PROGRAMMABLE PRESET POLYPHONIC SYNTHESIZER

KiwiSix

KIWITECHNICS UPGRADE

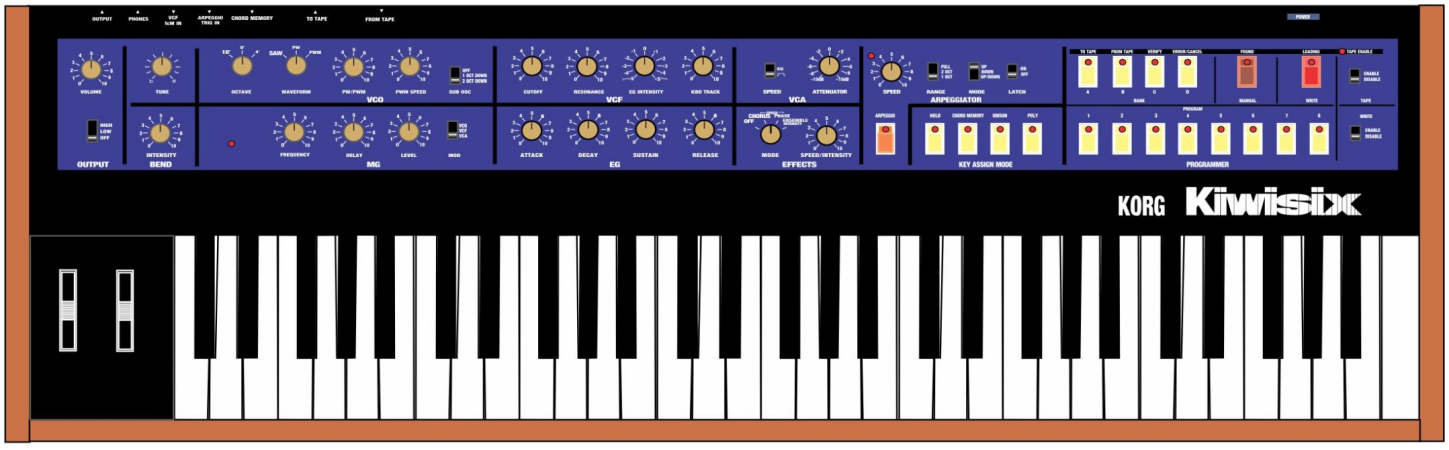


Table of Contents

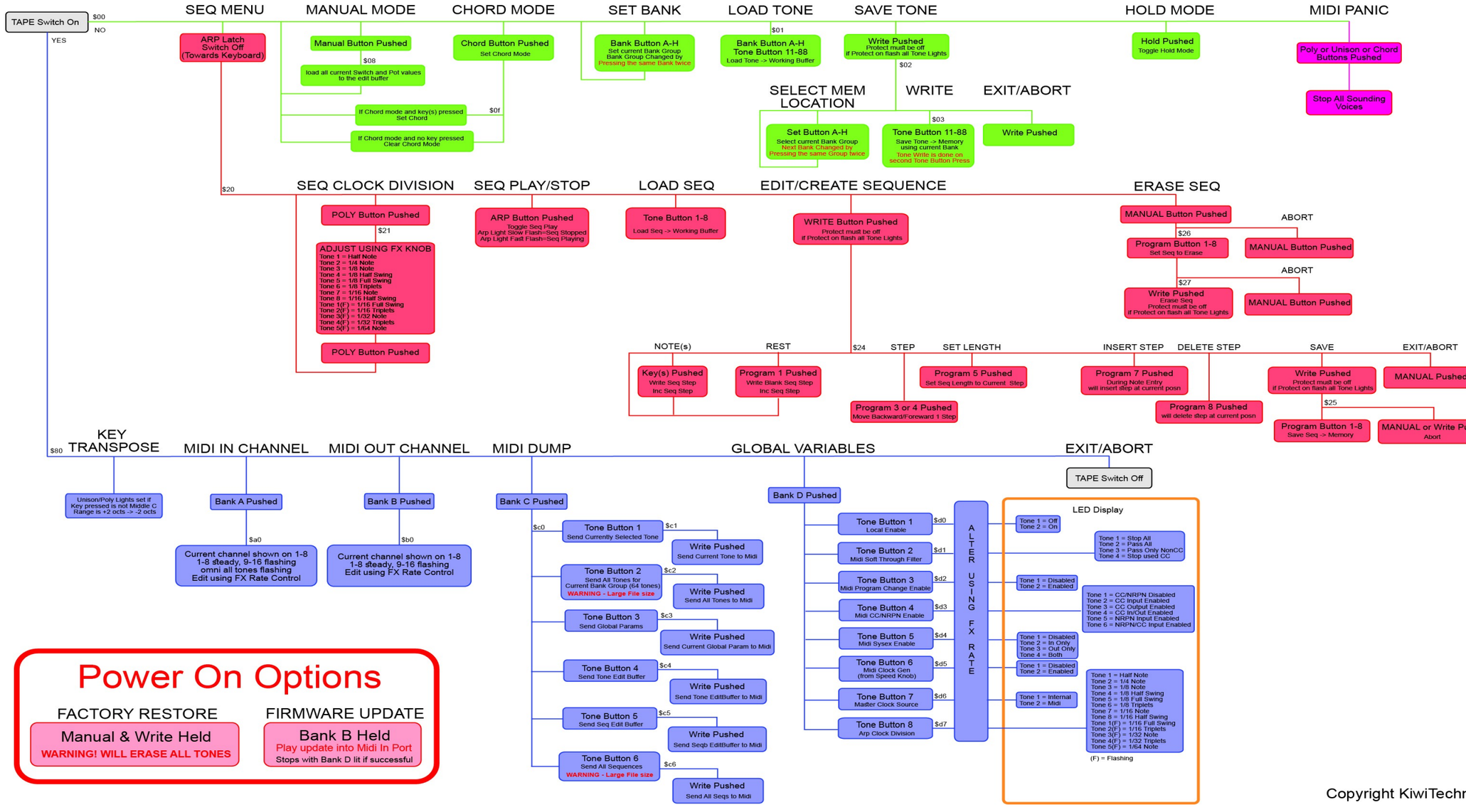
KiwiSix Features

- 512 Tones can be stored and edited. It is also possible to temporarily edit any Tone
- Tones are stored in Flash memory so no battery is required.
- MidiCC & Sysex support for all parameters and Midi Sysex support for Tone Dump & Load
- Sysex parameter control supports 12 bit for 4096 parameter steps
- Patch Editor Control of Parameters
- Polyphonic and Unison Assign Modes
- Chord Mode. Any chord with up to 6 notes can be set and played from any key
- MG & PWM LFOs have 6 waveforms - due to no front panel controls these need to be set using midi.
- The Master Clock can be internal or Midi
- The Arpeggiator can be divided from the master clock. Options are Half Note, 1/4 Note, 1/8 Note, 1/8 Note Half Swing, 1/8 Note Full Swing, 1/8 Note Triplet, 1/16 Note, 1/16 Note Half Swing, 1/16 Note Full Swing, 1/16 Note Triplet, 1/32 Note, 1/32 Note Triplet, 1/64 Note
- Arp modes are Up, Down, Up and Down, Random (midi control only), 0, 1 or 2 octaves
- 8 x 6 note x 124 step Sequences can be stored and edited. It is also possible to temporarily edit any Seq.
- Key transpose allows transposition to any key with a range of plus 2 or minus 1 octaves.
- Arp and Seq can be Started, Stopped & Continued using Midi Commands
- Appeggiator and Sequencer will Output Midi Data
- Optional Upgraded Power Supply Board

Menu Flow Chart

KiwiSix

v400 Menu Structure



Power On Options

FACTORY RESTORE	FIRMWARE UPDATE
Manual & Write Held	Bank B Held
WARNING! WILL ERASE ALL TONES	Play update into Midi In Port
	Stops with Bank D lit if successful

KiwiSix Notes

The Kiwitechnics KiwiSix upgrade has been designed to replace the existing KLM-367 board.

This manual should be used in conjunction with the existing PolySix User Guide and only the differences are detailed here.

Note: The PolySix hardware design requires capacitors in the Oscillator control area to charge before tuning is correct.

This takes about 10-12 seconds after the PolySix is powered on.

Tone Selection

The method for selecting tones differs from the Polysix. The Kiwisix supports 512 fully editable tones whereas the original Polysix had 32 tones.

Tones are stored in 8 bank groups which are accessed using the four Bank Buttons A-D. There are four 'groups' of banks and the current group is changed by pressing an already selected bank button. i.e. if Bank A is active and it is pressed again the bank 'group' will increment to the next group. If the current group is on 4 then the next group will be 1.

The current bank group is indicated as follows

Grp 1 - Bank Lights A-D are normal
Grp 2 - Bank Lights A-D are flashing

Tones are selected using a two button system. Tones in any one bank are numbered 1-1 to 8-8 making 64 tones in each bank. The first tone button pressed selects the first digit and is shown by the tone light flashing quickly. The next tone button selects the tone and it is loaded at this point.

e.g. to select Bank C tone 4-7 the button presses would be:-
Bank C, Tone 4, Tone 7

The same button sequence is used when writing a tone to memory and the actual write to memory is done on the second tone button press.

Note - The LEDs on Bank buttons B-D use a common resistor. The result of this is the LEDs will appear dimmer and will pulse if more than one is on. A fix for this is detailed in the install section of the manual.

Tone Display

The currently selected tone is displayed using two tone lights.
The first digit of the tone number displays as a flashing light and the second digit as a steady light. If both digits are the same (e.g. 3-3) then only the steady light will show.

Some examples of this in action are
Tone 4-7 will display tone 4 as flashing and tone 7 as steady.
Tone 1-5 will display tone 1 as flashing and tone 5 as steady
Tone 2-2 will show tone 2 as steady

Factory Tones

The KiwiSix comes loaded with the original Korg PolySix factory tones as well as the original Polysix alternate tone set. These can also be restored at any time if desired.

These 64 tones have been placed in Bank A1-1 -> A8-8 and the tone names are on the next page of the manual. Banks B-H have a blank tone in them which can be altered or overwritten.

Preset Section

Factory Tone Set

The Tones names are as given by Korg.

First Tone Button in left column	Second tone button 1	2	3	4	5	6	7	8
1-	Brass	Strings	Electric Piano 1	Clavichord	Acoustic Piano	Organ 1	Moon Sound	Vibraphone
2-	Synth Organ	Hi Strings	Fat Solo Sound *	Saxophone	Flute	Trombone	Guitar	Honky Tonk Piano
3-	Lead Sound *	Fat Bass *	Reggae Sound	Banjo	Electric Piano 2	Filtered Clavichord	New Wave Organ	Jazz Guitar
4-	Unison Solo Low *	Unison Solo High *	Organ 2	Chime	Sound Fall	Thin Sound	Touch Sound	Kim Carnes Sound
5-	Brass Ensemble	Mellow Brass	Oboe	Flute	Strings Orchestra	Solo Violin	Bowed Strings	Koto
6-	Electric Piano	Organ (Slow)	Organ (Fast)	Harpsichord	Clavichord	Chorus (Female)	Chorus (Male)	Steam Pipe Organ
7-	Synth 1	Synth 2	Synth 3	Slow Attack Wah Wah	Synth Bass	Synth 4	Oriental Sound	Synth Harp
8-	Whistle	Sound Effect 1	Gambang	Sound Effect 2	Sound Effect 3	Cave Echo	Sound Effect 4	Sound Effect 5

* = Set to unison

Chord Mode

A Chord is set by playing the Chord and then pressing and releasing the Chord button while up to 6 keys of the chord are being held. The chord that is set will then play for each key pressed as the base note.

Note - it is best to set the chord using middle 'C' as the base note.

As only one chord can be played at a time the keys played have lowest note priority.

Changing a chord.
To change a chord play the new chord and press and release the Chord button while the chord keys are pressed.

Canceling Chord Mode.
To cancel chord mode press and release the Chord Button with no notes pressed.

Arpeggiator

Latch Switch

The Latch Switch is used to switch between the SEQ Mode & Normal Play. When the switch is towards the keys then the Kiwisix is in SEQ Mode. The ARP button light will flash when is SEQ Mode.

Chord Mode

It is possible to arpeggiate a chord. This is achieved by first setting a chord as described in the Chord Section and then starting the Arpeggiator

Mode Switches

The Arp mode switches are stored as part of the tone. Because of this it is possible the Arp behaviour might not match the Arp switch settings on the panel.

Changing an Arp switch will set the mode to the switch setting. This can then be saved with the tone if desired.

Key Transpose

The KiwiSix can transpose the keyboard to any key up two octaves or down one octaves (three octaves in total)

This is done by switching the TAPE switch to the on position so that the LED is on and then pressing the desired key on the keyboard.
The Unison & Poly button LEDs will now show the current transpose as follows

-1 Oct	- Unison Flashing Slow
Off (middle C)	- Unison & Poly On steady
+1 Oct	- Poly Flashing Slow
+2 Octs	- Poly Flashing Fast

Note - if the tape switch is on when the KiwiSix is powered on this will be ignored. You will need to switch it off and then on again to edit the Key Transpose.

To cancel KeyTranspose select middle C so that both the Unison & Poly Lights are one without blinking.

To exit Key Transpose mode switch off the TAPE switch so that the light is off.

Midi Notes

Valid Midi data received will flash the Chord light.

Midi Panic

The Poly and Unison buttons will also act as midi Panic buttons and will stop all midi sound.

Edit Parameters

Parameters are edited by selecting the parameter type and then altering the value using the FX Rate knob. Parameter edit mode is entered by setting the TAPE ENABLE switch (SHIFT) to ON (the LED is on). Then select the parameter using the table and adjust using the FX knob. This setting will be saved automatically. Exit parameter edit mode by switching off the TAPE switch so that the LED is off.

Note - if the tape switch is on when the KiwiSix is powered on this will be ignored. You will need to switch it off and then on again to edit a parameter.

Arp Clock Division The clock for the Arpeggiator is divided from the Master Clock. The Arp Clock Divider parameter is located under Patch Button 8 in the Global Edit Area (SHIFT ON: BANK D pressed: PATCH Button 8 pressed) and is adjusted using the FX RATE knob. **This is actually a PATCH parameter and will be saved with the PATCH**.	Shift On, Bank D #8	Tone 1 On = Half Note (48/Step) (Default 1) Tone 2 On = Quarter note (24/Step) Tone 3 On = 8th note (12/Step) Tone 4 On = 8th note, 1/2 swing (14,10/Step) Tone 5 On = 8th note, full swing (16,8/Step) Tone 6 On = 8th note triplets (8/Step) Tone 7 On = 16th note (6/Step) Tone 8 On = 16th note, 1/2 swing (7,5/Step) Tone 1(F) On = 16th note, full swing (8,4/Step) Tone 2(F) On = 16th note triplets (4/Step) Tone 3(F) On = 32nd note (3/Step) Tone 4(F) On = 32nd note triplets (2/Step) Tone 5(F) On = 64th note triplets (1/Step) (F) = Flashing Adjust Using the FX Rate Knob

GLOBAL - Midi and General Settings		
Midi In Channel	Shift On, Bank A	Range 1-16 for Channels 1-16 & Omni (Default 1) Tone Lights will flash for 9-16 All Tone Lights will flash for OMNI Adjust Using the FX Rate Knob
Midi Out Channel	Shift On, Bank B	Range 1-16 for Channels 1-16 (Default 1) Adjust Using the FX Rate Knob
Device ID	Shift On, Manual	Range 1-16 for ID 1-16 (Default 1) Adjust Using the FX Rate Knob
Local On/Off	Shift On, Bank D #1	Tone 1 On = Local Keyboard Off (Default 2) Tone 2 On = Local Keyboard On Adjust Using the FX Rate Knob
Midi Soft Through Filter	Shift On, Bank D #2	Tone 1 On = No Midi Passed (Default 2) Tone 2 On = All Midi Passed Tone 3 On = Pass only non CC Midi Tone 4 On = Do not pass KiwiSix CC commands Adjust Using the FX Rate Knob
Enable Program Change Command	Shift On, Bank D #3	Tone 1 On = Program Change not sent (Default 2) Tone 2 On = Program Change sent Adjust Using the FX Rate Knob
Enable Midi CC Receive	Shift On, Bank D #4	Tone 1 On = Midi CC Receive Disabled (Default 2) Tone 2 On = Midi CC Receive Enabled Tone 3 On = Midi CC Send Enabled Tone 4 On = Midi CC Send/Receive Enabled Tone 5 On = NRPN Receive Enabled Tone 6 On = NRPN & CC Receive Enabled Adjust Using the FX Rate Knob

Enable Midi Sysex	Shift On, Bank D #5	Tone 1 On = Midi Sysex Disabled Tone 2 On = Midi Sysex Receive Only Enabled Tone 3 On = Midi Sysex Send Only Enabled Tone 4 On = Midi Sysex Send & Receive Enabled Adjust Using the FX Rate Knob
Enable Midi Clock Generation	Shift On, Bank D #6	Tone 1 On = Midi Clock not generated (Default 1) Tone 2 On = Midi Clock Generated from Internal Adjust Using the FX Rate Knob
Master Clock Source	Shift On, Bank D #7	Tone 1 On = Internal (Default 1) Tone 2 On = Midi Clock Adjust Using the FX Rate Knob

KiwiSix Upgrade Special Functions

Setting Incoming Midi Channel

The incoming midi channel can be set to any channel from 0-16. 0=Omni 1-16=channel number
This is set using the Global Parameter Edit A

Setting Outgoing Midi Channel

The outgoing midi channel can be set to any channel from 1-16.
This is set using the Global Parameter Edit B

Factory Restore 1

Programs Bank A11-A88 (first 64) can be restored to factory original by the following actions
1) Set 'Tape Enable' Switch On. The Tape enable Light will turn on
2) Press 'Bank D' button. The 'D' light will start to flash
3) Press 'Tone 8' button. The Tone 8 and Write buttons will begin to fast flash.
4) Press Write to start restore or Set Tape Enable Switch Off to cancel
Only Programs 1-64 (Set 'A', Bank/Tone 11 to 88) are overwritten and Write switch must be set to Enable.
The KiwiSix will stop responding for a short period while the restore is being done.

Factory Restore 2

Programs 1-1024 can be restored to factory settings by the following action
Press and hold Write and Manual while powering the KiwiSix on.

WARNING - There will be no confirmation and all Tones will be cleared.

The Memory Protect must be set to off. All the global parameters will also be set to the default settings. The Kiwisix will stop responding for 10 seconds while the restore is being done.

KiwiSix Upgrade Special Functions

Program Update

The KiwiTechnics KiwiSix Upgrade has built in ability to update the firmware should updates become available. This section is entered by pressing the Bank B (Load) button while the KiwiSix is powered on. The Update file is then 'played' into the KiwiSix using midiOX or similar program. The update progress is displayed on the Tone Lights. Once complete the Bank D button will light and the KiwiSix should be repowered.

WARNING - If this procedure fails the KiwiSix could be rendered unusable and will require a replacement CPU board from KiwiTechnics. Use at your own risk.

The current releases are displayed on the Tone Selector lights for about 1 sec at power on. Tone 1 - 6 display the program release and 7 - 8 display the Bootloader release. e.g. Tone 2, 3 & 7 would mean Prog v2.3 and BL v 1

KiwiSix Upgrade Sysex Dumps

Current Tone Dump

The currently selected tone can be dumped to midi by using the following keys
while shift mode is on (tape switch and LED is on)
Bank C, Tone 1, Write. This file will load to the same position in memory when loaded into the KiwiSix

All Tones Dump

All tones can be dumped to midi by using the following keys while shift mode is on (tape switch and LED is on)
Bank C, Tone 2, Write. This file will contain 512 Tones. These tones will load to the same positions in memory when loaded into the KiwiSix. Note - this is a large file.

Global Parameters Dump

The global parameters can be dumped to midi by using the following keys
while shift mode is on (tape switch and LED is on)
Bank C, Tone 3, Write. This file will dump all the global variables (midi channels etc)

Edit Buffer Dump

The current edit buffer can be dumped to midi by using the following keys
while shift mode is on (tape switch and LED is on)
Bank C, Tone 4, Write. This file will load into the edit buffer only when loaded into the KiwiSix.

Seq Edit Buffer Dump

The current sequence edit buffer can be dumped to midi by using the following keys while shift mode is on (tape switch and LED is on)
Bank C, Tone 5, Write. This file will load into the sequencer edit buffer only when loaded into the KiwiSix.

All Sequences Dump

All 8 stored sequences can be dumped to midi by using the following keys
while shift mode is on (tape switch and LED is on)
Bank C, Tone 6, Write. This file will load into all the Sequence buffers when loaded into the KiwiSix. Note - this is a large file.

Sequencer

The KiwiSix Upgrade contains a polyphonic sequencer that has the capacity of 124 step automatic playing. Up to 6 notes can be played at a time so writing a chord is possible.

Sequencer Mode is entered by setting the ARP LATCH towards the keyboard of the synth.

The ARP button will Slow Flash.

The clock for the Sequencer is taken from the Master Clock and can be further divided using the Seq divider Edit when in Seq Edit mode. The Seq Clock Divide parameter is located under the POLY button while in Sequencer Mode.
Possible Sequencer division types are

Half Note (48/Step)
Quarter note (24/Step)
8th note (12/Step)
8th note, 1/2 swing (14,10/Step)
8th note, full swing (16,8/Step)
8th note triplets (8/Step)
16th note (6/Step)
16th note, 1/2 swing (7,5/Step)
16th note, full swing (8,4/Step)
16th note triplets (4/Step)
32nd note (3/Step)
32nd note triplets (2/Step)
64th note triplets (1/Step)

Note - If the Master clock source is set to Midi Clock and no midi clock is present the sequence will not run.

Note - If the master clock source is midi the sequence will not begin playing until the first clock is received

PATCH Buttons

The patch buttons will select the sequence to play. If a sequence is selected while a sequence is playing the currently playing sequence will finish before the new sequence is loaded.

ARP Button

This button is used to start or stop the sequencer playing while in Sequencer mode. Each time you press this button the sequencer will start or stop. When the synth is in Seq Mode the Arp light will flash slowly when the Seq is stopped and flash fast when the Seq is playing

MANUAL Button

This followed by the seq number (Patch button 1-8) followed by the WRITE button is used to erase a sequence. After the Seq number is selected the erase is done when the write button is pressed. Press MANUAL to abort.

Step Display

During Sequencer editing and Sequence play the current step is displayed on the BANK & TONE lights as follows:

Step 1-8	Step on TONE only
Step 9-16	Bank A + Tone
Step 17-24	Bank B + Tone
Step 25-32	Bank C + Tone
Step 33-40	Bank D + Tone
Step 41-48	Bank A Slow Flash +
Step 49-56	Bank B Slow Flash +
Step 57-64	Bank C Slow Flash +
Step 65-72	Bank D Slow Flash +
Step 73-80	Bank A Fast Flash +
Step 81-88	Bank B Fast Flash +
Step 89-96	Bank C Fast Flash +
Step 97-104	Bank D Fast Flash +
Step 105-112	Bnk A-D All On +
Step 113-120	Bnk A-D Slow Flash+
Step 121-124	Bnk A-D Fast Flash+

A) Writing/Editing

The memory protect switch on the PolySix must be set to Off to write or erase a sequence

The only way to erase or blank a sequence is by using the Seq Erase Option (While in Seq Mode, press MANUAL, Seq number, WRITE - see the menu map). **If you choose an existing sequence when Seq Write is pressed then any step(s) you write will overwrite all notes in the existing step(s) already in the sequence.** The BANK 3 (backwards) and BANK 4 (forwards) buttons will allow non destructive stepping within a sequence.

e.g. if the existing sequence is C, D, E, F, G and you step to the second step (D) and play the chord C E G the resulting sequence will now be C, D, CEG(chord), F, G. You will have overwritten the third step. You step to the step before the step you want to overwrite as each step write is to the next available step. This is done so that initial note entry will always put the new step after the last step in the sequence.

Note – When Sequence Edit Mode is entered a generic Tone is loaded for editing. The last used Patch will be reloaded on exiting Sequence Edit Mode. **Any temporary edits made to a Patch will be lost when Sequence Edit Mode is entered.**

You can write the pitch by playing the keyboard (or midi keyboard), and the rhythm by pressing the Rest button.

(1) Find the shortest time value in the phrase you wish to write. Then divide the longer time values by that shortest one.

(e.g)

2) Press the WRITE button to begin Seq write/edit.

(3) By playing the keyboard and using the Rest button, write steps one after another.

Note - if more than 6 notes are used in one step only the last 6 notes used will play.

(4) If writing is complete press the Write button followed by a Tone button to Save the Sequence to permanent memory or the MANUAL Button to exit edit mode. The ARP button will start the sequence playing on the next clock received. If the Seq is not written to memory the sequence will be lost if the PolySix is powered off or another sequence is loaded. Pressing the ARP button again will stop the sequence playing and the indicator will go out. (refer to **Sequencer Playing** in the next section)

(5) Return the Memory Protect Switch to the Off Position.

Button use in detail

Bank 1 – Rest

When the Bank 1 button is pressed while in edit mode a blank step will be inserted at the current sequence step. Note - this button can only be used if no notes are being pressed.

Bank 2 – Tie

Due to the fact that the PolySix has hardware envelopes it has proved to be too difficult to implement a Tie system in the KiwiSix. This button is ignored

Bank 3 – Step Back

When the Bank 3 button is pressed while in edit mode the sequence will step back one position if possible and sound the step.

Note – the next step to write will be after the step that sounds as a step write is always made to the next memory location. It is done this way so that the Seq will grow as you play notes. i.e. is you want to change step three in your sequence step back until step 2 sounds (and shows on the step display) then play the note(s) you want in step three.

Bank 4 – Step Forward

When the Bank 4 button is pressed while in edit mode the sequence will step forward one position if possible and sound the step. If the Seq is positioned on the last step the next note entered will be placed after the last step making the seq one step longer.

Bank 5 – Set Length

When the Bank 5 button is pressed while in edit mode the sequence length will be set to the step showing on the display. The step showing will be the last step to play and all steps after this will be erased.

Bank 6 – Not Used

Bank 7 – Insert Step

When the Bank 7 button is pressed while in edit mode and notes are being held the sequence step is inserted at the current step that is showing on the display. Note – if the sequence is full (124 steps) the last step will be lost when the Bank 7 button is pressed.

Bank 8 – Delete Step

When the Bank 8 button is pressed while in edit mode the sequence step that is showing on the display is deleted and all steps after this point are moved up one position.

B) Playing

Load Sequence

A Sequence can be loaded by pressing a Patch Button 1-8 while in Sequence Mode (Arp Latch is in the ON position). The Sequence that is stored under the Patch button selected will be loaded to memory

If you press the ARP button while in Seq Mode the indicator will fast flash and the data written into the sequencer will be played. The first note of the sequence will only sound once a clock has been received. This allows a seq to be queued to start. When all the notes are played the data will return to the beginning and be played again from the start. Pressing the ARP button once more (it's indicator will slow flash) will stop playing immediately. The tempo of the playing will be determined by the master clock source and the Seq division factor. If the clock source is the Internal Clock then the Master Clock tempo will be set by the Poly Six SPEED knob. The SPEED Knob will have no effect if the clock source is midi clock.

* If you stop the Sequence part way through and then restart it the data will start from the beginning.

* If you wish to only play the data once, put some rests are the end so it is easier to stop the sequence in the correct place.

The clock for the Sequencer is divided from the Master Clock. The Seq Clock Divider parameter is located under POLY button and adjusted using the FX Rate knob while in Seq Mode.

A sequence playing will follow the same key transpose that is set in the KiwiSix. By starting a sequence and then switching to SHIFT mode by turning on the TAPE switch it will be possible to shift a playing seq transpose.

If the HOLD button or pedal is pressed (with the hardware mod done) then any played notes will hold but not seq notes. This can be useful for playing along with a sequence.

Arpeggiator

The KiwiTechnics KiwiSix Upgrade has a built in Arpeggiator that can be applied to any sound including the Sequencer output.

Arpeggiator Mode is entered by pressing the ARP Button while not in Seq Mode (the ARP LATCH is towards the rear of the synth (OFF)).

The ARP button will light.

Note – The Arp settings are saved with the Patch. i.e. if the Arp is on when the Patch is saved it will be on when the Patch is loaded

The clock for the Arpeggiator is divided from the Master Clock. The Arp Clock Divider parameter is located under Patch Button 8 in the Global Edit Area (SHIFT ON: BANK D pressed: PATCH Button 8 pressed) and is adjusted using the FX RATE knob.

The behavior or the Arpeggiator is set using the RANGE & MODE switches. These are saved with the Patch.

Note - If the Master clock source is set to the Midi Clock the Arp will not play if the midi clock is not present.

Canceling Arpeggiator Mode.
Arpeggiator mode can be stopped by pressing the ARP button while not in Seq Mode. The ARP button light will go out.

Note - If the Arpeggiator notes held are spread over more than 1 octave and more than one octave is selected in the Arp Range the notes played will be as follows. All the first octave notes held will play followed by the same pattern moved up one or two octaves. The result of this will be the first note of the second pass can be lower than the last note of the first pass. This can sound odd if you have selected one direction for the Arp Mode.

If the Arp is run while a Seq is playing the Arp can be applied to a Seq output.

If the Arp is on (ARP light on) when a Patch is saved the Arp will be switched on when the Tone is loaded. If the Arp is off when a Patch is saved the Arp state will be unaltered when that Patch is loaded.

Setting up with External Devices

External Clock

The external clock input on the rear of the Polysix synth will override the internal clock if anything is plugged into this input. This is a mechanical switch and cannot be overridden in the firmware.

Any clocks fed into this input will be divided by the Arp & Seq clock divider settings.

Midi Notes

Midi though should be used if multiple units are being used on the midi chain to reduce delays. While every effort has been made to make the midi as fast as is possible within the KiwiTechnics KiwiSix upgrade there will always be small delays between the midi input and midi output as the commands need to be interpreted which cannot be done until a full command arrives. Full midi command details are at the end of the manual.

Hold Pedal

Any pedal that shorts the tip to ring when pressed can be used. It will need to short when pressed to suit the Korg PolySix hardware. A hardware mod needs to be made to the PolySix voice board to allow a HOLD pedal to be used. Details are in the install section of this manual.

KiwiSix Upgrade Install Instructions

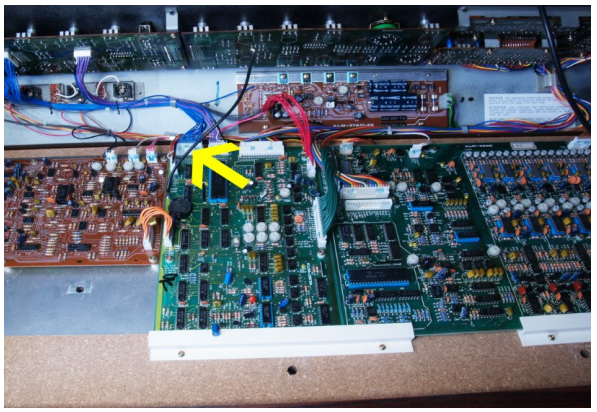
Disclaimer.

This modification is at your own risk and Kiwitechnics will not be held liable for any damage done by not doing this modification correctly.

If you are in any doubt at all or do not understand any part of this document then have this work done by a professional.

UNPLUG THE POLYSIX!

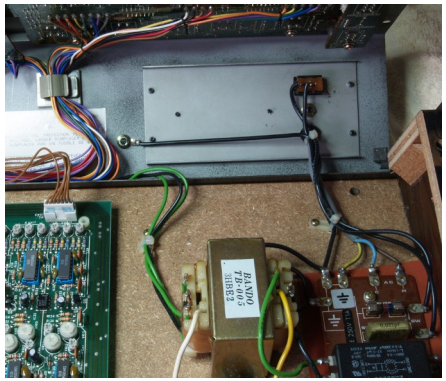
There are dangerous voltages inside the unit and it must not be opened until the power plug is removed from the power supply.

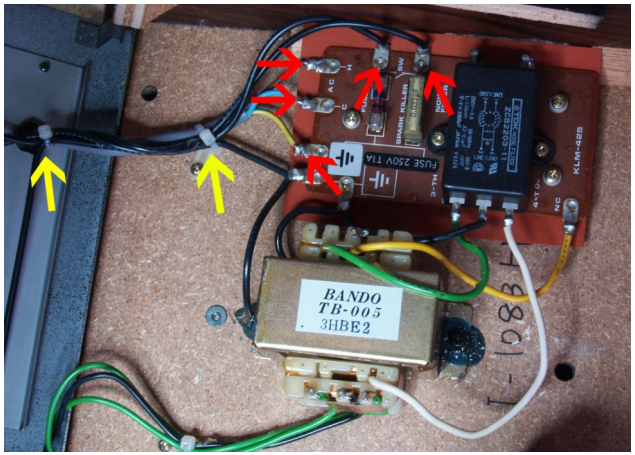


1) Rear Panel Install

a) Open the PolySix case by removing the four screws located on the top of the front panel ends (two are at each end) and the four screws on the underside along the rear of the unit. The top will then hinge up. This will be limited by a think black wire running from the KLM-367 board to the top panel (yellow arrow in photo). This can be cut as it will be removed during the install.

b) Remove the Keyboard. This is done by removing the plug with the black and white wires (yellow on early models) to the keyboard from the KLM-366 board (CN04) and the five large screws on the underside front. The five screws are in two rows with three located nearest the front edge of the Polysix and two nearer the center. The Photo shows the keyboard already removed and the empty socket can be seen just to the right of the KLM-367 Board. Some of the holes that the keyboard screws use are visible in the photo.

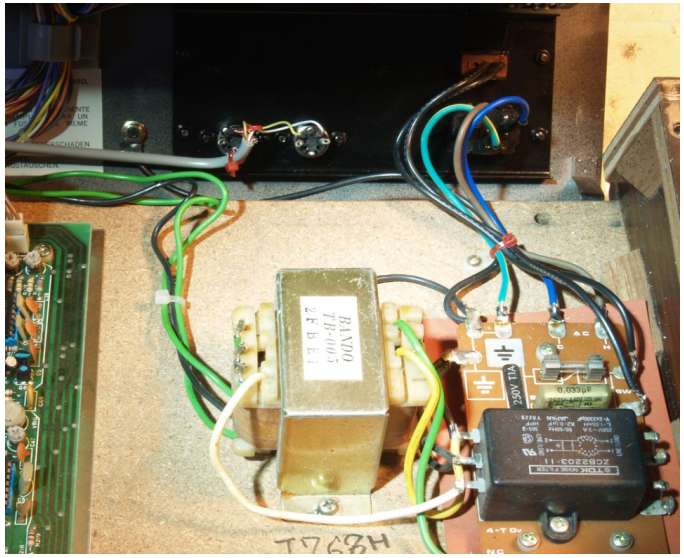




c) Remove the Power Panel. The left photo shows the panel as it is in the later production PolySix. The other photo shows the cable ties that will need to be cut with yellow arrows and the wires that need to be unsoldered with red arrows before the panel can be removed. For units that have a two wire power cable the ground wire will be missing. Once this is done the rear panel can be unscrewed with the four black screws and removed. Retain these four screws for screwing on the replacement panel. Also remove the serial number plate by undoing the two screws. The serial number plate screws will not be used again and can be discarded.

For early production models the Ground cable is connected to the plate being removed. See the note on the next page for instructions for these models.

d) Remove the power switch from the old panel by squeezing the ends and pushing it out of the panel. Put this in the new panel with the red printing on the switch to the top (away from the base). Do this by feeding the wires through the hole and pressing the switch into the hole.

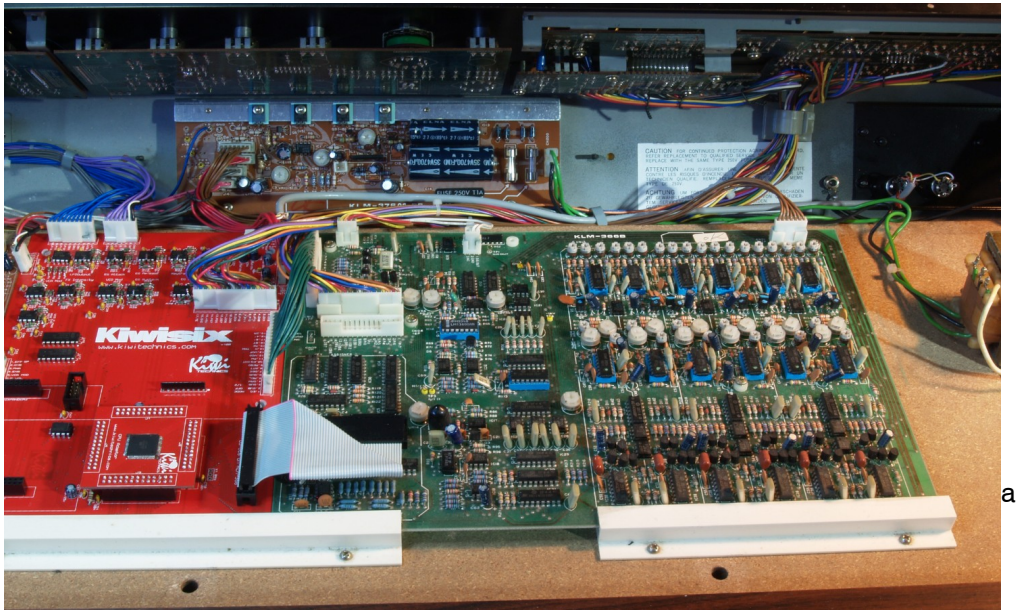


e) Put the serial number plate onto the new panel using the two new screws provided.

f) The new power plate can now be fitted by screwing it on using the four screws that were removed in step c.

g) Solder back on the two black wires from the switch to the same two points they were removed from. These are marked SW on the board and show a graphic of a switch. It does not matter which way around these go.

h) Solder the three wires from the new IEC power socket to the board. The green earth wire goes to the earth pin marked on the board (this is nearest to the transformer - see photo). For synths that had a two wire power cord solder to the unused earth terminal (usually the one closest to the transformer) The blue wire goes to the terminal marked 'C' (Cold or Neutral) and the brown wire goes to the terminal marked 'H' (Hot or Live). Make sure all these wires are well soldered so that they cannot come loose.

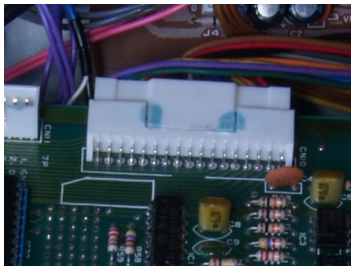


i) Run the midi ribbon vable along the existing wires to the KLM-367 board and clip it under the existing cable clamp along with the other wires. The photos show an early type of rear panel and the latest one have a small circuit board and ribbon cable.

Note for early version models. The ground cable on the early version polysix is mounted onto the power plate and not the chassis as on the later model. It will be necessary to drill a 4mm hole in the same position as in the later version polysix (see photos) and remove any burrs. Burr removing can be done be using a larger drill. Next mount the ground cable to this using the bolt, lock washer, ground tag and nut removed from the old power plate (in this order). This needs to be tight to ensure good ground connection. Carefully remove all metal fragments from the drilling from the synth.

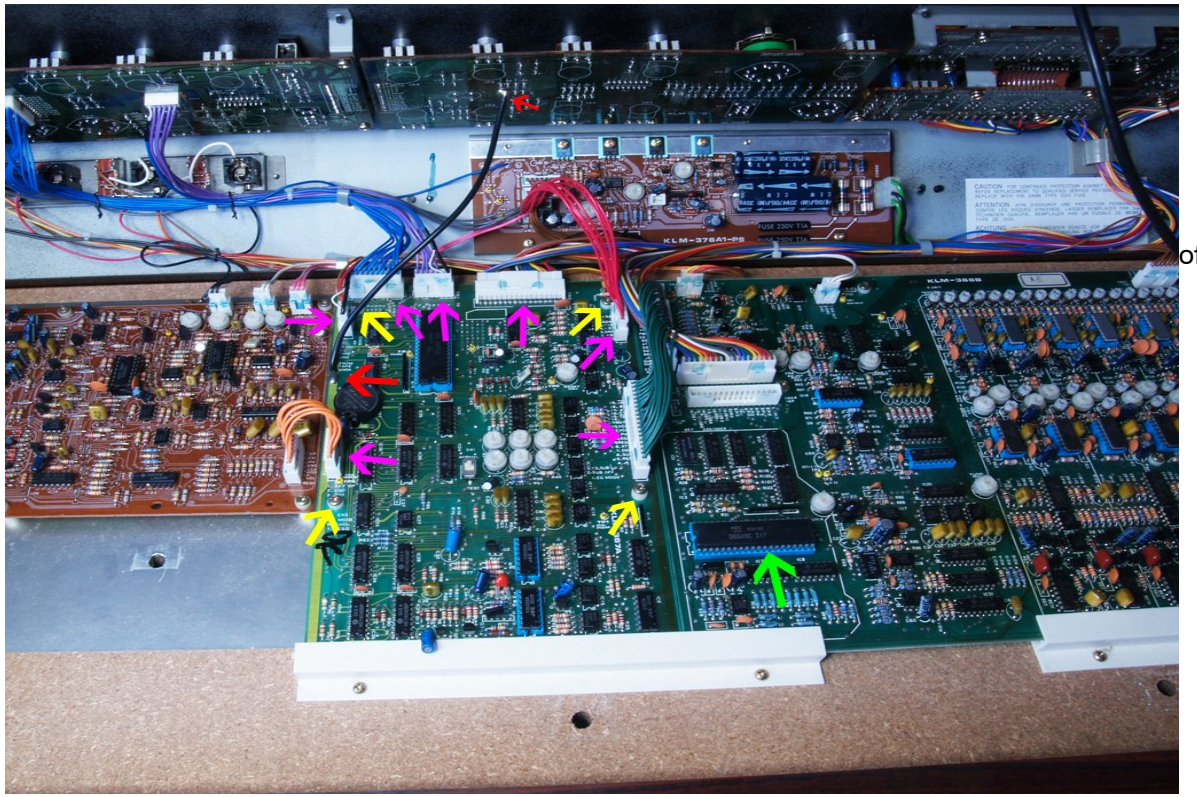
a

2) KLM-367 Replacement



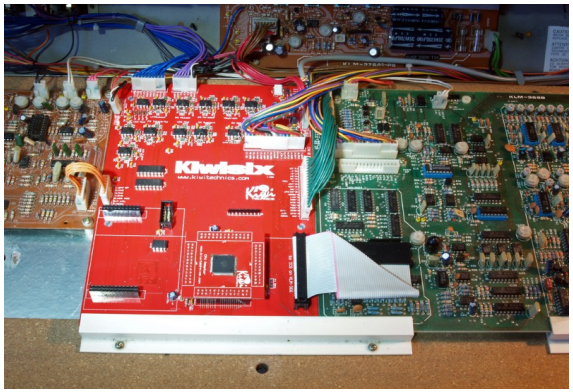
a) The first step is to unplug the existing plugs from the KLM-367 board. If the Polysix has never been serviced or the plugs never removed before this can be difficult as Korg have sealed each connector with a type of varnish to stop them coming apart and this must be broken before the cable plug can be removed. This varnish is blue in colour as shown in this photo.

b) Once all the plugs are removed (purple arrows) remove the black wire by unsoldering both ends at the red arrows. The board can then be unscrewed and removed from the Polysix by removing the four screws marked with yellow arrows and sliding it out the front plastic channel. Retain the four yellow arrow screws as these will be used for the KiwiSix board.



of

c) Remove the KLM-366 40 pin cpu located in the blue socket marked with the green arrow. This is easily done using a small flat blade screw driver fitted between the cpu and the socket at each end.



d) Fit the KiwiSix board in the same position and screw in using the four screws that were removed from the KLM-367 in step b. The Kiwisix board in the photo is an early version and will differ slightly.

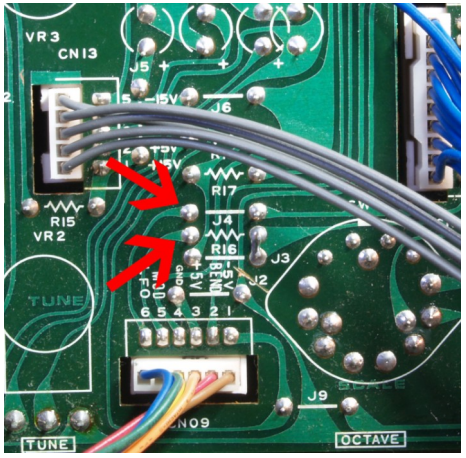
e) Plug in the cable to the KLM-366 40 pin cpu into the blue socket. Be very careful that the pins are all in in the holes before pressing in. If a pin is not in the hole it will bend and most likely break. This will then require a replacement cable from Kiwitechnics. The other end of this cable plugs into the Kiwisix board as shown in the photo.

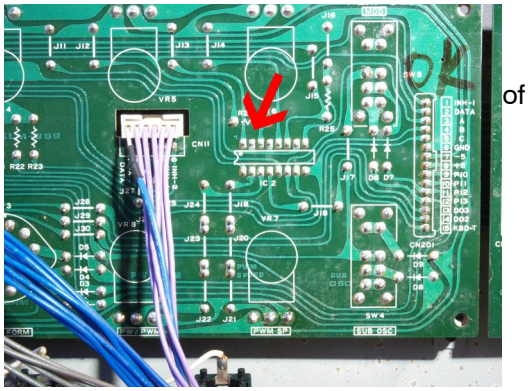
f) Plug in all the cables that were removed in step a. These are best started at an angle and then straightened as they are pushed on. This ensures that the pins go into the socket correctly. If a plug will not go on all the way then try again until it will. Note that the CN10 cable has moved to the center of the board and is now straight up. The brown wire goes to the right side of CN10 as viewed from the front.
VERY IMPORTANT! Make sure the plugs are correctly on ALL the pins. As it is possible to put the plug in any position the Plug must be placed so NO pins are visible at either end and it hasn't been reversed. Damage to the Polysix could occur if plugs are placed incorrectly.
The Kiwisix Upgrade board should now look like the photo. Make sure all the cables are the correct way around and correctly on the plugs.

g) Plug in the midi cable to the midi connector on the KiwiSix board (CN99). This is keyed and can only be plugged in the correct way around.

h) The keyboard can now be replaced by placing it back into the Polysix and fitting the 5 screws that were removed in step 1-b. Reinsert the keyboard cable into the socket in the KLM-366 board.

3) KLM-369 Front Panel





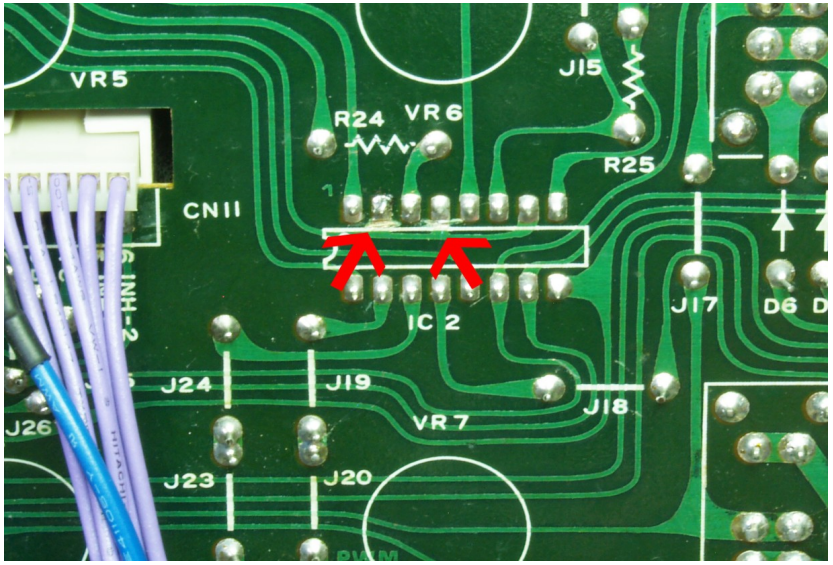
The Bend, Fine tune and mod wheels need a modification to make them midi compatible. On our test Polysix we found it it difficult to remove some of the front panel knobs without damage, Because of this instructions are given to make the changes required with the board in place.

a) locate jumper J4 and R16 (470K next to J4) and R18 which are marked with the red arrows (R18 is next to R17 and is hidden in the photo behind the gray wires).

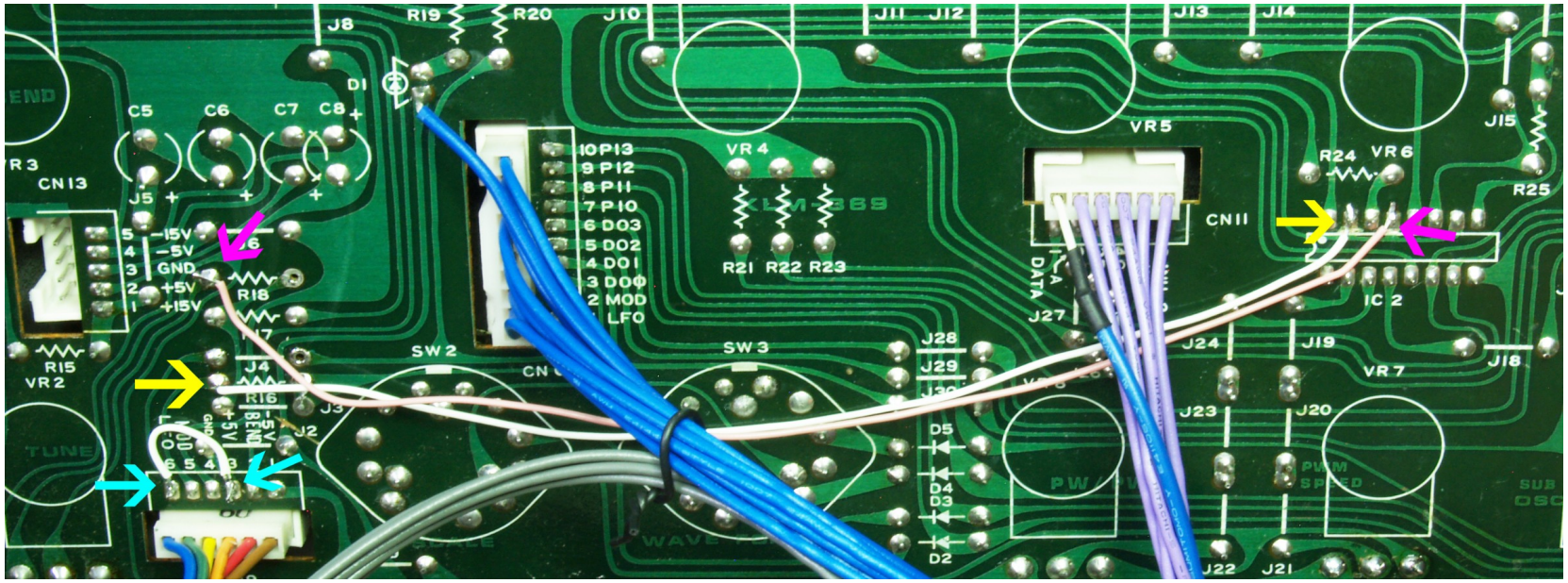
b) desolder these (J4, R16 & R18) and push them out of the holes using a pin and let then fall off the board. Recover these from the synth and remove.

c) Locate IC2 (red arrow in right photo).

d) Cut the trace between -5v & pin2 and the -5v and pin 4 of IC2. This is done underneath IC2 where the -5v track runs down the center of IC2 and links pin2, pin4 & pin 7. Cut the track neatly between pin 2 and the track and pin 4 and the track leading to pin 7 (arrows in photo shows cuts already made). Pin 7 needs to stay connected to this track so cut carefully. To make sure you have cut correctly make sure there is no short between pin 7 and pins 2 & 4 using a DVM.



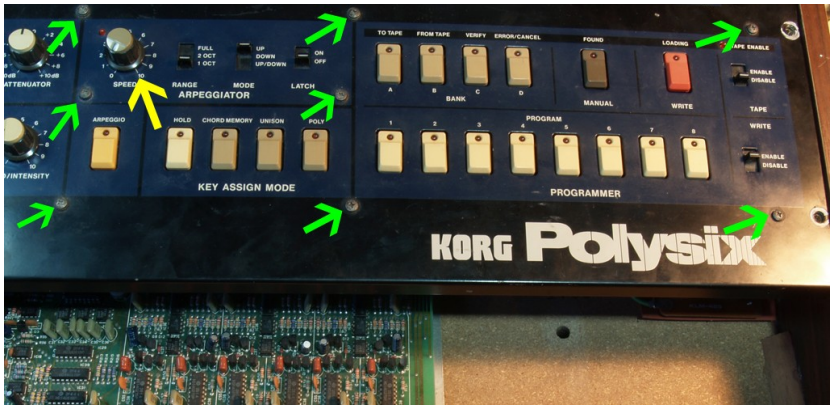
e) Add the short supplied wire between CN09 Pin 3 & pin 6 (Blue arrows). Add the one of the longer wires between IC2 pin 2 and CN09 Pin5 at the end of R16 (yellow arrows) and the other longer wire between IC2 pin 4 and the left end of R18 (purple arrows). The gray wires to CN13 have been removed in the photo for clarity.



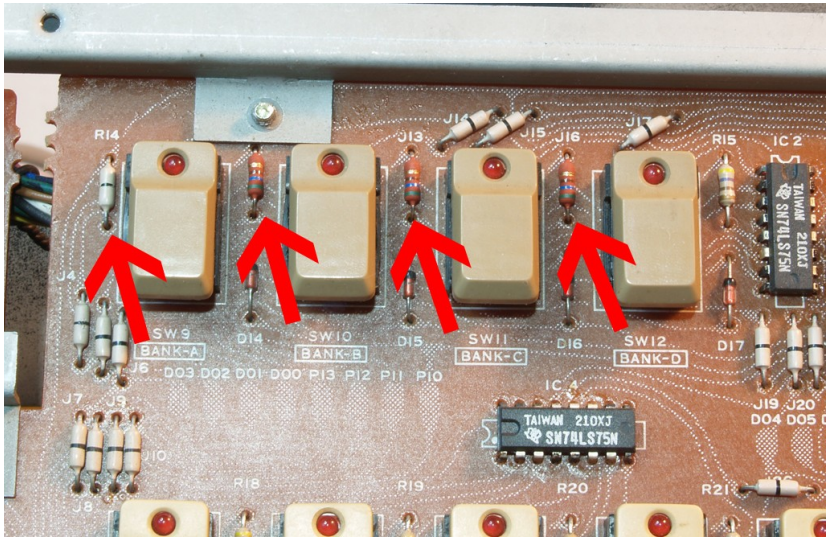
4) KLM-371 Mods

The LED's for the Bank buttons A-C share a common resistor. This is fine if only one light is on at a time but is not ideal for the upgrade. The Kiwisix upgrade uses these lights in combinations to show Bank Groups and the Bank A-C will show activity on the other lights and will also be dimmer that the others. This can be fixed by fitting the three supplied resistors and fitting a jumper in place of R14 on the KLM-371 board.

a) Remove the Arp Rate knob (yellow arrow) and the nut that is under this on the pot shaft. Remove the KLM-371 board by removing the front panel screws marked with green arrows.



b) Desolder and remove R14, J12, J13 & J16 (red arrows). Use one of the removed jumpers (J12, J13 or J16) to fit a jumper in place of where R14 was and use the 470R resistor in J12. Then fit the two supplied resistors in the J13 & J16 positions (see photo).



c) Refit the front panel boards by replacing the screws, the arp nut and then the knob.

5) PolySix Adjustments

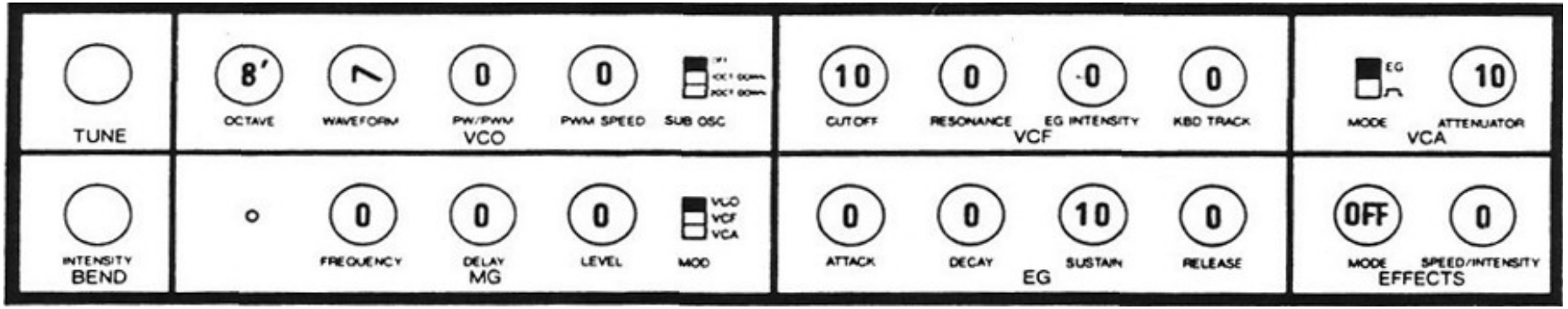
THE POLYSIX WILL BE ON WITH THE LID OPEN DURING THIS PROCEDURE AND THERE ARE LETHAL VOLTAGES PRESENT!

LEAVE THIS TO A PROFESSIONAL IF YOU ARE AT ALL UNSURE.

The Korg Polysix can be adjusted and retuned while it is apart. To do the adjustments you will require an accurate digital voltage meter, an oscilloscope , a small screwdriver and something to measure tuning. I can recommend AP Tuner (http://www.aptuner.com) for windows based computers. The Polysix voices are cyclic. The same note replayed will choose the next voice to sound. It is done this way so that note release times are not chopped off when the next note is played. The voice that is currently being gated is shown by a red led on the voice board.

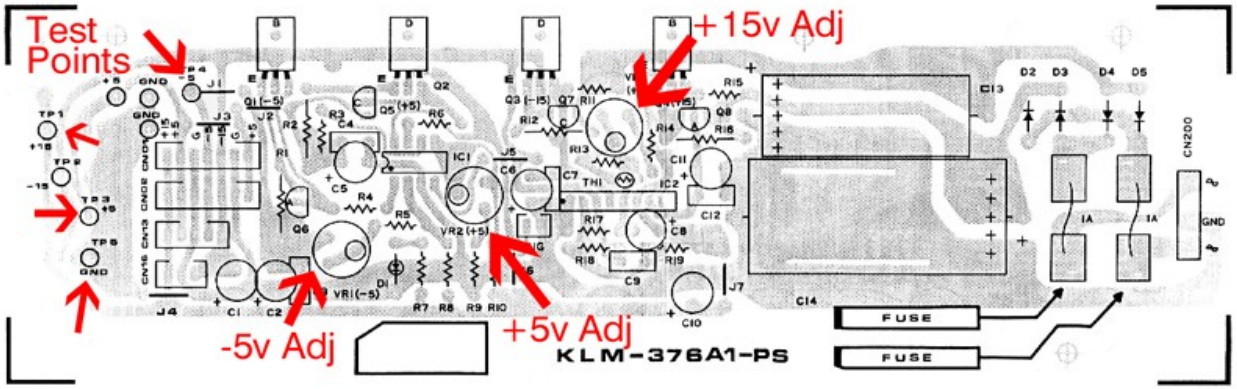
1) Warm up the Polysix

Leave the Polysix running for at least 15 minutes with the top closed to let the electronics stabilize. Set the front panel to the Normal setting. Also center the Tune Knob and set Bend Intensity to 0.



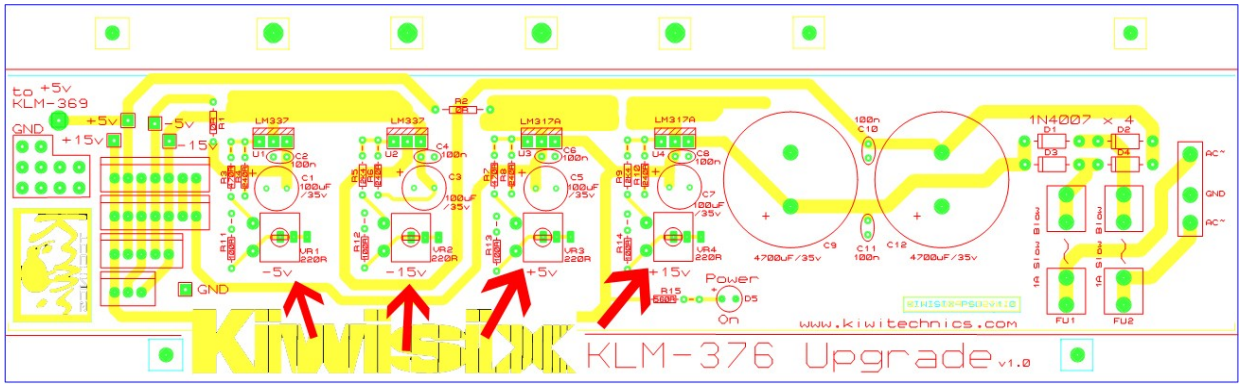
2) Power supply adjustment (original PolySix power board).

Using an accurate 4 1/2 digit or better DVM check and trim the +15v, +5v and -5v power in this order. The test points for connecting the DVM are clearly marked on the power supply board. To adjust these you will require a small screwdriver. The +15v should be ±50mv and the +5v and -5v should be ±10mv.



2) Power supply adjustment (KiwiSix upgrade power board).

Using an accurate 4 1/2 digit or better DVM check and trim the +15v, +5v, -15v and -5v power in this order (red arrows). The test points for connecting the DVM are clearly marked on the top left of the power supply board. To adjust these you will require a small screwdriver. The +15v and -15v should be ±50mv and the +5v and -5v should be ±10mv.



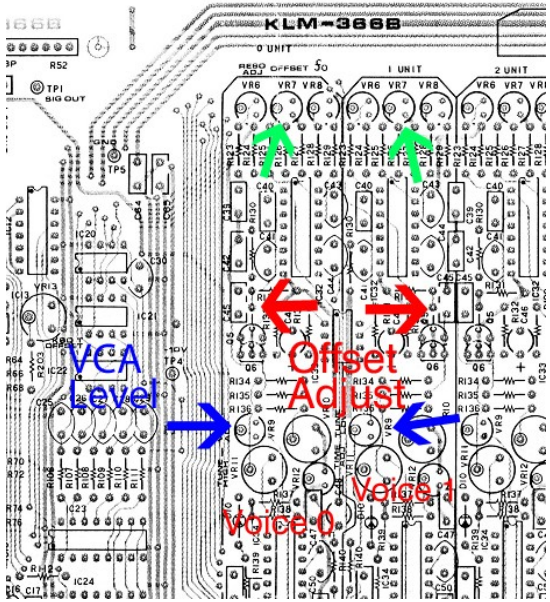
KLM-366

3) VCF Offset Adjustment

Obtain ground at TP5 (upper left of picture). Set the Waveform to PW and PWM to 10. Connect the DVM to the collector of Q5. For each voice adjust VR7 (green arrow) so that 0v is is measured at the collector of Q5 (Red arrow) (see diagram). The voice 0 & 1 are shown in the picture and the other voices are the same.

4) VCA Level Adjustment

Set Octave to 4. Leave other settings at the normal settings. Connect the oscilloscope to TP1 Signal Out (top left in picture). Play C3 (1 oct below middle C) and adjust VR9 (blue arrow) to obtain a 1v peak to peak waveform at TP1 (±5%). Do this for each voice.



5) VCF Resonance Adjustment

Obtain ground at TP5. Set the Octave to 8, Waveform to PW and PWM to 10. Measure CN05-7 (on the voice board or CN05-13 on the KiwiSix Board) using the DVM and adjust the VCF cutoff control to as close as you can get to 0.000v. Check CN05-11 (on the voice board or CN05-9 on the KiwiSix Board) with the DVM and adjust the Resonance control as close as you can get to 8.000v. Connect the oscilloscope probe to TP1 Signal Out (top left in the last picture). Play any single key and adjust VR6 (left of VR7 - green arrow) to obtain 300mV peak to peak ±20mV. Repeat this for each voice.

6) VCF Cutoff Adjustment

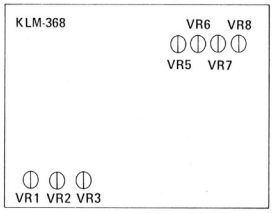
Set Resonance to 10 and leave the other settings the same as in step 5. Play any key and adjust VR8 (right of VR7 - green arrow) for a frequency of 523Hz (C4) (±10 Cents). Repeat for each voice.

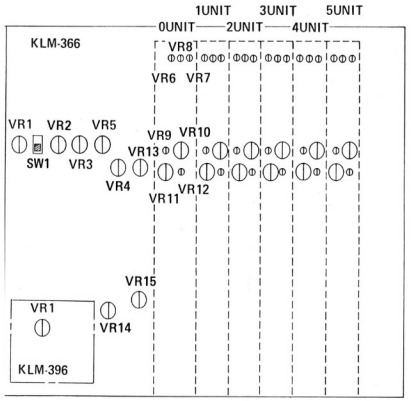
7) VCF EG Intensity Adjustment

Set Waveform to PW and PW/PWM to 10, Cutoff to 0, Resonance to 10, EG Int to + 5. Leave others at normal setting. Play any key and adjust VR4 to obtain 5kHz (±500Hz) (200uS for a full wave cycle on the oscilloscope). VR4 is located near the right hand end of CN12 and is marked EG INT ADJ on the board.

8) VCF Keytrack Adjustment

Set Octave to 16'. Connect DVM to CN05-6 and adjust VCF Keytrack to obtain +1.6v. Leave the other settings as in step 7. Adjust VR5 so that playing the bottom C to the next C up sounds like a scale. VR5 is located next to VR4 and is marked KBD T ADJ on the board.





(※ VR2, VR13, VR14, VR15→NEW PRODUCTION.)

9) Voice Pitch Tuning

Here's where the fun really starts. Center the master tuning controls VR1 (Adj Center), VR2 (Tune High), VR3 (Tune Low), VR14 (D#4-E4 Adj), VR15 (Tune Mid) and the tuning knob on the front panel. VR14 is not present in the early production models and VR15 (Tune Mid) is mounted on the KLM-396 daughter board.

Set Octave to 4' and all other controls at the normal settings. Set the slide switch between VR1 and VR2 so that it is towards the rear of the P6 (away from CN12). This is the 'normal' tuning position. The other position is for stretch tuning.
a) Play C5 (second top C) and adjust VR11 (next to the blue arrow for each voice) to obtain C7 0 cents. Repeat for all voices. If any of the voices are outside the trim range then adjust VR2 which will adjust all the voices. This will require all the voices to be redone.
b) Play C2 (second lowest C) and adjust VR1 (next to the switch) to obtain 0 cents. Do this for one voice only. VR1 should be close to the center position, if it is out of range try a combination of VR1 & VR15.
c) Set Octave to 16' and play C2. Adjust VR10 (next to VR11) to obtain 0 cents. Repeat for all voices. VR3 is used to correct deviation in all voices
d) check other octaves. If they are out of tune you will need to try adjusting VR14 (D#4-E4 Adj) and VR15 (Tune Mid). Each time you adjust one of the master settings (VR1, VR2, VR3, VR14, VR15) all the voices will be effected and you pretty much need to start from a) again.

Get things as close as you can and it will not be possible to get every voice tracking exactly over the full range as each voice has it's own oscillator, and after all this is part of the Polysix analog charm and unique sound.

10) EG Time Adjust

Check CN05-12 (on the voice board) with the DVM and adjust the EG Attack control to as close to +0.9v as possible. Set Sustain to 0. Leave other controls at the normal setting. Connect the oscilloscope to the end nearest the rear of the p6 of R143 (next to IC35 that is between each voice pair). Set Arpeggio to on, Arpeggio speed to 2.5, Hold on and Unison on. Play any single key and adjust VR12 to obtain an attack time of 250mS ±10mS. Repeat for each voice.

The SW1 switch can be left at the rear position for normal tuning or set to the forward position for stretch tuning.

KLM-368 Adjustments

1) Headphone Amp Offset

Use normal settings. Connect a DVM to TP-4 (GND is TP-6). Adjust VR6 to obtain offset of 0mV (± 20mV)

2) Headphone Amp Level

Set Octave to 4'. Connect oscilloscope to TP-4. Play C3 and adjust VR5 to set sawtooth waveform to amplitude of 0.3V p-p (± 5%)

3) Output Amp Offset Adjustment

Set Waveform to PW and PW/PWM to 10, MG Frequency to 7, MG Level to 10 and MG MOD to VCA. Check SIG OUT (TP5) with the oscilloscope. Adjust VR7 to minimize waveform amplitude (less than 0.2v peak to peak).

4) Output Level Adjustment

Set Octave to 4' with other settings at normal. Play C3 and adjust VR8 to obtain an output of 3v Peak to Peak at SIG OUT (TP5) (±5%).

5) BBD Clock Adjustment

Set Effects Mode to Ensemble, Intensity to 10 and other settings to Normal.

a) Check TP1 with Oscilloscope and adjust VR1 to obtain a maximum clock cycle of 30uS.
b) Check TP2 with Oscilloscope and adjust VR2 to obtain a maximum clock cycle of 30uS.
c) Check TP3 with Oscilloscope and adjust VR3 to obtain a maximum clock cycle of 30uS.

6) PolySix Common Faults

Unable to tune correctly

If you find you cannot tune the Polysix and the scale is well away from correct and cannot be adjusted using the trims then your synth may well have a fault in the master tuning area. One common fault is the optocoupler labeled PC-1. These are no longer available but one replacement that works is a Vactec VTL5C9 which can be found at Small Bear Electronics (www.smallbearelec.com) or EBay at the time this manual was written.
To check that it is optocoupler PC-1, using a DVM with test point 5 for ground, measure IC18 pin 7. It should be somewhat between -2v and -6v. If it measures -13v the optocoupler is faulty and should be replaced.

Another less common failure that effects overall tuning is Q12 (which is under a rubber hat). This is a 2SC1583 matched transistor pair and can be found at Wagner Electronic Services (www.wagner.net.au). For tuning and scale problems it is also a good idea to change the TL071 (IC17, early version only) and the TL072 and 4558 op amps (ICs 17, 18 & 19). These are commonly available and cheap.

The SSM2044 filter chip and SSM2056 Env generator chips can be found on EBay. The SSM2056 is beginning to get harder to find and more expensive.

Bad key contacts

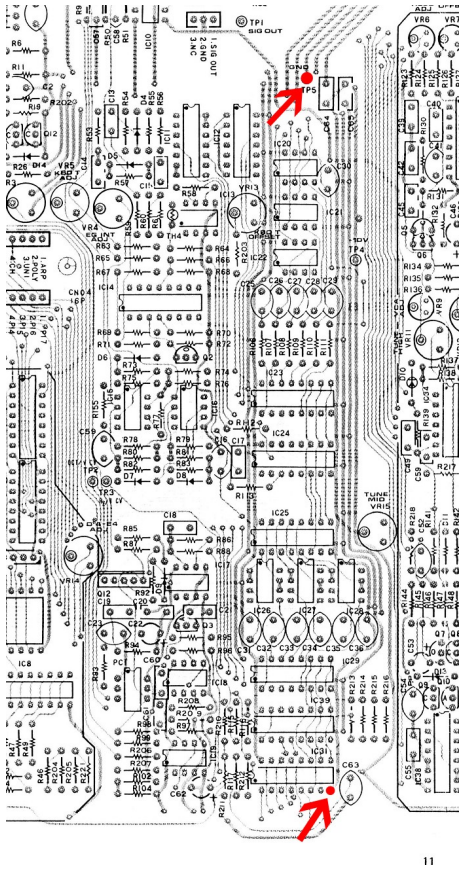
Almost every Polysix that has come through the Kiwitechnics workshop over the years has had problems with key contacts. Two things cause this, one is the gold plating on the contact board developing an oxidizing type coating over time (yes gold shouldn't oxidize so it isn't pure) and the other is the carbon used in the rubber section is not very conductive. New replacement rubber contact are being made by LA Synth at time of printing. The URL is http://shop.lasynthco.com/product/key-contacts-for-korg-poly-oberheim-sequential-prophet-600-kawai-and-others

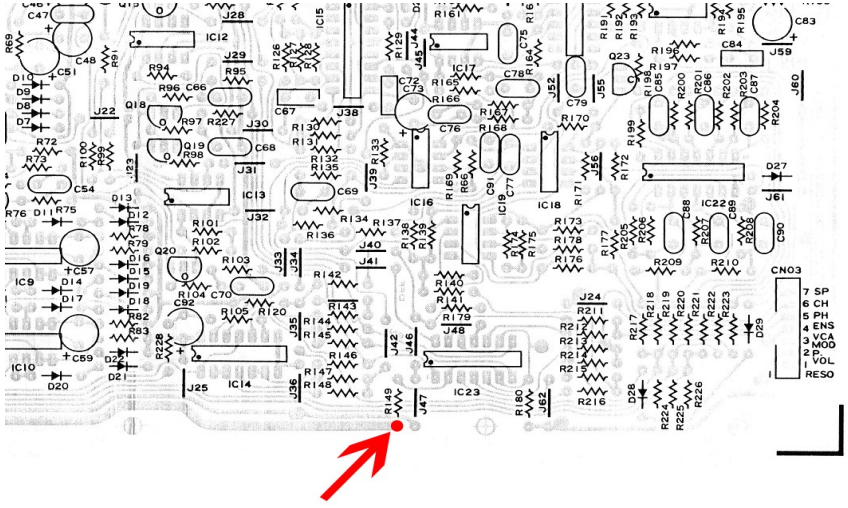
Noise on the output

In all the Polysixes we have installed the Kiwitechnics upgrade in there has been noise and hum on the output. This is caused by poor ground design in the circuit board layouts and light gauge power wires used. This can be made a lot better by taking the following steps

1) Joining the digital and analog grounds at the output jack. To do this solder a wire between the ground on the VCF Fcm IN jack (the wire running along the base of all the digital inputs) to the ground on the output jack (the yellow wire that runs to the CN07 plug on the front panel).

2) Run heavy duty ground wires from the Kiwitechnics Power Upgrade board to the following points. These need to start from the area of holes on the Power Upgrade board marked GND and with a white box around it. If you are installing the Kiwisix without the PSU upgrade then use the ground leg of the largest capacitor as the ground point.
   a) To the ground wire to all the output and input sockets (the same wire joined in step 1)
   b) To the underside of the GND point marked TP5 on the KLM-366. Also solder a second wire from this point (TP5) to to pin 8 of IC31.
   c) To the ground side of R149 (nearest the edge of the board) on the KLM-368 FX Board.
   d) To the ground point on the front panel that was the point the heavy black wire was soldered to.





3) Isolate the mounting leg of the Keyboard from the grounding foil running under the KLM-368 FX Board. This is best done by cutting out a square of the foil around the keyboard mounting leg.

4) Fit the supplied ferrite clamps onto the keyboard scan lines and the front panel switch scan lines. The Keyboard scan lines run from the voice board to the left hand end of the keyboard and are usually black & white. The front panel scan lines run from the Kiwisix board from CN6 and are usually blue in colour.

7) PolySix Waveform Mod

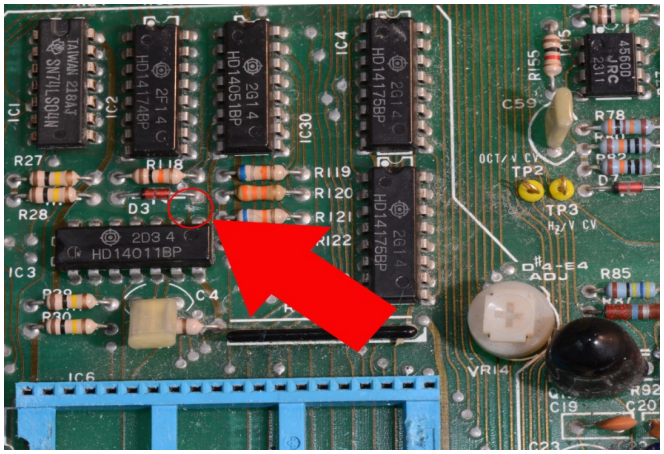
Saw + PW Wave Combination Mod

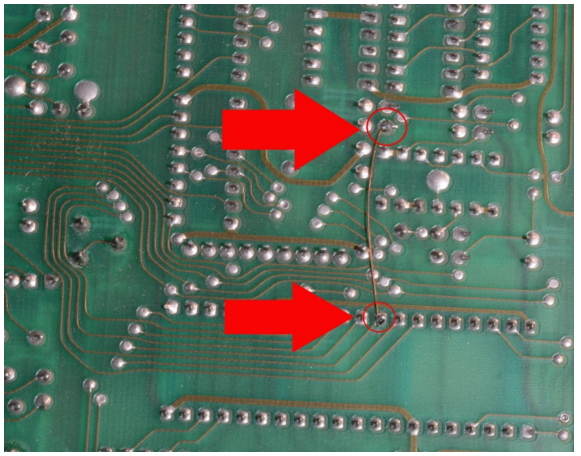
A very simple waveform mod can be made to the Polysix. This was developed by Johannes Hausensteiner. By removing Diode D1 on the KLM-366 board the Polysix will combine both the Saw & PW waveforms with the PW level controlled by the PW knob. With the PW set to full only the Saw remains so it is possible to mix the two waveforms.

8) PolySix Hold Pedal Mod

Hold Pedal in the CHORD input on the rear of the PolySix Mod

A mod can be made that will allow a HOLD pedal to be used into the CHORD input on the rear of the PolySix. This involves a track to be cut and a wire to be run. This mod will only have any effect with version 3+ of the firmware.





1) Cut the track joining D3 on the voice board topside. See left photo.

2) Join the Leg of D3 to Pin 32 of the blue CPU socket on the underside of the voice board. See right photo. We have used enameled copper wire but any thin wire can be used. Be careful not to short together the CPU pins when soldering the wire.

Any pedal that shorts the tip to the ring when pressed will work.

9) PolySix Power Supply Upgrade

This section describes how to upgrade the Korg Polysix power supply. We have had several Polysix units arrive in our workshop with extensive and expensive internal damage that could only be caused by over voltage being applied to all the integrated circuits on all the boards even though the power supply was still functioning. The result of this is we now have a mistrust of the design as it stands. This upgrade is optional and will require some tools.

Tools required
Crosshead screwdriver, multimeter
Soldering and desoldering Equipment
Heat Transfer Paste

Step 1

Remove the power supply unit from the Polysix. This is done by removing the four screws that are nearest the KORG sign on the rear of the Polysix

Then unplug all the power connectors and the transformer wires and unsolder the blue +5v wire to the front panel.

Warning: the metal plate between the Power supply board and the rear of the Polysix has heat transfer paste on it. This paste is also on the rear of the top metal rail of the power supply board. Some early heat transfer pastes were fairly toxic and can contain Beryllium so either wash with IPA or wear gloves and clean up carefully after you are finished.

Step 2

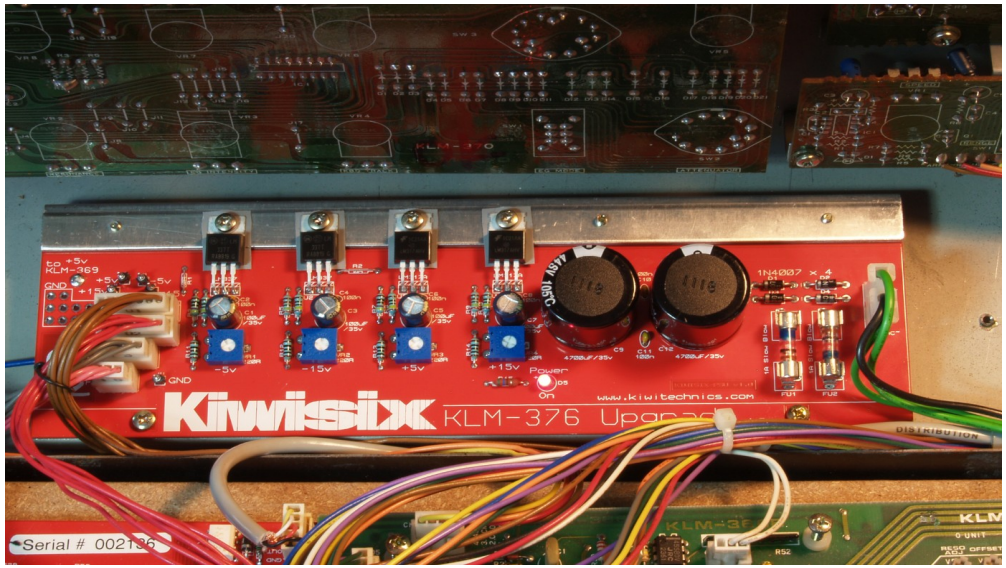
Remove the existing circuit board and mount the upgrade board. Remove the blue +5v wire from the pad on the power board. Next remove the four screws holding the transistors to the metal rail and keep these screws together as they will be used again, then remove the 5 screws holding the two metal rails to the circuit board. Fit these two rails to the new board in the same position using the same screws and washers. Using the supplied heat transfer pads and insulating washers mount the four regulators to the metal rail. These do not need heat transfer paste applied and should be put on dry. These should be screwed up fairly tight but don't overdo it or you will strip the thread.

These regulators must all be isolated from the metal rail so check using a multimeter that there is no contact.

If you do strip the thread you will need to put in a suitable M3 bolt and nut which can be a little tricky as the bolt is difficult to reach.

Step 3

Move the plug and Sockets. Because the plugs and sockets used in the Polysix are made out of unobtainium and no longer available it is necessary to remove the four sockets on the left of the board (that the cables plug into) and the 3 pin header on the right side (that the transformer plugs into). Desolder these and solder them into the Upgrade power board in the same positions and the same way around. With the printing on the board the right way up the slots in the plugs are towards the top. Remove the two fuses by lifting at the ends with a small screw driver, being careful not to break the glass, and put these into the new board.
These plugs are made of soft plastic with a low melting point. Work quickly with a hot desoldering iron. Heat one pin only, if it doesn't desolder the first time try another pin and let the failed pin cool throughly before trying again. You can also leave the power cable plugged in which will help cool the pin and keep it in line.



Step 4

Mount the upgrade board into the Polysix. Use new heat transfer paste on the rear plate. Using the four screws that were removed in step 1 mount the upgrade board into the Polysix. Plug in the transformer cable but not the other cables. Turn on the Polysix and adjust all the voltages in the order +15v, +5v, -15v & -5v. These have been set at the factory but should be checked again to avoid damage to the synth. Once all the voltages are correct, switch off the Polysix and plug in the four cable headers and solder on the blue +5v wire to the pad provided. Then switch on and readjust all the voltages again as these will change slightly under load.

Step 5

Final adjustment of the Power supply voltages. Leave the Polysix running for at least 15mins to let the electronics warm and stabilize, then adjust each voltage to be as close as possible to the correct voltages. This should be done in the order +15v, +5v, -15v & -5v.

Note: in the photo the extra blue +5v wire to the front panel KLM-369 board has not been fitted yet.

Midi Data

Function	Transmitted	Recognized	Notes
Basic Channel	1-16	1-16	If Omni selected the Kiwisix will recognize any midi channel
Note Number	24(C1)-108(C8)	0-127	Notes that are received outside the KiwiSix range of 24-108 are transposed to the nearest octave within range.
Mode	O	O	Voice Modes need to be changed using Midi Control or Sysex commands
Velocity Note On Note Off	 X X	 X X	
Aftertouch Keys Channels	 X X	 X X	
Pitch Bender	O	O	Midi and internal bends are additive within the KiwiSix.
Control Change	O	O	Only if Midi CC option is Enabled. See Control Change Tables for details
Program Change	O	0-127	If CC0=0 then CC32 & Program change select Tone 1-1024. Each CC32 number (0 - 7) accesses 128 tones using Program Change (0-127)
System Exclusive	O	O	Only if Midi Sysex option is Enabled - See Sysex Table for details
System Real Time Clock Commands	O	O	Will Transmit from Arp Clock if Clock Output is enabled. Input clocks are passed through to midi out unaltered and with minimal delay. Midi Clocks are recognized within the KiwiSix only if the clock source has been set to midi on the Arp clock source
Modulation	O	O	Midi and internal Modulation are additive within the Kiwisix

Notes X=No O=Yes

Supported Midi Messages	Status	Second	Third	Notes
Note Off	$8n (128-143)	$kk	$yy	n = 0-15 midi channel kk = note number (0-127) - Notes outside range 24-108 are transposed to the nearest octave yy = Don't care (ignored)

Note On	$9n (144-159)	$kk	$yy	n = 0-15 midi channel kk = note number (0-127)-outside 24-108 are transposed to the nearest Octave yy = 0=Note Off, 1-127 = Note Velocity. - ignored as the KiwiSix does not support this due to hardware limitations Notes are sent at 127 velocity
Continuous Controllers	$bn (160-191)	$kk	$yy	n = 0-15 midi channel $kk & $yy see CC table
Program Change	$cn (192-207)	0-127		n = 0-15 midi channel If CC0 = 0 then for CC32 = 0 for tones 1-128 1 for tones 129-256 2 for tones 257-384 3 for tones 385-512 4 for tones 513-640 5 for tones 641-768 6 for tones 769-896 7 for tones 897-1024
Channel Aftertouch	$dn (208-223)	$kk	---	ignored as AT is not supported by the P6 hardware
Pitch Bend	$en (224-239)	$kk	$yy	n = 0-15 midi channel kk = Least Significant 7 bits yy = Most Significant 7 bits Note - Midi pitch bend is mixed with internal bend Internal hardware can only support 12 bits so the 2 LSB are dropped
				Note $xx = hex number

Continuous Controllers

Continuous Controllers	Second	Third	Notes
Bank Select MSB	$00 (00)	$00	0=Tone Selection, 1-127=Not currently Used Used in conjunction with CC32 Bank Select LSB
Modulation Wheel Level	$01 (01)	$00-$7f (0-127)	Note - Midi modulation is mixed with internal mods.
Breath Controller	$02 (02)	$00-$7f (0-127)	Not Supported
Foot Controller	$04 (04)	$00-$7f (0-127)	Not Supported
Portamento Time	$05 (05)	$00-$7f (0-127)	Not Supported
NRPN MSB	$06 (06)	$00-$7f (0-127)	Supported. See NRPN Detail Table
Overall Volume	$07 (07)	$00-$7f (0-127)	Sets VCA Level
VCO Range	$08 (08)	$yy	yy = $00-$1f (0-31) 16' $20-$3f (32-63) 8' $40-$7f (64-127) 4'
VCO Wave	$09 (09)	$yy	yy = $00-$1f (0-31) Ramp (+ Sqr if Mod done) $20-$3f (32-63) Pulse Width $40-$7f (64-127) Pulse Width Modulation
VCO PW/PWM	$10 (16)	$00-$7f (0-127)	
MG Rate	$13 (19)	$00-$7f (0-127)	
MG Delay	$14 (20)	$00-$7f (0-127)	
Bank Select LSB	$20 (32)	$00-$03 (0-3)	Select Tones = 0 for tones 1-128 1 for tones 129-256 2 for tones 257-384 3 for tones 385-512
VCO PWM Rate	$21 (33)	$00-$7f (0-127)	
Sub Oscillator Switch	$22 (34)	$yy	yy = $00-$1f (0-31) Off $20-$3f (32-63) -1 Oct $40-$7f (64-127) -2 Oct
NRPN LSB	$26 (38)	$00-$7f (0-127)	Supported. See NRPN Detail Table
VCF Low Pass Cutoff	$29 (41)	$00-$7f (0-127)	
VCF Low Pass Resonance	$2a (42)	$00-$7f (0-127)	
VCF Key Track	$2b (43)	$00-$7f (0-127)	
VCF Envelope Mod Amount	$2f (47)	$00-$7f (0-127)	Split Control +-63 - below 63 will subtract effect, above 63 will add effect
MG Level	$31 (49)	$00-$7f (0-127)	

Continuous Controllers

Continuous Controllers	Second	Third	Notes
MG Destination Switch	$32 (50)	$yy	yy = $00-$1f (0-31) VCO $20-$3f (32-63) VCF $40-$7f (64-127) VCA
ENV 1 Attack	$33 (51)	$00-$7f (0-127)	
ENV 1 Decay	$34 (52)	$00-$7f (0-127)	
ENV 1 Sustain	$35 (53)	$00-$7f (0-127)	
ENV 1 Release	$36 (54)	$00-$7f (0-127)	
VCA Mode	$3d (61)	$yy	yy = $00-$3f (0-63) Gate $40-$7f (64-127) ENV
FX Rate/Intensity	$3f (63)	$00-$7f (0-127)	
Hold Pedal	$40 (64)	$yy	yy = $00-$1f (0-31) Off $40-$7f (32-63) On
MG Wave	$41 (65)	$yy	yy = $00-$0f (0-15) Triangle $10-$1f (16-31) Square $20-$2f (32-47) Saw $30-$3f (48-63) Rev Saw $40-$7f (64-127) Random
PWM Wave	$42 (66)	$yy	yy = $00-$0f (0-15) Triangle $10-$1f (16-31) Square $20-$2f (32-47) Saw $30-$3f (48-63) Rev Saw $40-$7f (64-127) Random
NRPN Data Plus	$60 (96)		Supported. See NRPN Detail Table
NRPN Data Minus	$61 (97)		Supported. See NRPN Detail Table
NRPN Data LSB	$62 (98)		Supported. See NRPN Detail Table
NRPN Data MSB	$63 (99)		Supported. See NRPN Detail Table
RPN Data LSB	$64 (100)		Not Supported
RPN Data MSB	$65 (101)		Not Supported
Key Mode	$68 (104)	$yy	yy = $00-$1f (0-31) Poly 1 $20-$3f (32-63) Poly 2 $40-$7f (64-127) Unison
Arpeggiator Mode	$6c (108)	$yy	$yy = $00-$1f(0-31) Up $20-$3f(32-63) Down $40-$5f(64-95) Up & Down $60-$7f(96-127) Random * * = only available by midi command

Continuous Controllers

Continuous Controllers	Second	Third	Notes
Arpeggiator Range	$6d (109)	$yy	$yy = $00-$1f(0-31) 0 Octave $20-$3f(32-63) 1 Octave $40-$7f(64-127) 2 Octaves
Arpeggiator Clock Divide	$6e (110)	$yy	$yy = $00-$09 (0-9)- Half Note (48/Step) $0a-$13 (10-19)-Quarter note (24/Step) $14-$1d (20-29)-8th note (12/Step) $1e-$27 (30-39)-8th note, 1/2 swing (14,10/Step) $28-$31 (40-49)-8th note, full swing (16,8/Step) $32-$3b (50-59)-8th note triplets (8/Step) $3c-$45 (60-69)-16th note (6/Step) $46-$4f (70-79)-16th note, half swing (7,5/Step) $50-$59 (80-89)-16th note, full swing (8,4/Step) $5a-$63 (90-99)-16th note triplets (4/Step) $64-$6d (100-109)-32nd note (3/Step) $6e-$77 (110-119)-32nd note triplets (2/Step) $78-$7f (120-127)-64th note triplets (1/Step)
Sequencer Clock Divide	$6f (111)	$yy	$yy = $00-$09 (0-9)- Half Note (48/Step) $0a-$13 (10-19)-Quarter note (24/Step) $14-$1d (20-29)-8th note (12/Step) $1e-$27 (30-39)-8th note, 1/2 swing (14,10/Step) $28-$31 (40-49)-8th note, full swing (16,8/Step) $32-$3b (50-59)-8th note triplets (8/Step) $3c-$45 (60-69)-16th note (6/Step) $46-$4f (70-79)-16th note, half swing (7,5/Step) $50-$59 (80-89)-16th note, full swing (8,4/Step) $5a-$63 (90-99)-16th note triplets (4/Step) $64-$6d (100-109)-32nd note (3/Step) $6e-$77 (110-119)-32nd note triplets (2/Step) $78-$7f (120-127)-64th note triplets (1/Step)
Start/Stop Arp	$74 (117)	$yy	yy = $00-$3f (0-63) Arp Stopped $40-$7f (64-127) Arp Playing
FX Select Switch	$76 (118)	$yy	yy = $00-$1f (0-31) Off $20-$3f (32-63) Chorus $40-$5f (64-95) Phase $60-$7f (96-127) Ensemble
Program Change	$77 (119)	$yy	yy = $00-$7f (0-127) Program Number Note – this is only here because the BCR2000 is not able to step programs using two buttons
All Sound off	$78 (120)		Stops all output immediately
All Notes off	$7b (123)		Stops all output immediately

NRPN Controllers			
NRPN MSB	$63 (99)	$60 (96)	Kiwitechnics ID. Any NRPN that does not have this number as the MSB will be ignored
NRPN LSB	$62 (98)	$07-$3f (7-63)	See table Note: the Kiwisix supports 12 bit control only so the two lowest bits are ignored
NRPN Data	$6 & $26 (6 & 38)	14 bits of data	$6 (6) is upper 7 bits and is optional $26 (38) is lower 7 bits and is optional (only 5 bits are used) These are combined to make one 12 bit control (6) 0xxxxxxx (38) 0yyyyyyy = 0000xxxx xxxyyyyy
NRPN Data Increment	$60 (96)		Will increment the current NRPN by one count
NRPN Data Decrement	$61 (97)		Will decrement the current NRPN by one count
Overall Volume	$07 (07)	0-4096	Sets VCA Level
VCO PW/PWM	$10 (16)	0-4096	
MG Rate	$13 (19)	0-4096	
MG Delay	$14 (20)	0-4096	
VCO PWM Rate	$21 (33)	0-4096	
VCF Low Pass Cutoff	$29 (41)	0-4096	
VCF Low Pass Resonance	$2a (42)	0-4096	
VCF Key Track	$2b (43)	0-4096	
VCF Envelope Mod Amount	$2f (47)	0-4096	Split Control +-2048 - below 2048 will subtract effect, above 2048 will add effect
MG Level	$31 (49)	0-4096	
ENV 1 Attack	$33 (51)	0-4096	
ENV 1 Decay	$34 (52)	0-4096	
ENV 1 Sustain	$35 (53)	0-4096	
ENV 1 Release	$36 (54)	0-4096	
FX Rate/Intensity	$3f (63)	0-4096	

Real Time Commands			
Midi Clock	$f8 (248)		Midi Timing Clock
Start	$fa (250)		Start Arp Play
Stop	$fc (252)		Stop Arp Play

Midi Sysex Support

Function	Transmitted	Recognized	Notes
Basic ID	1-16	1-16, Omni	Set using Device ID in Global Variable
Load	O	O	
Dump	O	O	

Midi Sysex Data

		Notes $nn = Hexadecimal Data - Decimal data is in Brackets e.g. $0a (10)
Sysex Header	$f0	Sysex Start
	$00 $21 $16	Kiwitechnics Manufacturers ID
	$60	Kiwitechnics ID
	$02	Kiwitechnics KiwiSix ID
	nn	Device ID ($00-$0f) (KiwiSix Device ID 1-16)
	xx	Command ID (see table 1.0) $01 = Request Global Dump $02 = Transmit/Receive Global Dump $03 = Request Tone Edit Buffer Dump $04 = Transmit/Receive Tone Edit Buffer Dump $05 = Request Tone Dump $06 = Transmit/Receive Tone Dump $09 = Request Seq Dump $0a = Transmit/Receive Seq Dump $0b = Request Tone Name $0c = Transmit/Receive Tone Name $0d = Request Tone Parameter $0e = Transmit/Receive Tone Parameter $0f = Request Global Parameter $10 = Transmit/Receive Global Parameter $13 = Request Sequence Edit Buffer Dump $14 = Transmit/Receive Sequence Edit Buffer Dump
	Data	Depending on command type (see table 1.0) Note - Each data byte ($yyyyxxxx) is sent as 2 bytes ($0000yyyy) & ($0000xxxx)
	$f7	Sysex Footer

WARNING! Sysex dumps have the ability to put non valid settings into memory and few checks are made for validity. If the KiwiSix becomes unusable due to non valid data you may need to do a full restore of the Synth which will lose all saved memory. If tones are dumped to the Kiwisix that have invalid parameters the generic tone will sound instead.

Table 1.0 Command ID	Data Byte	Data Type Byte details 7 ------- 0	Data Details
$01 (1) Request Global Dump	No Data		KiwiSix transmits a $02 (2) command

$02 (2) Transmit or Receive Global Dump 24 Data bytes	$00 (00) = Midi Channel In	000yxxxx	xxxx = 0-15 for midi channel 1-16 y = set for Omni
	$01 (01) = Midi Channel Out	0000xxxx	xxxx = 0-15 for midi channel 1-16
	$02 (02) = Device ID	0000xxxx	xxxx = 0-15 for ID number 1-16
	$03 (03) = Master Clock Src	0000000x	x = 0-Internal 1-Midi Note - Master Clock will be divided according to the Arp Clock Divide option
	$04 (04) = Local Enable	0000000x	x = Off/On (set=On)
	$05 (05) = Enable MidiCC	00000xxx	xxx = 000 = NRPN & CC Off 001 = CC In Enabled 010 = CC Out Enabled 011 = CC I/O Enabled 100 = NRPN In Enabled 101 = CC I/O & NRPN In Enabled
	$06 (06) = Enable Sysex	000000xx	xx = 0 Off xx = 1 Sysex Input Enabled xx = 2 Sysex Output Enabled xx = 3 Sysex In & Out Enabled
	$07 (07) = Enable Program Change	0000000x	x = Off/On (set=On)
	$08 (08) = Midi Soft Through	000000xx	xx = 0 Off - No midi will pass xx = 1 All Midi will pass xx = 2 Pass only nonCC xx = 3 Pass only unused CC Note - Bank, Panic & MW will still pass with option 2&3 Note - Midi real time (>$F8) will always pass for options 1,2&3
	$09 (09) = Enable Midi Clock Gen	0000000x	x = Off/On (set=Generate Clock)
	$0a-$18 (10-24) = Nulls		Not currently Used

Table 1.0 Command ID	Data Byte	Data Type Byte details 7 ------- 0	Data Details
$03 (3) Request Tone Edit Buffer Dump	No Data		KiwiSix transmits a $04 (4) command
$04 (4) Transmit/Receive Tone Edit Buffer Dump Null x 2 + 128 data bytes	2 x Null + 72 bytes data		2 x null bytes sent followed by 72 bytes of data in the following format
	$00-$13(0-19)=Tone Name	Ascii Bytes	Tone Name
	$14(20)=VCO Range	000000xx	xx = 00=16' 01=8' 10=4'
	$15(21)=VCO Wave	000000xx	xx = 00=Saw 01=Pulse Width 10=Pulse Width Mod
	$16(22)=PW/PWM Amount Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$17(23)=PW/PWM Amount Lo	0yyyyyyy	
	$18(24)=PWM Rate Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$19(25)=PWM Rate Lo	0yyyyyyy	
	$1a(26)=Sub Osc Switch	000000xx	xx = 00=Off 01= -1 Oct 10= -2 Oct
	$1b(27)=VCO Control	00000000	Not Currently Used
	$1c(28)=VCF Cutoff Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$1d(29)=VCF Cutoff Lo	0yyyyyyy	
	$1e(30)=VCF Res Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$1f(31)=VCF Res Lo	0yyyyyyy	
	$20(32)=VCF EG Intensity Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy

Table 1.0 Command ID	Data Byte	Data Type Byte details 7 ------- 0	Data Details
	$21(33)=VCF EG Intensity Lo	0yyyyyyy	Split Control (+-2047)
	$22(34)=VCF Keytrack Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$23(35)=VCF Keytrack Lo	0yyyyyyy	
	$24(36)=VCF Control	00000000	Not Currently Used
	$25(37)=VCA Level Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$26(38)=VCA Level Lo	0yyyyyyy	
	$27(39)=VCA Control	0000000x	x = 0=EG 1=Gate
	$28(40)=Env 1 Attack Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$29(41)=Env 1 Attack Lo	0yyyyyyy	
	$2a(42)=Env 1 Decay Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$2b(43)=Env 1 Decay Lo	0yyyyyyy	
	$2c(44)=Env 1 Sustain Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$2d(45)=Env 1 Sustain Lo	0yyyyyyy	
	$2e(46)=Env 1 Release Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$2f(47)=Env 1 Release Lo	0yyyyyyy	
	$30(48)=MG Rate Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$31(49)=MG Rate Lo	0yyyyyyy	
	$32(50)=MG Delay Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$33(51)=MG Delay Lo	0yyyyyyy	
	$34(52)=MG Level Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$35(53)=MG Level Lo	0yyyyyyy	
	$36(54)=MG Control	00000xyz	x = VCO (set=Enabled) y = VCF (set=Enabled) z = VCA (set=Enabled)

Table 1.0 Command ID	Data Byte	Data Type Byte details 7 ------- 0	Data Details
	$37(55)=FX Rate Hi	000xxxxx	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
	$38(56)=FX Rate Lo	0yyyyyyy	
	$39(57)=FX Control	00000xyz	x = Chorus (set=Enabled) y = Ensemble (set=Enabled) z = Phase (set=Enabled)
	$3a(58)=Voice Assign Mode	00000xxx	xxx = 000 - Poly 1 001 - Poly 2 011 - Unison 1
	$3b(59)=Arp Control	000yyxxx	yy = 00 - Up 01 - Down 11 - U/D xxx = 000 - Off 001 - 1 Oct 010 - 2 Oct 011 - 3 Oct
	$3c (60)=Midi Control	0000w0yz	z = Arp Enable (1=Enabled) y = Seq Enable (1=Enabled) w = Hold Enabled (1=Hold On)
	$3d (61)= Not Used	00000000	
	$3e (62)= Not Used	00000000	
	$3f (63)= PWM Control	00000xxx	xxx = 000 - Triangle 001 - Square 010 - Saw 011 - Rev Saw 100 - Random
	$40 (64) Arp Clock Divide	0000yyyy	yyyy= 0000-Half Note (48 Clk/Step) 0001-Quarter note (24 Clk/Step) 0010-8th note (12 Clk/Step) 0011-8th note, half swing (14,10Clk/Step) 0100-8th note, full swing (16,8 Clk/Step) 0101-8th note triplets (8 Clk/Step) 0110-16th note (6 Clk/Step) 0111-16th note, half swing (7,5 Clk/Step) 1000-16th note, full swing (8,4 Clk/Step) 1001-16th note triplets (4 Clk/Step) 1010-32nd note (3 Clk/Step) 1011-32nd note triplets (2 Clk/Step) 1100-64th note triplets (1 Clk/Step) Clock source is Master Clock
	$41-$7f(65-127)	Not used	All set to $00 for dump out ignored for dump in

Table 1.0 Command ID	Data Byte	Data Type Byte details 7 ------- 0	Data Details
$05 (5) Request Tone Dump Bank + Tone	Bank Number	00000xxx	Select Tones = 0 for tones 1-128 1 for tones 129-256 2 for tones 257-384 3 for tones 385-512 4 for tones 513-640 5 for tones 641-768 6 for tones 769-896 7 for tones 897-1024
WARNING! This command will overwrite the current sounding tone with the Tone selected	Tone Number	0xxxxxxx	x = 0-127 Kiwisix transmits a $06 (6) command
$06 (6) Transmit/Receive Tone Dump Bank + Tone + 128 data bytes	Bank Number	00000xxx	Select Tones = 0 for tones 1-128 1 for tones 129-256 2 for tones 257-384 3 for tones 385-512 4 for tones 513-640 5 for tones 641-768 6 for tones 769-896 7 for tones 897-1024
WARNING! This command will overwrite the current sounding tone with the Tone selected	Tone Number	0xxxxxxx	x = 0-127 Kiwisix transmits data in the same format as the $04 Command
$09 (9) Request Seq Dump Seq Number			
WARNING! This command will overwrite the current sounding Seq with the Seq selected	$00 (0) - Sequence Number	000xxxxx	x = 0-7 for Sequence 1-8 KiwiSix transmits a $0a (10) command with 1659 data bytes
$0a (10) Transmit / Receive Seq Dump Seq Number + 1659 data bytes			
WARNING! This command will overwrite the current sounding Seq with the Seq selected	$00 (0) - Sequence Number	000xxxxx	x = 0-7 for Sequence 1-8 Kiwisix transmits a $0a (10) command with 1659 data bytes

Table 1.0 Command ID	Data Byte	Data Type Byte details 7 ------- 0	Data Details
	$00-$13 (0-19) = Seq Name	20 Ascii Bytes	Sequence Name
	$14 (20) = Seq Length	0xxxxxxx	x = 0 = No Seq Recorded 1-124 = No of Seq Steps for seq 0-7
	$15-$2e (21-46) = Reserved		26 bytes Reserved for future expansion
	$2f-$67b (47-1659) = Seq Steps	124 x 13 (1612) Note 1 0xxxxxxx Note 2 0xxxxxxx Note 3 0xxxxxxx Note 4 0xxxxxxx Note 5 0xxxxxxx Note 6 0xxxxxxx Byte 7 00abcdef Byte 8 0xxxxxxx Byte 9 0xxxxxxx Byte 10 0xxxxxxx Byte 11 0xxxxxxx Byte 12 0xxxxxxx Byte 13 0xxxxxxx	Step is 13 bytes Byte 1-6 xxxxxxx = note number (32-96) Note Bytes are $00 (0) if not used Byte 7 a-f is tie bits 1-6 (set if tie set) Byte 8-13 xxxxxxx = voice 1-6 Level (0-127) Seq 0-7 can have a maximum of 124 steps
$0b (11) Request Tone Name Bank + Tone	$00 (0) = Bank Number	00000xxx	Select Tones = 0 for tones 1-128 1 for tones 129-256 2 for tones 257-384 3 for tones 385-512 4 for tones 513-640 5 for tones 641-768 6 for tones 769-896 7 for tones 897-1024
WARNING! This command will overwrite the current sounding tone with the Tone selected	$01 (1) = Tone Number	0xxxxxxx	x = 0-127 Kiwisix transmits data in the same format as the $0c (12) Command
$0c (12) Transmit / Receive Tone Name Bank + Tone + 20 data bytes	$00 (0) = Bank Number	00000xxx	Select Tones = 0 for tones 1-128 1 for tones 129-256 2 for tones 257-384 3 for tones 385-512 4 for tones 513-640 5 for tones 641-768 6 for tones 769-896 7 for tones 897-1024
WARNING! This command will overwrite the current sounding tone with the Tone selected	$01 (1) = Tone Number	0xxxxxxx	x = 0-127

Table 1.0 Command ID	Data Byte	Data Type Byte details 7 ------- 0	Data Details
	$00-$13 (0-19) = Tone Name	Ascii Bytes	Tone Name

$0d (13) Request Edit Buffer Tone Parameter 1 Data Byte	$00 (0) - Tone Parameter Number Data format the same as $04 Parameter Number is Data Posn	0xxxxxxx	x = Data Offset Use Data Position for Parameter Number e.g. $1c=VCFCutoffHi Kiwisix transmits a $0e (14) command

Table 1.0 Command ID	Data Byte	Data Byte details Hi byte Lo byte	Data Details
$0e (14) Transmit / Receive Edit Buffer Tone Parameter 2 data bytes	$00 (0) - Tone Parameter Number Data format the same as $04 Parameter Number is Data Posn	0xxxxxxx	x = Data Offset Use Data Position for Parameter Number e.g. $1c=VCFCutoffHi Kiwisix transmits a $0e (14) command
	$01 (1) - Parameter Value (Hi)	000xxxxx	Data format depends on Parameter Data format the same as $04 Note - This byte is $00 for all non 12 bit parameters
	$02 (2) - Parameter Value (Lo)	0yyyyyyy	Hi & Lo are combined to make single 12 bit command. 000xxxxx + 0yyyyyyy = 0000xxxx xyyyyyyy
$0f (15) Request Global Parameter 1 Data Byte	$00 (0) - Global Parameter Number	000xxxxx	x = Data Offset Use Data Position for Parameter Number Data format the same as $02 e.g. $00 (00) = Midi Channel In
$10 (16) Transmit / Receive Global Parameter 2 data bytes	$00 (0) - Global Parameter Number	000xxxxx	x = Data Offset Use Data Position for Parameter Number Data format the same as $02 e.g. $00 (00) = Midi Channel In
	$01 (1) - Parameter Value	0xxxxxxx	Data format depends on Parameter Data format the same as $02 Command
$13 (19) Request Sequence Edit Buffer Dump			Kiwisix transmits a $14 (20) command
$14 (20) Transmit/Receive Sequence Edit Buffer Dump Null + 1659 data bytes	$00 (0) - Null		
	1659 bytes Data		Data Format is the same is $0a (10) Command (with 0 Sequence Number)