, a sales slip, a warranty registration or some other form of proof that you are the original purchaser and the date of your purchase of the Product.

If you are not able to provide us with some form of proof of purchase date, the Warranty Period will be a shorter period (the "Shorter Warranty Period") which is two years from the date that your dealer purchased the Product from QRS. If you cannot provide a proof of purchase date, you may contact us in the manner described below and we will assist you in determining the date that your dealer purchased the Product from us and determining the Shorter Warranty Period. This is a warranty is for parts only and does not include shipping or labor.

This warranty does not apply to any accessories you may have purchased with the Product and does not apply to any piano or components of the piano with which the Product is used or any Piano in which the Product is installed. In addition, this warranty does not cover scratches, dents or other defects in the cosmetic finish of the Product.

The warranty is issued solely to the original purchaser of the Product. THIS WARRANTY IS NOT TRANSFERABLE. If, during the Warranty Period, parts incorporated in this Product are found to be defective in material or workmanship, and the original purchaser provides Purchase Documents to QRS, then QRS or its authorized dealer will provide replacement parts without charge. We may, at our discretion, provide reconditioned parts or assemblies as warranty replacements. You as the original purchaser will be responsible to pay labor costs incurred in connection with any repair.

LIMITATION IN CONNECTION WITH OBSOLETE PRODUCTS

If at the time you make a claim pursuant to this warranty, we no longer manufacture or sell the same model of Product, we may, at our discretion, rather than repair or replace defective parts in the Product, offer to sell you a more current version of a similar Product. If we offer to sell you a more current model of the Product, you will be responsible to pay the difference between the Manufacturer's Suggested Retail Price ("MSRP") of the more current version of a similar Product and the price you paid for the Product you purchased. If you choose not to accept such offer, we will have no further obligations pursuant to this warranty.

THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, MADE BY THE MANUFACTURER IN CONNECTION WITH THIS PRODUCT. INCLUDING, BUT NOT LIMITED TO, WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TO THE EXTENT ALLOWED BY THE LAW, QRS SHALL NOT BE RESPONSIBLE FOR LOSS OF THE PRODUCT, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, SPECIAL OR CONSEQUENTIAL DAMAGES, EVEN IF THE MANUFACTURER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This warranty gives you specific legal rights. Some states provide other rights, and some states do not allow excluding or limiting liability for incidental or consequential damage. Consequently, the limitations and exclusions in this warranty may not apply to you. In addition, some jurisdictions have consumer protection rules, regulations and statutes that may apply to you.

Exclusions

There is no express warranty on the Product and this warranty is void if:

- 1) You did not purchase this Product from an authorized Pianomation reseller
- 2) This Product has been serviced, modified or tampered with by anyone other than an QRS Authorized Service Representative
- 3) The name, trademark or serial number has been modified, defaced or removed from the product,
- 4) This Product has been damaged as a result of abuse, abnormal force or strain, failure to reasonably maintain and protect, modification, accident or exposure to extreme temperature or humidity,
- 5) Parts, supplies or other accessories which have not been approved by QRS have been used with this Product,
- 6) Radio frequency interference is generated by uncertified and/or illegal equipment,
- 7) This Product has been moved or delivered without reasonable preparation and packaging or
- 8) QRS reasonably determines, after inspection that there has been modification of this Product which adversely affects the reliability of the product or component.

Owner's Responsibility

In order to have rights under this warranty, you have the following responsibilities:

- 1) Retain your proof of purchase and purchase date and send in your Warranty Registration Card
- 2) Notify QRS or any authorized dealer of any warranty claim within ten (10) days after discovery and provide a detailed explanation of the problem.

General

If any provision herein shall be unlawful, void or for any reason unenforceable, then that provision shall be deemed severable from this warranty certificate and shall not affect the validity of and enforceability of the remaining provisions.

QRS reserves the right to make changes in design and/or improvements to its products without any obligation to retrofit products previously manufactured.

INSTRUCTIONS FOR OBTAINING WARRANTY SERVICE

- 1) If you cannot provide proof of purchase, contact QRS at 800-247-6557 and we will attempt to determine the date on which your dealer purchased the Product and assist you in determining the Shorter Warranty Period. For warranty service, contact the dealer from whom you purchased the product, or your nearest dealer.
- 2) If no dealer is near you, contact QRS by phone at 800-247-6557.
- 3) Do not ship the product without prior written Return Authorization from QRS. Do not attempt to repair or disassemble the product yourself.
- 4) Please record your model number and serial number and your date of purchase below for your records. Keep this information with your proof of purchase in case your product requires service. Do not dispose of the warranty after it expires. In the event your product ever requires service, these instructions should be helpful in enabling you to obtain proper service.

Product Model # _____

Product Serial # _____

Date of purchase _____

General MIDI Sound List

Patch	Name	Patch	Name	Patch	Name	Patch	Name
1	Acoustic Grand Piano	33	Acoustic Bass	65	Soprano Sax	97	FX 1 (rain)
2	Bright Acoustic Piano	34	Electric Bass (finger)	66	Alto Sax	98	FX 2 (soundtrack)
3	Electric Grand Piano	35	Electric Bass (pick)	67	Tenor Sax	99	FX 3 (crystal)
4	Honky-tonk Piano	36	Fretless Bass	68	Baritone Sax	100	FX 4 (atmosphere)
5	Electric Piano 1	37	Slap Bass 1	69	Oboe	101	FX 5 (brightness)
6	Electric Piano 2	38	Slap Bass 2	70	English Horn	102	FX 6 (goblins)
7	Harpichord	39	Synth Bass 1	71	Bassoon	103	FX 7 (echoes)
8	Clavi	40	Synth Bass 2	72	Clarinet	104	FX 8 (sci-fi)
9	Celesta	41	Violin	73	Piccolo	105	Sitar
10	Glockenspiel	42	Viola	74	Flute	106	Banjo
11	Music Box	43	Cello	75	Recorder	107	Shamisen
12	Vibraphone	44	Contrabass	76	Pan Flute	108	Koto
13	Marimba	45	Tremolo Strings	77	Blow n Bottle	109	Kalimba
14	Xylophone	46	Pizzicato Strings	78	Shakuhachi	110	Bag pipe
15	Tubular Bells	47	Orchestral Harp	79	Whistle	111	Fiddle
16	Dulcimer	48	Timpani	80	Ocarina	112	Shanai
17	Draw bar Organ	49	String Ensemble 1	81	Lead 1 (square)	113	Tinkle Bell
18	Percussive Organ	50	String Ensemble 2	82	Lead 2 (saw tooth)	114	Agogo
19	Rock Organ	51	SynthStrings 1	83	Lead 3 (calliope)	115	Steel Drums
20	Church Organ	52	SynthStrings 2	84	Lead 4 (chiff)	116	Woodblock
21	Reed Organ	53	Choir Aahs	85	Lead 5 (charang)	117	Taiko Drum
22	Accordion	54	Voice Oohs	86	Lead 6 (voice)	118	Melodic Tom
23	Harmonica	55	Synth Voice	87	Lead 7 (fifths)	119	Synth Drum
24	Tango Accordion	56	Orchestra Hit	88	lead)	120	Reverse Cymbal
25	Acoustic Guitar (nylon)	57	Trumpet	89	Pad 1 (new age)	121	Guitar Fret Noise
26	Acoustic Guitar (steel)	58	Trombone	90	Pad 2 (w arm)	122	Breath Noise
27	Electric Guitar (jazz)	59	Tuba	91	Pad 3 (polysynth)	123	Seashore
28	Electric Guitar (clean)	60	Muted Trumpet	92	Pad 4 (choir)	124	Bird Tw eet
29	Electric Guitar (muted)	61	French Horn	93	Pad 5 (bow ed)	125	Telephone Ring
30	Overdriven Guitar	62	Brass Section	94	Pad 6 (metallic)	126	Helicopter
31	Distortion Guitar	63	SynthBrass 1	95	Pad 7 (halo)	127	Applause
32	Guitar harmonics	64	SynthBrass 2	96	Pad 8 (sw eep)	128	Gunshot

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