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**Steinberg  
PRO 24 III**

**TUTORIAL**

*by  
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**AN 'IT' PRESENTATION**

annual.

**INTRINSIC TECHNOLOGY Ltd, PO Box 907, London, SE27 9NZ**



## TUTORIAL UPGRADES

If you would like to be kept up to date with further hints and tips for using PRO 24, as well as other products from their training series, contact Intrinsic Technology, the authors of this tutorial, at the address below.



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## INTRODUCTION

This Tutorial is not intended as a replacement for reading the supplied manual, or indeed from experimenting from the deep end. All we hope to do is to shed some light on the logic and processes involved in MIDI sequencing with the PRO 24, which may aid you in operating your sequencer, rather than it operating you.

### A BRIEF FAIRY STORY

Once upon a time, after man had finished creating natural acoustic instruments made out of wood and metal, he looked round and wondered what to do next. He suddenly realised that whilst he had been busy things had been happening. Electricity had been discovered and was being used to power lights, and record players, radio and TV were starting to evolve.

The logical step for man was to make an instrument involving electricity. Whether this was an accidental discovery that electronics made noises that could be controlled, OR man's natural desire to discover and create new sonic textures, OR just something that seemed to be a good idea at the time, will never be known, by this author at any rate.

Anyhow, man started to create sounds electronically, of the like that had never been heard before. Then somebody said, "it doesn't sound much like a real piano does it". No it didn't and hadn't been meant to. But liking a challenge man decided to emulate real sounds as well as create new ones. The synthesiser was born, and would grow up and live happily ever after in your bedroom.

However, man was not content to rest on his laurels - or his hardys. He and his friends went on to design more synthesisers with different characters and sounds. Then somebody said 'what happens if you play them all together', which was probably an idea he had got from watching a real orchestra section. Of course man's problem was that he didn't have enough hands to play them all. He decided rather than growing extra arms that it would be simpler to find a way of connecting the keyboards together electronically, to make them play together.

The wicked fairy Cut-your-nose-off-to-spite-your-face saw what was going to happen and like a lot of people, because it wasn't his idea he slagged it off and blindfolded each of the manufacturers. This meant that each manufacturer developed his own system and way of connecting things. This often meant that you could only reliably connect the same make of equipment together. Then a man called Dave was kissed by a frog and his blindfold fell off. He then went round removing the blindfolds of the other manufacturers and persuaded them that what they needed was a common standard to connect things together. This became MIDI, and the wicked fairy Cut-your-nose-off-to-spite-your-face went off to work in the computer industry instead.



## WHAT IS MIDI

MIDI stands for Musical Instrument Digital Interface. It reveals itself to the naked eye as a set of five pin DIN sockets on equipment. In simplistic terms, it allows equipment (Musical Instruments) to talk (or interface) to each other.

The main confusion comes from the Digital bit. Digital is a term used to describe how things can be represented with just two values, a 0 and a 1, rather than the analogue format which needs a different number for each different value. Looking at it another way, an analogue signal can be simulated with a 9 volt battery. When there is no sound there are 0 Volts. When there is maximum level it is 9 volts. Any level in between is given a corresponding value. As the original changes, so does the voltage of the battery. With a digital system we only have two voltages, say positive 5 Volts and negative 5 volts. Every time we look at the original we send out a series of positive and negative pulses, in a code which can be deciphered later.

With analogue, as the value changes so does the value representing it, and they change together continuously. With digital, every now and then a value is taken and the result represented with 0's and 1's. Because the digits are just 0's and 1's it is very easy to transfer, store and manipulate the data. Any small changes that would change the analogue signal, such as noise and distortion (small unwanted voltage changes) which would actually alter the analogue signal, can be ignored in the digital system; it either is a 1 or a 0, there is nothing in between.

The two main advantages of Digital are a) Data can be processed arithmetically, and b) that the data is hard to distort or corrupt. As there are only two states, it is easy to handle accurately.

## IMPORTANT FACTS ABOUT MIDI

The most important thing to know about MIDI is that it is not a sound that you can hear. You can't plug a MIDI lead into your hifi and hear the stuff dripping out of it. Although the lead might fit, what comes out of a MIDI lead is digital data about a performance or event; MIDI has been described as 'everything about the sound, except the sound itself.' MIDI is in fact a digital representation of a performance, ie, what note was played and how loud. It does NOT represent the sound at all. The sound always has to be played back from the MIDI instrument.

'MIDI is NOT sound, merely data about the performance of it.'

What happens when you press a key on your keyboard is a MIDI man (or message, if you prefer) runs from the MIDI Out port shouting 'he played a note, it was this note, he played it *this loudly* and he did it just then'. He tells this to the person at the MIDI IN port, who can then act on that information.

You'll notice that the man describes the performance, he can even describe what the sound was like, but his message isn't the sound itself. He doesn't carry a cup with the sound in it and say here it is, listen to this.

## WHAT ARE MIDI CHANNELS

When they created the MIDI standard they decided that you may want to connect more than two units together and that you may then want to talk to each one independently (or collectively). This is where the ideas of channels came from. It is much like the idea of a telephone number and a party conference. Each unit has its own personal telephone number. To decide who you want to talk to, you just select the right number.

There is a mode called Omni Mode. This means that the instrument will play any part on any MIDI channel. It's a bit like our party conference idea, where the instrument can hear all the conversations at once. It is not a particularly useful mode, other than for panic situations. It is much better to be able to address each instrument (subscriber) independently.



Another way of looking at MIDI channels is to think of a MIDI cable as a television aerial that carries all of the stations at once. To select the one that you want, you simply tune the connected MIDI instrument into it. When MIDI was established they decided that 16 instruments should be catered for. In those days that seemed a lot, and it is only with hindsight that we can see it isn't.

## **WHAT IS MIDI SEQUENCING**

Just being able to play one keyboard from another is useful but not the end of the story. As we said, MIDI is digital data and it can be transmitted, processed and stored. Enter the sequencer. A sequencer is just a device that can store (and manipulate) data. These days we mean that to be storing the data of a performance in real time into a computer type memory.

A MIDI sequencer can only store MIDI data. It cannot record performances from instruments which are not fitted with MIDI, such as the human voice, guitars, or any other acoustic sources. The only way that these can be controlled from a MIDI sequencer is if these sounds are recorded into a sampling type instrument equipped with MIDI (see later). If you like, you can look at a MIDI sequencer as being a tape recorder for MIDI performances.

## **WHAT IS A MIDI INSTRUMENT**

A MIDI instrument is one equipped with the infamous MIDI ports (sockets). The most common is the MIDI keyboard and MIDI drum machine. Becoming increasingly more common are the MIDI drum kit, MIDI drum pads, MIDI fitted guitar, MIDI fitted wind controller and the MIDI equipped acoustic piano.

You may like to note that except for the last item (the piano) these MIDI fitted instruments send MIDI data out, but cannot respond to MIDI data in. In other words, they are used as controllers to enter in the performance but the performance data is used to play a standard MIDI sound source, such as a MIDI keyboard/module or drum machine/brain. The latter item, the MIDI piano, actually employs MIDI triggered mechanisms to actually hit each individual string. You will no doubt appreciate that such a machine is expensive.

## **WHAT DOES MULTI TIMBRAL MEAN**

A normal MIDI keyboard is capable of producing a number of different sounds, ranging say from piano to strings. However it can only make the sound of each of these, one at a time. So although we may record a number of different tracks with our MIDI keyboard, we will only ever get them to play back with one sound at a time. For instance, say we set our MIDI keyboard to a bass sound and record a bass part on a track. We can play it back and it's fine. Then we select a piano sound, and start to record our piano part. We can hear ourselves playing the piano sound live, but we also hear our bass part playing the sound of the piano. This is because the MIDI messages just say 'play these notes' (piano and bass) and the keyboard uses what ever sound it is set to. If we select the bass sound again, we hear both the bass and piano part played back with the bass sound.

The answer to this scenario, is to buy more MIDI keyboards - one for each different simultaneous sound that you want. This is indeed one way of doing it, and offers some advantages.

However, manufacturers realising this problem have created the MULTI TIMBRAL instrument, which is effectively like having a number of different keyboards except that they are all housed in one box. Each instrument can be accessed on a different MIDI channel, and each one can be set to a different sound. The only limit to this setup is the number of multi timbral parts that they give you and the overall polyphony of the unit, but more of that later. This scenario is much like



real life. With the standard MIDI keyboard, we have a musician, who is a multi instrumentalist. He can play a number of different instruments, but as he only has one pair of hands, he can only play one of them at a time. He can play all (up to his polyphony or finger limit) of the notes you tell him to, but he can only hold one instrument at a time.

With the multi timbral system, we have a number of multi instrumentalists in the same box. You decide which one you are talking to, by selecting his MIDI channel (or telephone number) and obviously, he can play his bit while the others play theirs.

## **WHAT DOES POLYPHONY MEAN**

As we have already seen, in any system each musician only has a certain number of fingers. This is his polyphony limit. In other words he can only play up to a maximum number of notes at one time. On some units, he can assign his fingers dynamically. This means that he'll play the more important notes, those which are most recent. The ones he's been playing for a while, he can stop playing, and you won't notice so much, because of the new notes being played.

On some other units you have to decide before hand how many fingers he is to use on each instrument. The advantage of this is that he will always play that many notes of that sound. The disadvantage is that you may not have enough at any one time, to play what you need on each instrument when you need it. Presently it is common to have eight parts (or musicians) but they only have sixteen fingers between them. In practice, on a dynamically assigned instrument, this means that you get 4 or 5 parts out of it.

You never get something for nothing, and although multi timbral instruments are very useful, there is something to be said for having a number of different instruments. Firstly, they'll probably have sixteen fingers each, secondly, they'll all have different tonal characters, thirdly, they'll each have their own outputs (which can be processed separately) and volume controls, and fourthly, unlike a number of multi timbral units, each instrument will give its job everything it's got. On some units the number of oscillators (richness or components of the sound) decreases, the more notes that are played. The bad news of course is that multi timbral instruments are good value, whereas separate units will cost significantly more.

## **WHAT IS SAMPLING**

A MIDI Sampler is an instrument that digitally records real sounds into its memory. When you play a key on your MIDI keyboard, it plays the recording back, in essence speeding it up faster as you play up the keyboard in pitch and slowing it down as you go down the keyboard in pitch, much like a tape recorder would. Some samplers use techniques to make the sample the same length and quality, whatever pitch you play it at. It does this by removing or repeating parts of the sample data.

To reduce the effects of this at extreme ranges, a technique called multi sampling is used. This is where a large number of samples is taken at different pitches, so that a sample is never far from its original speed. Apart from the technical aspects of extremes of sampling rates, the sound of an instrument usually naturally changes over its pitch range. If samples are taken at regular pitch intervals the faithfulness to the original character is better kept.

A sampler is one way of playing acoustic sounds in a MIDI system. It allows acoustic sounds to be triggered from a MIDI sequencer, with all the benefits that that entails.

The bad side of sampling is one of memory. Most samplers currently only have 15 seconds of sampling time. That is that they can only record for a total of 15 seconds. When you consider that most sounds last for 2 to 5 seconds and that a sample should be taken every octave, if not every 3rd, you'll realise that there isn't a lot of time available.



One technique for overcoming this problem is called looping, where the attack part of the sound is used normally but, as the sound starts to sustain, the same section is repeated over and over again, until the sound is required to stop. Amplitude and filter envelopes are often applied to the sound to emulate the effects of a naturally decaying sound.

It is all these shortcomings that do not allow the sampler to be as good as the original sound. It was once said that to reproduce the infinite number of sounds available on an instrument, including the way that it interacts with itself, you would need an infinite amount of memory. Obviously this is not viable. However, that said, a sampler can produce some very good results. The other side of sampling of course is to use it creatively, making new sounds and textures out of normal sounds. Taking a sound out of its normal pitch range can produce some very interesting results, such as a tambourine sounding like a submarine, or a balloon popping sounding like a kick drum.

## **WHAT IS TAPELESS RECORDING**

Tapeless recording is the next technological area to come within the financial grasp of us poor mortals. It is really an extension of sampling, allowing much greater recording times. This is presently achieved by recording onto a hard disk and using it as a virtual memory, reading each part that is required into its internal memory just before it is required. Again MIDI control can be employed here to make it play certain sections as required.

It could be argued that MIDI sequencing is a form of tapeless recording, which to an extent it can be. The difference as we have said with MIDI, is that it is data about a performance and does not contain the actual sound itself; a MIDI instrument is required to play it back. As with tape, true tapeless recording involves actually recording the sound (or a representation of it, perhaps in digital form).

## **WHAT IS A COMPUTER**

A computer is simply a machine that can be used to do a number of different tasks by using the appropriate software in it. The Atari you are using now can be used for MIDI sequencing, drawing, painting and animation, word processing and desk top publishing, accounts functions, databases, spreadsheets and graphs, business presentations, telecommunication functions such as fax (by adding a suitable modem) and if you have any time left after all that - for games. Other musical applications include notation and scoring. It can even be used as a sampler, drum machine or synthesiser, but not at the same time as PRO 24.

## **WHAT IS STEINBERG PRO 24 SOFTWARE**

PRO 24 is a 24 track MIDI sequencing package that, with the aid of suitably equipped MIDI instruments, will allow you to record musical MIDI performances, much like recording onto tape but with all the advantages of MIDI sequencing.





# THE PROS & CONS OF MIDI SEQUENCING

## **The advantages of MIDI sequencing are:**

- You can adjust the tempo (speed) without affecting the pitch. Useful for recording difficult passages or solos at a slow tempo, and then speeding them up for playback. Changing the tempo can also create effects and moods, for instance speeding up the chorus a few BPM is a standard trick.
- You can change the sounds used to instantly play back the performance, to see how the sound matches a part.
- You can copy sections, so get it right once and you can copy it in seconds. The copies can be transposed and edited for variety.
- You can copy tracks and make them play on a number of different MIDI channels (and hence instrument and sound) and get a doubling or orchestrated effect. Transposing and delaying the copies adds to the effect.
- You can add a MIDI delay (advance or retard) to alter feel, either subtly or dramatically for effect. A few MIDI clocks of delay will give a relaxed feel to that track, while advancing by a few clocks will give an aggressive leading feel to that track.
- Using MIDI delays uses up some of the instruments polyphony, but can give repeat echo or ADT (Automatic Double Tracking) type effects, with no loss of quality or expense.
- With many systems (including PRO 24) you can edit individual notes, changing their pitch, duration, velocity (loudness) and time played.
- Performances can be quantised so that they are in strict time. PRO 24 has a number of different types of quantising, ranging from the mechanical sounding note on and off type, to the natural sounding Over quantised type.
- Some sequencers (not PRO 24) have a groove quantise, whereby they can impose the rhythmical feel of one track onto another. Some have a window or range feature for the quantise, where only notes beyond a certain limit will be brought back into time and then only by a set percentage.
- Step time entry (on the grid edit or score edit pages) allows you to enter notes in a numerical or graphical form, so that manual dexterity needn't stifle the idea.
- You can rearrange the order of a song in seconds and without the aid of a razor blade.
- Sections can be transposed in seconds into new keys.
- Parts can be prepared in depth at home before hiring expensive equipment, or studio time, to master the results.
- If the song contains no acoustic or non MIDI sources and you have enough instruments, effects, separate outputs and mixer channels, the song can be mastered directly to the master tape avoiding any multitrack tape generation (quality) losses.
- If acoustic and non MIDI sources are required, a tape to MIDI synchroniser can be used to link the sounds on the multitrack tape with the first generation sounds from the MIDI equipment.

## **The disadvantages of MIDI sequencing are:**

- The main problem with MIDI sequencing arises out of its flexibility. As every aspect of the song is instantly variable, this means you needn't ever commit yourself until you master to tape.
- Whenever you go back to listen to a song you have done previously on the sequencer, you have to set up all your instruments, effects, mixer settings and other variables to sound the



same as the original version. Unless you have taken notes, this becomes quite difficult.

- If you change instruments or the sounds in your instruments you can get completely different results.
- With a tape recording, the sound on the tape doesn't change and will always sound the same as when you recorded it.

## PRO 24 OVERVIEW

As you will see from the screen layout (look under Options - Picture, view), the main screen of PRO 24 is divided into six main sections -

- 1) Track and fast access selection,
- 2) Tape transport and position readout,
- 3) Fast access window,
- 4) Tape locators,
- 5) Master section,
- 6) VU meters.

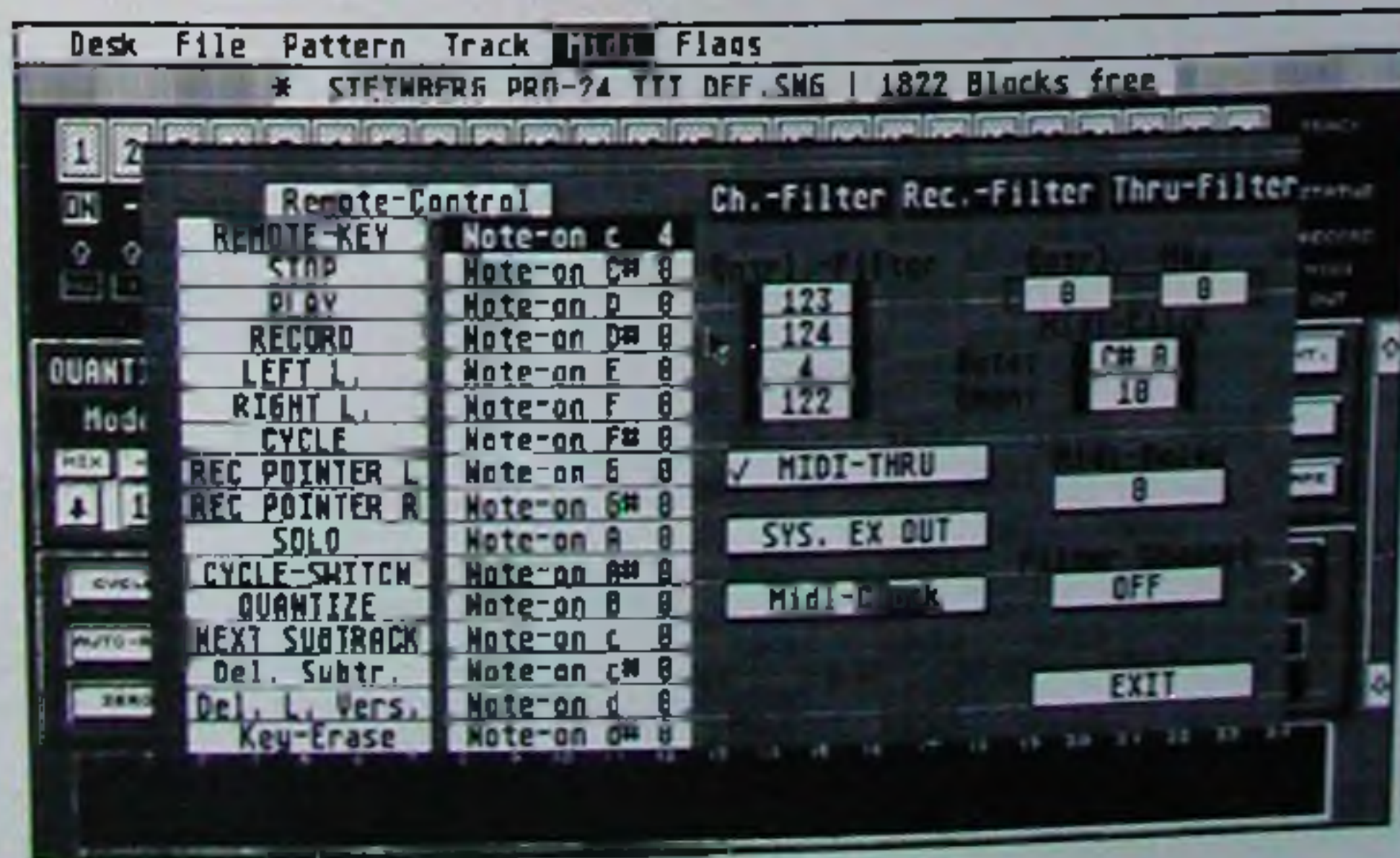
## TRACK SELECTION

At the very top we have the 24 tracks. The track that is to be recorded onto is signified by the large white arrow. This always has to be on a track, it cannot be switched off completely. Just above this strip are the mute on - off boxes which show a 'X' (cross) for muted, 'On' for on and 'S' for sequencer arrange mode (see later).

Above these are the white fast access selection boxes. If you click on one of these it will turn grey. Once it is grey the track and pattern that you will be copying or editing will be determined by this box.

If you look in the fast access window, you will see some details about the selected track and pattern. Firstly you will see the track number and name. Secondly you will see that pattern number and name and its start and end point.

Now would be a good time to look at what we mean by a pattern and a track.





## WHAT ARE TRACKS

Each performance can be recorded onto a separate track. A track is just a separate place to put the data. Just like a track on an audio tape machine, a track can contain an individual note, a chord or a whole piece of music, either made up of one instrument or many of them.

The logical way of working, of course, is to keep each individual instrument on its own track so that it is easier to work with in terms of muting, editing or copying.

Unlike tape, if an instrument is on a separate MIDI channel it can be extracted at will for manipulation in isolation. This is possible with the remix function of PRO 24 because as well as recording the notes, the MIDI channel of each note is also recorded. It is therefore fairly easy for the program to separate any sounds, or to be more accurate MIDI performances, which are on a different MIDI channel from the others.

With tape of course, it is sound that is recorded, and not performance data stored digitally, and as each component of the sound is not so neatly labelled with its relative instrument details, they can't be extracted.

## WHAT ARE PATTERNS

In musical terms, and in the same way as drum machines work, a pattern refers to a complete section of music comprising all the instruments used in it. With PRO 24 a pattern is used to refer to a section on an individual track. There is not necessarily any relationship between any pattern on one track and another. The patterns can be of any length on any track.

This gives rise to a very flexible system where the lengths of each pattern, or section, do not restrict the way the song can be recorded and/or put together. For example, we may want to create a 2 bar drum pattern on one track which repeats, with a 4 bar bass groove on another which repeats, while a 48 bar pattern goes over the top of them both. Without the restriction of each track being made up of an X bar pattern, we can do what we like.

On the down side, with any system that is flexible, it can be confusing, especially when trying to copy parts of the song which comprise of more than one track at a time. As we shall see later, the mixdown function helps us solve any problems we may have created.

### **Tape transport and position readout:**

The tape transport controls are like a normal tape machine. Rewind, record, play, fast forward and record. The extra single arrow fast wind buttons allow you to go back in beats rather than bars.

The upper counter shows the present song position in bars, beats and divisions of a beat called ticks. Each quarter note is subdivided into 24 ticks.

The lower counter shows the present position in real time of hours, minutes and seconds.

### **Fast access window:**

The fast access window, as already mentioned, shows us the track number and name and pattern number and name, for the track/pattern selected with the grey fast access box (above the track record and track number box).

The pattern/track displayed is the one that we will be editing or copying. You can change the selection by clicking on the track or pattern number in the fast access window or by being at the right part of the song and clicking on the fast access box for the required track.

We can actually copy a pattern or track, to the point set by the destination locator, by simply picking up the word pattern or track and dropping it on the destination track.



## **Tape locators:**

The tape locator is like a tape operator. You tell him where you wish to record (drop in or cycle between) by setting the left and right locator. You can set the left and right locator in three ways.

- 1) By clicking on the numbers shown, changing it up or down by clicking the left or right mouse buttons while pointing over the numbers.
- 2) By hitting the L (for left locator) or R (for right locator) key on the keyboard, typing in the numbers and hitting return. Just typing in the first number/s and hitting return will set it to the beginning of the bar entered. You only need to enter '/' or '.' after the bar figure if you wish to enter a point that needs beat or tick setting.
- 3) On the fly by holding the shift key and then pressing the L (for left locator) or R (for right locator) at the correct points.

Left and right locator positions can be memorised by hitting the shift and F1 - F10 function keys, and recalled by just hitting the F1 - F10 function keys. (The function keys are the large buttons two rows above the QWERTY keyboard letters.)

## **Master section:**

In the master section we can set the tempo (how fast the piece will be) and the time signature (how many beats to the bar, i.e. 3/4 for a waltz and 4/4 for pop and rock, etc).

Also in this section we can set whether the 'Mastertrack' is on or off. The Mastertrack is a place where the time signature and tempo changes can be set and changed throughout the song. Without the Mastertrack, we can only set an initial tempo and time signature, which we have to stick to for the whole song.

A box marked 'Solo' is normally set to off. When off this allows any unmuted track to play. When set to on, only one track is allowed to play, that being the one marked 'On' in its mute box. The last track selected for fast access will be the starting solo track.

## **Two other options remain:**

The box marked 'Mode - Tape' is the normal mode for PRO 24. This makes the sequencer work in a linear fashion, i.e. consecutively like tape. The other option for this is 'seq.' (for sequencer), which is needed if the Song Arrange function is to be used. See later for more details of this mode.

The boxed marked Sync. This selects how the PRO 24 is synchronised with other equipment or not. Whether it will act as the master and stop, start and control the tempo of other MIDI clockable units (such as drum machines and other sequencers) or whether it will act as the slave unit and be controlled by the other MIDI clocking device.

It is probably worth mentioning here that the PRO 24 on its own cannot be synchronised to tape directly. An external synchronisation unit is required to do this. The reason that this is important is because we can record all our MIDI tracks into PRO 24 but we cannot record any non MIDI sources, such as voice and guitar, into it. We could of course simply run the sequencer and record the NON MIDI tracks live, but we may well need to do more NON MIDI tracks than we can play or control live. Multitracking with a tape machine gives us the flexibility for NON MIDI sources.

A multitrack tape machine is simply one that has more than the two stereo tracks as on your hifi cassette machine. Each of the tracks on a multitrack recorder can be recorded independently, either at different times or in sections. Or simply, as each track is separate, we can tailor it as we require.

The problem then comes of synchronising the MIDI sources and NON MIDI sources together. If we just hit play, they will probably drift out of sync. If we were to simply record the MIDI tracks onto one or two tracks of the tape, we would firstly be using up these two valuable tracks and secondly, once recorded onto tape, we would lose the control over the MIDI tracks from the sequencer.



Another reason for using a tape synchroniser is that it allows us to get the most out of our MIDI gear. The MIDI tracks, for instance, could be recorded one at a time onto tape allowing us to either:

- 1) layer sounds.
- 2) use a non multi timbral instrument to record a number of sounds - one at a time.
- 3) use a MIDI instrument to its full (without note or oscillator stealing).
- 4) use the built in effects of the instrument on a different setting each pass, or use a single external effects unit in the same way, or to provide a staggered form of separate outputs from the instrument allowing EQ and tone control, and easy level control.

The solution to all this, is to use a tape synchroniser. This records a tone onto one track of the tape machine. This is then used to link the tape and MIDI sources together, both in starting point and tempo. As the MIDI tracks are still on the MIDI sequencer, we can still control them. On the tape side, we have only used 1 of our valuable tracks to control up to 16 MIDI instrument sources and possibly a drum machine too, if not more (with a MIDI port expander).

### ***However going back to our sync modes:***

Internal, decides whether the PRO 24 is acting independently and being the master unit, as is normal with Internal. If set to MIDI, PRO 24 is a slave and will stop and start and follow the tempo of the external MIDI device (such as a drum machine or tape synchroniser).

If you use a Steinberg type tape synchroniser it connects directly to the Atari, rather than via the MIDI ports, and hence if a Steinberg synchroniser is connected a third option is selectable called 'Ext.' for external.

### ***VU meters:***

At the very bottom of the screen you can see the VU meters for each track. These indicate the MIDI activity on each track during stop and playback. When recording on a track, its VU meter does not register although any other tracks playing back will register.



# WHAT IS AN ARRANGEMENT OR SONG

A song normally comprises of a number of sections which are chained together, such as intro, verse, chorus, verse, chorus, chorus. We can achieve a song arrangement in three ways with PRO 24.

- 1) Firstly, we can actually record the sections we want in the places we want them. This will probably entail playing a section a number of times. We can do this by simply setting the track to record on and setting the left and right locator for the position we want. Then we simply enter, record and perform.
- 2) Secondly, we can copy the sections we want to the places we want them. We can do this by setting the destination locator to be the beginning of where we want the section to start from. We do this either by clicking on it, or hitting the '/' key on the numeric pad, and then typing in the bar (and beat and tick if required) and hitting return. Then, you get the track and pattern that you want to copy to appear in the fast access window. We can do this by clicking with the mouse on the relevant fast access box, and scrolling through to the correct pattern. If the sequencer was positioned in the section that you wanted when you clicked the mouse button, the fast access window will contain that pattern.

We can then simply pick up the required pattern or track by clicking the left mouse button when the pointer is positioned over the word 'pattern' or 'track', respectively. Then we drop the word onto the track that we want to copy it onto. It will be copied onto that track, starting from the position in the destination locator.

- 3) The third method of song arrangement is selected in the following manner.

The Mode box has to be set to Seq. rather than tape.

The tracks that are to be included with this form of arrangement must have their mute box selected to 'S' by double clicking on it.

Then Arrange Song is selected under the PRO 24 Track menu.

Next we have to decide which track is the guide for the pattern lengths the arrangement will be made up of. We type in the guide track number and then we select new track, to confirm that this is the guide track. Then the list of each pattern on the guide track will be shown. To arrange the song we can simply pick up the pattern name and drop it in the arrangement list. If we need to insert a pattern between two existing ones, we simply drop it in the vertical grey strip at the side of the arrangement list.

When you click on the available pattern name, you will see all the available patterns on any of the tracks highlighted in the 1 - 24 grid box on the left of the screen. Any highlighted pattern will be included in this arrangement.

The problem with this method of song arrangement is that if any pattern on another track is not the same length as the guide track, then it will not be included in this style of arrangement whether it is shorter or longer. If each pattern on each track is the same length as the guide track, then this form of arrangement will work easily.

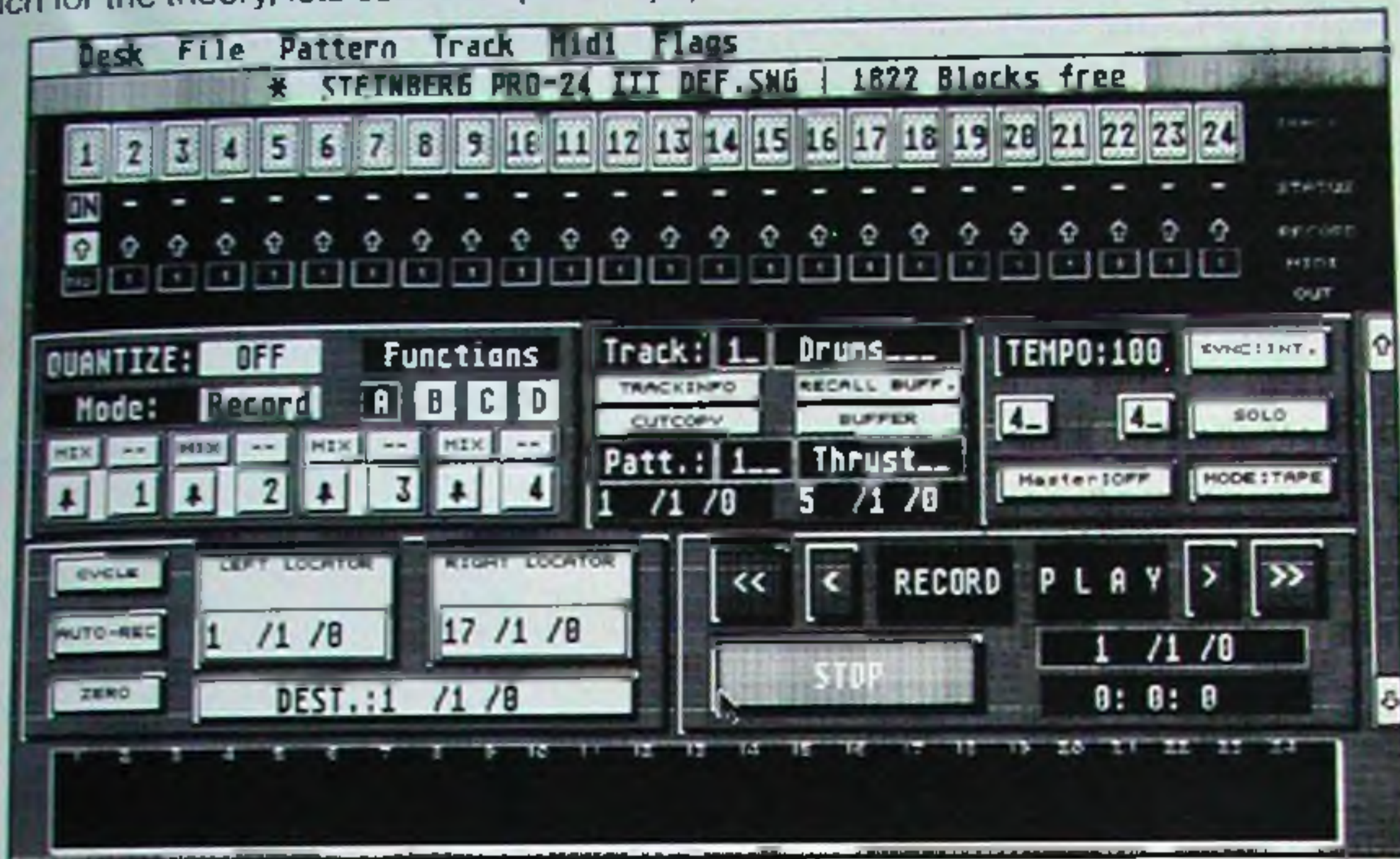
One good point about this form of arrangement is that it only effects the tracks put into sequence ('S') mode. Any other tracks are allowed to run as well, playing at the points that they are physically on our imaginary tape.

One not so good point about this form of arrangement, is that we cannot mute a pattern on a track, through the song, if it is in sequence mode. This means that we cannot build the song by introducing and removing patterns, unless we remove the required tracks/patterns from the sequence mode, and put it back into linear tape mode. Then we can put the patterns where we want them (or mute them in the track info section).



# HOW TO CONNECT YOUR SYSTEM

So much for the theory, lets connect up our equipment. Connect the monitor to the Atari computer.



Note - Your master keyboard is the one that you want to use to play the music from. A mother keyboard is one that has no sounds of its own.

## If your master keyboard has MIDI IN, OUT & THROUGH:-

Take the MIDI OUT of your master keyboard to the MIDI IN of the computer.

Take the MIDI out of the computer and put it into the MIDI IN of your master keyboard.

Take the MIDI THRU (through) of the master keyboard into the MIDI IN of your next MIDI instrument.

Take the MIDI THRU of this instrument into the MIDI IN of your next MIDI instrument.

Repeat this last step as often as necessary. If you have more than 4 MIDI sound sources, then you would be advised to get a MIDI THRU box (see later).

If you have a unit that does not have a MIDI THRU socket, this will have to go at the end of the chain.

If you have more than one unit without a MIDI THRU socket, then you will have to buy a MIDI THRU box (see later).

## If your Master keyboard doesn't have a MIDI THRU:-

If your master keyboard does not have a MIDI THRU socket, then the system is the same as above, except that the computer MIDI OUT is connected to your first MIDI instruments' MIDI IN. The MIDI THRU of that then feeds the MIDI IN of the next, and so on. Finally, the last MIDI THRU goes into the IN of your master keyboard. If you have any other units that do not have a MIDI THRU, then you will need to buy a MIDI THRU box.

## Here is a more detailed explanation:

Take the MIDI OUT of your master keyboard (the one you want to play to enter in the music) to the MIDI IN of the computer.



Take the MIDI out of the computer and put it into the MIDI IN of your first MIDI instrument.

Take the MIDI THRU (through) of that first MIDI instrument and connect it to the MIDI IN of your next MIDI instrument.

Take the MIDI THRU of this instrument into the MIDI IN of your next MIDI instrument.

Repeat this last step as often as necessary.

Finally connect the MIDI THRU of your last MIDI instrument, into the MIDI IN of your master keyboard.

If you have more than 4 MIDI sound sources, then you would be advised to get a MIDI THRU box (see later).

If you have one or more units that do not have a MIDI THRU socket, then you will have to buy a MIDI THRU box (see later).

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**If you are using a mother keyboard (ie one that just has the keys and doesn't make any sounds itself):-**

Take the MIDI OUT of your master keyboard (the one you want to play to enter in the music) to the MIDI IN of the computer.

Take the MIDI out of the computer and put it into the MIDI IN of your first MIDI instrument.

Take the MIDI THRU (through) of that first MIDI instrument and connect it to the MIDI IN of your next MIDI instrument.

Take the MIDI THRU of this instrument into the MIDI IN of your next MIDI instrument.

Repeat this last step as often as necessary.

If you have more than 4 MIDI sound sources, then you would be advised to get a MIDI THRU box (see later).

If you have one or more units that do not have a MIDI THRU socket, then you will have to buy a MIDI THRU box (see later).

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Please note that in any of the above systems, you do not need to take the MIDI OUT of the last unit in the chain, back to anywhere. You do not need a loop and in fact, if you can devise some weird way of achieving one, you will probably get MIDI problems like hanging notes and reduced polyphony.

## **MIDI THRU BOXES**

A MIDI THRU box has one input and a number of outputs. Each of these outputs then feeds an input directly. This saves any delays or corruption caused by a long chain of MIDI IN to MIDI THRU of your system.



## **MIDI SWITCHERS**

A number of people want to be able to use more than one MIDI controller to enter data into their sequencer. The most common is wanting to use their keyboard OR their drum machine. Also if you start to get sound editing or dumping software, the MIDI OUT of each required MIDI instrument needs to be connected to the Atari MIDI IN, at that time.

These scenarios can be achieved by re - plugging the MIDI cables.

A better way is to use a MIDI switching box - such as the Intrinsic Technology MIDI switcher, which caters for 6 inputs, tape synchroniser systems, has a computer bypass mode, MIDI activity indicator and is fitted with a ten way MIDI thru box, all in a 19" rack mount case.

## **MIDI MERGERS**

If you need to use more than one MIDI controller (ie two master keyboards) at the SAME TIME, such as for jamming with other people or trying to do more than one thing at a time, then you will require a MIDI MERGE box. This enables you to connect and use (normally) two MIDI instruments as controllers.

A MIDI merge is necessary because you cannot just plug MIDI cables together into a parallel strip. MIDI is serial Digital data and is sent in a continuous stream of code. If it is interrupted by other data, the result is confusion and mayhem. Returning to our telephone analogy it is like someone trying to listen to alternate syllables of words from two people speaking to him.

A MIDI merge unit employs a microcomputer to make sure that all intelligible packets of data are sent at a time (ie a whole word or sentence from each person), without interruption.

## **SETTING UP THE AUDIO**

It is essential that you can hear all of your MIDI instruments. Ensure that the output of each one is plugged into an amplification system and that the volumes are all suitably adjusted.

A very common misunderstanding in MIDI systems is that connecting the MIDI part together is all you have to do. Well it isn't. You must also plug the audio outputs (mono or stereo line outputs) of each of your MIDI instruments into an amplifier system. If you do not have enough inputs on your amplifier for all of your instruments, then an Intrinsic Technology MixIT or MixIT plus is a cost effective way of getting either 4 inputs in mono or 4 inputs in stereo. Just using parallel or splitter jacks may, in the long term, damage your instruments and will not provide the best performance from the system.

### **Powering up:**

Turn all your keyboards and modules on first.

Turn on your computer monitor and then the Atari computer. Turn off in the reverse order. This prolongs the life of your computer system.

Do not play while the computer is loading or saving, as this has a tendency to crash (freeze) the program.



# BASIC ATARI SKILLS

## Learning the basic Atari skills:

Normally when you boot up your Atari computer you are presented with a screen called the desktop. It consists of two icons (pictures) as a disk drive - A and B (you only have A at the moment) and a trash can. On the top line of the desktop is a bar called the Menu bar. When the mouse is rolled over this, some menus drop down showing the options available.

The extreme left hand menu is called the desktop, and this is where any accessory programs can be selected from. An accessory program is one that you can call up at any time, even from within another program. It normally gives you some extra utilities or functions which are not available in the main program, such as a notepad, calculator, etc. Supplied with your Atari, there should be an accessory called 'Control.acc' which is a control panel letting you set the current date and time. This is very useful as it time stamps every file you save, making it easy to see when you saved each one.

Please read the Atari manual for a detailed explanation of the functions of each menu available from the desktop.

Once you have loaded the PRO 24 program a different set of menus will be available, except of course the left hand desktop accessory menu which is nearly always available.

The Atari computer works in a thing called the WIMP environment, which means that you move the mouse pointer over what you want and then click to select or change it.

The mouse is the rolling blob that you plug into the left hand 0 mouse port, situated under the right hand front of your 1040ST-E.

The cable (or tail), should be furthest away from you. Moving the mouse up, down, left or right, moves the pointer on the screen correspondingly.

The left button on the mouse is the one used for 'clicking'; the action of hitting and quickly releasing the left button. This action is used to tell the computer you want to select what is underneath the mouse pointer. It may be to select a disk drive or program ready for loading, or to increment a value shown on the screen.

Double clicking is the action of clicking the left mouse button twice, very quickly in succession - almost a triple click in fact. This is a fast way of opening a disk drive icon to see what is on the disk, or to load a program straight away without further reference to the menus such as the file menu and Open option, which is what you have to select after highlighting the drive A icon with a single click.

DRAGGING is the action of picking something up with mouse and moving it somewhere else. To do this you move the mouse pointer (by moving the mouse) over what it is you want to move. You press the left mouse button and hold it down. Then you move the mouse (still holding the left button down) over to where you want to drag the object. Then you release the left button. This is in fact the way that we can copy a pattern or track with PRO 24.

The right mouse button is used within PRO 24 to change a value in the opposite way to the left mouse button.



## **BEFORE YOU START**

You are advised to make a backup copy of the PRO 24 program disk. You do this from the desktop bootup screen.

### **FORMATTING**

First of all, format two blank discs. Format means prepare them ready for use (ie tell them that they are really disks and not just flat bits of rust and plastic). One disk is to copy the PRO 24 program onto, the other is save your song work onto.

To format select the drive A icon by clicking on it with the left button once. It will go dark. Next, under the 'file' menu, select the format option. Select double sided, type in a disk name and select format with the left mouse button. It will whiz away erasing everything that had been on that disk, so lets hope it wasn't important.

Put in the second blank disk and select format again. This disk is to save your song work onto. It is important that you do this now, as the PRO 24 program will not allow you to format a disk from within it. Each disk holds around 15 normal songs; remember to prepare as many as you need before you start sequencing.

### **DISK COPYING**

#### **To make a backup copy of your program:**

First ensure that the write protect tab is open on the PRO 24 disk, so that you can see through it. This will stop you accidentally erasing the disk. Next drag the drive A icon on top of the drive B icon and let go. Then follow the on-screen prompts as they tell you to insert disk A (your program disk) and disk B your empty disk.

Incidentally, you can make a backup copy of your song work disk in the same manner as above. Alternatively, our sequencer utility disk (see later) includes a Fast disk copier & Ram disk, which allows you to easily and quickly copy disks or files.

#### **REMEMBER!**

Monitor on first and off last. Prolongs the life of your system.

### **SETTING UP PRO 24**

TURN OFF THE POWER to your computer and insert the PRO 24 dongle. This is the small black (or blue) plastic box that allows you to use the program.

Ensure that you insert it the correct way up. Now that it is in, you will hardly ever have to remove it. You will only ever need to remove it to run a small selection of software that will not work properly with the dongle in.

**NEVER EVER** remove or insert the dongle with the power on, it can seriously damage the computer and/or dongle.

### **LOADING PRO 24**

To load the PRO 24 program, double click on the drive A icon. A window will open up showing you what is on the disk. You can select whether this will be in text or icons by selecting the appropriate option under the 'SHOW AS' menu. This also allows you to reorganise the order shown.



In a minute we will need to double click on TWENTY4.PRG file to load the program. If you cannot see this file, you will have some grey sections on one or both sides of the window. These are called the scroll bars and the grey part signifies the stuff you cannot see. Click on these with the mouse, until the window shows the correct file.

Once you can see the TWENTY4.PRG file in the form and position you like, temporarily remove the write protect tab on the Program disk so that you cannot see through the hole. Put the disk back in and select 'save desktop' from under the Options menu. From now on, whenever you use this disk to boot up from power off, the disk contents will always come up shown in this way. Put the write protect tab back on so that you can see through the hole once more.

Next, double click on the PRO24.PRG file. After a few moments, the PRO 24 program will load and you will see the main PRO 24 screen.

## SETTING UP YOUR DEF SONG

### The layout:

We have already discussed the general layout of the PRO 24. We can record on any track and get it to play any instrument by setting it to the relevant MIDI channel, by changing the number in the MIDI channel box below the white arrow record selector.

(MIDI channel NO means no change from the channel that it came in on, ie the channel your master keyboard was set to transmit on at the time the recording took place.)

Whilst this system is very flexible it is less confusing to devise a method and system of working. For instance, if we select tracks 1 to 16 to be on MIDI channels 1 to 16, then we will know instantly, which track is using which instrument. The remaining 8 tracks should be set for overdubs and percussion tracks in a system that you find suitable.

Secondly, if we tend to record a certain type of part on a certain track then we will know instantly where to find it. The following is an example of such a set up.

## SEQUENCER PLANNER

TRACK	MIDI CHANNEL	INSTRUMENT	SOUND TYPE
1	1	D110 timbre 1	bass
2	2	D110 timbre 2	chords
3	3	D110 timbre 3	pads
4	4	D110 timbre 4	melody
5	5	D110 timbre 5	count melody
6	6	D110 timbre 6	frills 1
7	7	D110 timbre 7	frills 2
8	8	D110 timbre 8	frills 3
9	9	DX7	theme
10	10	D110 drums 1	
11	11	Evolution 1	
12	12	Evolution 2	
13	13	Evolution 3	
14	14	Evolution 3	
15	15	Evolution 4	
16	16	Evolution 5	
17	10	D110 drums 2	Percussion overdub
18	10	D110 drums 3	Percussion overdub



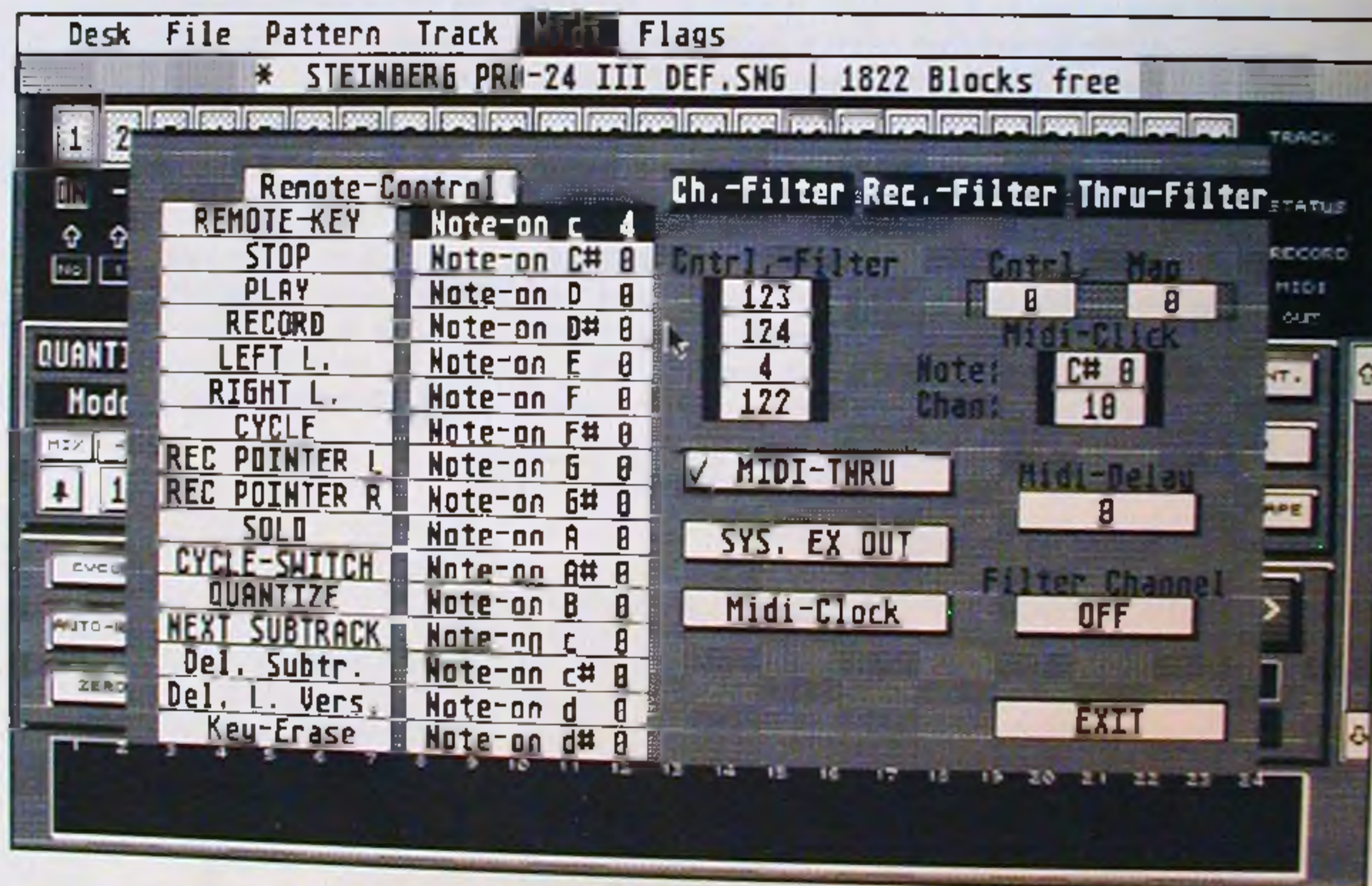
TRACK	MIDI CHANNEL	INSTRUMENT	SOUND TYPE
19	3	D110 timbre 3	Pad overdubs
20	4	D110 timbre 4	Melody overdubs
21	5	D110 timbre 5	counter overdubs
22	6	D110 timbre 6	frills overdubs
23	11	Evolution 1	
24	12	Evolution 2	

Once you have devised such a system, you will know which track to use to get the right instrument and timbre. Once this happens the MIDI channels almost become transparent, which is the way it should be.

## MIDI DEFINITIONS

### MIDI THRU software function:

Under the MIDI menu select MIDI definitions. Select MIDI THRU on. This allows the keyboard to play any other connected MIDI instruments, via the computer. It will talk to the instrument on the same channel as that set on the track selected with the record arrow.



## LOCAL OFF

If you are using a master keyboard that has a local off function, then set this to off. This means that the keyboard keys will not play itself directly, but via the computer. If the computer is set to a MIDI channel other than that of the master keyboard then it will not sound. This is desirable so that you just hear the sound of the unit that you want, and not the master keyboards sound as well.

When using the sounds of the master keyboard, this stops its polyphony being halved during recording, by the effect of the keyboard keys playing it once and then the computer MIDI THRU function playing it again.



## **AUTO OFF CHANNEL**

If your master keyboard does not have a local off function, then set the auto off channel to the same channel as the keyboard is transmitting on. This will stop its polyphony halving during recording. Turn down the volume of the master keyboard to hear the other MIDI instruments in isolation when recording.

## **MOTHER KEYBOARD**

If using a mother keyboard (one that has no sounds of its own), set MIDI thru ON and auto off channel OFF.

## **MIDI MODES**

If you find you get problems with notes hanging on, or instruments not responding properly, consult the MIDI Mode setting section of the PRO 24 manual to set up the Mode setting window. This is necessary due to the slightly different interpretations by manufacturers regarding the MIDI specification. Normally Poly - mono2/poly will do most MIDI instruments, except Roland which needs Poly - All notes off.

If you have set this page and still have problems, try unticking the running status option under the flags menu. When ticked this uses a recognised short cut form of sending MIDI data. Some older and non standard MIDI units cannot read this short hand.

## **DEF.SNG**

Once you have set all this for your system you should save the setup as the def.sng. Temporarily remove the write protect from your program disk and insert it in the drive. Under the file menu, select save song. Select Def.sng and hit the return key. Say no to write backup. From now on whenever you load PRO 24 from this disk it will have this setup. Reselect write protect on the program disk (so that you can see through the window).

## **ASSUMPTIONS**

In the following tutorial the following assumptions are made about these terms.

- 1) Select, means position the mouse pointer over the item and click once with the left mouse button.
- 2) After selecting an icon which requires the typing of text from the qwerty keyboard, return should be pressed to signify the end of the entry.

## **FIRST TUTORIAL**

### **Recording your first track and pattern:**

It is assumed that you have set the MIDI channels of the tracks to ones which your MIDI instruments can respond to. If you only have one MIDI instrument available, which is not Multi timbral, set all the tracks to MIDI channel 1.



# METRONOME

Ensure that the Atari monitor volume is up so that you can hear the metronome beep when you record.

To Record 2 bars on track 1 from bar 1 to 3.  
(For instance use a drum sound; use the track set to your drum instrument.)

Select track one by moving the white record arrow, by clicking in the space for it on track 1.

Select the fast access box above the record arrow, by clicking in it with the mouse.

Set the left and right locator. Hit the L button on the keyboard. (If the left locator doesn't turn into a series of underscores, hit the caps lock key and try again). Enter the starting bar '1' and hit return. Hit the R button on the keyboard. Enter the finishing bar '3' and hit return, (or type '+2' from the right hand numeric keypad and hit return).

Select the record icon with the mouse.

You will hear an eight beat count in and then you record.

Select the rewind (<<) key with the mouse, until the tape counter reads 1/1/0.

Select the play icon and you will hear your recording back. If you don't, check that the track is not muted (showing 'X' instead of 'ON').

Select stop.

Select the track name icon in the fast access window with the mouse. Type in the track name and then hit return.

Select the pattern name icon in the fast access window with the mouse. Type in the pattern name and then hit return.

# QUANTISING

The screenshot shows the Atari Music Editor interface. At the top is a menu bar with 'File', 'Pattern', 'Track', 'Midi', and 'Flows'. Below the menu bar is a track list with 24 tracks, each with a name and a status indicator. The main interface is divided into several sections:

- QUANTIZE:** OFF
- Mode:** Record
- Functions:** A, B, C, D
- Track:** 1, Drums
- Tempo:** 100
- Pattern:** 1, Thrust
- Transport Controls:** RECDR, PLAY, STOP
- Position Counter:** 1 / 1 / 0
- VU Meters:** Two meters showing signal levels.
- Fast Access Window:** A window at the bottom right showing track and pattern names.
- Locators:** Two locators at the bottom left showing bar numbers.

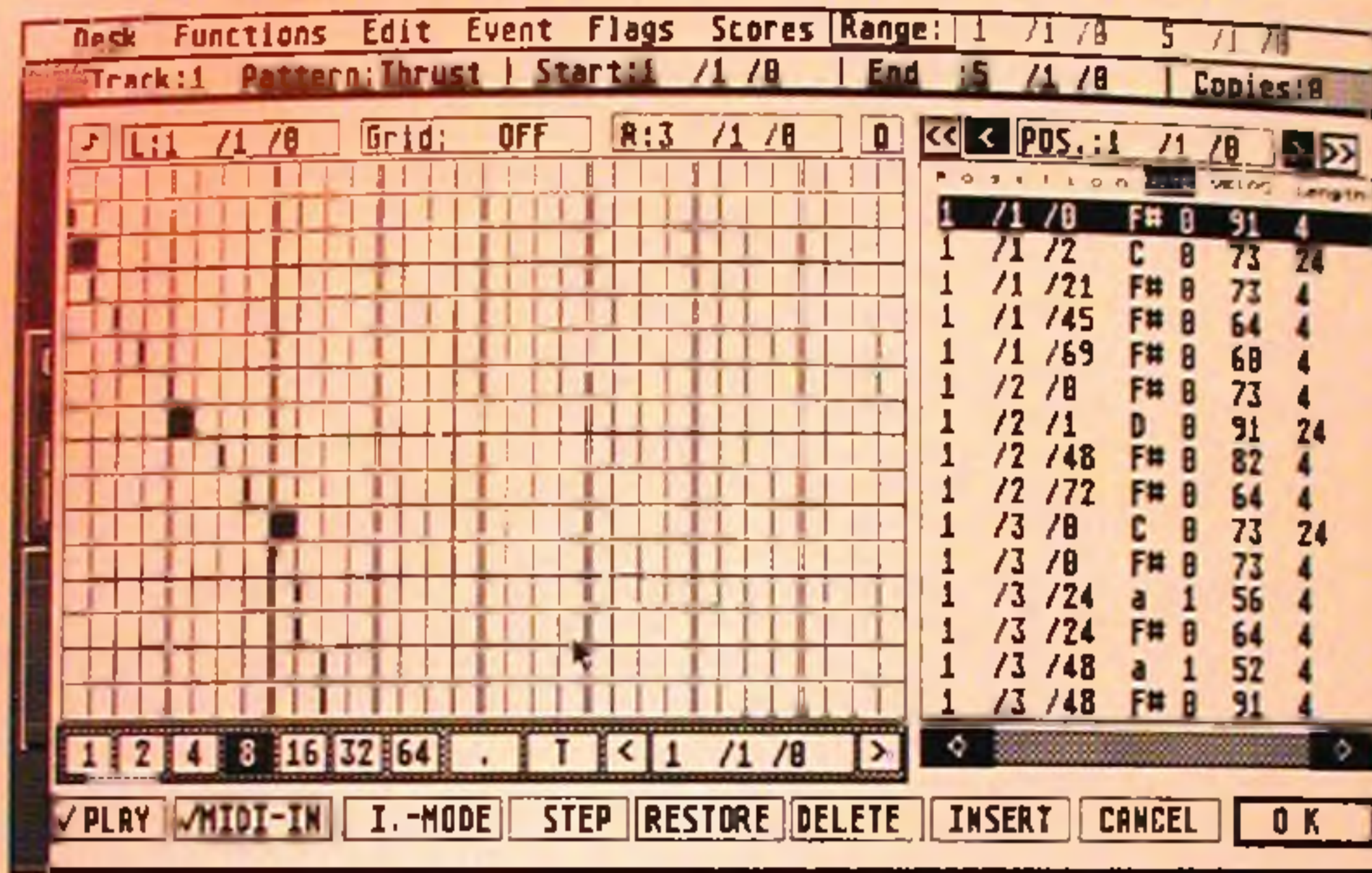
Arrows point to the following elements:

- Menus
- Fast Access Boxes
- Track Mutes
- Record Selector
- MIDI Channels
- Master Section
- Fast Access Window
- Transport Controls
- Position Counter
- VU Meters
- Fast Access Window
- Locators



Ensuring that the fast access window says track 1 pattern 1, select grid edit from the pattern menu. Select 8th note quantise on the bottom row. Then select 'Over Q' under the functions menu. You will see the squares move slightly. Each square represents a note. The length of the square is the length of the note. If you follow the square across to the right you can see other information about it, what position in bars, beats and ticks it is at, what note it is, how loud (velocity) and how long (duration). Any of these values can be altered by clicking on them with the mouse.

When the squares move, they are shifting into exact 8th note timing slots. If you are happy with the result hit OK, if not hit restore and try a new quantise value - ie 16ths. When happy hit OK.



### To repeat this section once:

Ensuring that the fast access window says track 1 pattern 1, select the Repeat function under pattern. Hit this once, using the repeat option under the pattern menu.

When the Repeat window opens, select as ONE pattern, so that the original and repeat become double the length: so instead of two distinct 2 bar patterns it becomes one 4 bar section. This will help us manipulate it as one block later.

If we select data copy (highlighted black) then the data of the original and copy are distinct as if we had played it twice. With Datacopy off (white), if we change either the original or the copy in any way the other will change to be identical.

For this exercise we shall do it without Datacopy. Type in the number of repeats required, in this case 1, and hit return.

### Recording your second track on track 2,

#### Record 4 bars from 1 to 5 on track 2:

Select track 2 for record, by clicking where the white record arrow should be.

Double check that the left locator is set correctly.

Set the right locator to end at bar 5, by hitting R, typing 5 and then return (or hit R, '+4' on numeric keypad and enter).

Select record and, after the eight beat count in, play. You should hear track one playing as you record. If you don't, check that it is not muted (showing 'X' instead of 'ON').



### **Record a third track on track 3:**

Record 4 bars from bars 1 to 5 on track 3.

Select track 3 for record, by clicking where the white record arrow should be.

Double check that the left and right locator are set correctly.

Select record and, after the eight beat count in, play. You should hear tracks one and two playing as you record. If you don't, check that they are not muted (showing 'X' instead of 'ON').

### **Recording a second section on track 3:**

Record 4 bars on track 3 from bars 5 to 9.

Select track 3 for record, by clicking where the white record arrow should be.

Double check that the left and right locator are set correctly.

(Use 'L' '5' return, and 'R' '9' (or 'R' and '+4') return, to set them).

Select record and, after the eight beat count in, perform.

## **COPYING**

Copy section 1 (tracks 1, 2 and 3, originating from bar 1 to 5) to start at bar 9, ending at bar 13.

### **To copy the section from the first track (1):**

Select the destination locator (by clicking on it, or hitting '/' on the numeric keypad). Enter the position where the copy is to start from - bar 9.

Select the fast access box for track 1, by clicking on it. If it doesn't say pattern 1, then select pattern 1 by scrolling with the mouse on the pattern number.

Drag the word pattern from the fast access window, onto track 1. This will copy that pattern onto track 1 starting from bar 9.

### **To copy the section of the next track (2):**

The destination location is the same - bar 9.

Select the fast access box for track 2, by clicking on it. If it doesn't say pattern 1, then select pattern 1, by scrolling with the mouse on the pattern number.

Drag the word pattern from the fast access window, onto track 2. This will copy that pattern onto track 2 starting from bar 9.

### **To copy the section of the next track (3):**

The destination location is the same - bar 9.

Select the fast access box for track 3, by clicking on it. If it doesn't say pattern 1, then select pattern 1 by scrolling with the mouse on the pattern number. Drag the word pattern from the fast



access window, onto track 3. This will copy that pattern onto track 3 starting from bar 9.

### **Repeat pattern 3 on track 3, twice:**

Select track 3 fast access box by clicking on it. Ensure the fast access window says track 3, pattern 3. If it doesn't, use the mouse to scroll to the right one.

### **Select repeat under the pattern menu:**

When the repeat window opens, select data copy (so that the copies are independent), select repeat 2 times, and leave as ONE pattern 'off'.

## **TRANSPOSING**

Ensure that the fast access window says track 3 pattern 4. If it doesn't, use the mouse to scroll to the correct one.

Click on track info in the fast access window.

A new window opens up allowing us to set certain parameters.

Select transpose +3 which will transpose that pattern by 3 semitones. Move the mouse away from the window to exit from it.

## **NOTE EDITING**

Ensure that the fast access window says track 3 pattern 5.

If it doesn't, use the mouse to scroll to the correct one.

Select grid edit under the pattern menu

Alter some of the values of the notes' pitches, durations, velocities and positions by clicking with the mouse.

When happy, select OK.

Finally rewind to the beginning of the track and play back the whole thing.

It may not be a masterpiece, but it should show you a number of the ways in which PRO 24 can be used to create, record and manipulate your music.



## LOADING AND SAVING

Now that you have created your master piece insert your empty formatted song disk, and then select 'save song' under the file menu. The disk file selector box appears, and waits for you to type in an eight character file name, ending with the letters 'SNG'.

To load your work back in, after a suitable rest while having tea and biscuits, select load song under the file menu. The file selector will appear. Simply use the mouse to double click on the file you wish to load.

## COPYING WITH CUT COPY

NOTE: In the fast access window a very powerful and useful function exists called Cutcopy. Double clicking on this opens a new window that allows you to specify a part of a pattern that we want to copy. To use this function, type in the correct values required and exit the window by selecting OK.

You will find that you can drag the word Cutcopy and copy it onto any track, starting at the bar set in the destination locator.

Try using a cut copy 1 bar long on one of the tracks. Select bar 1 on the destination locator. Drag it to a new track and repeat it 4 times. It might not be very good, but it illustrates how repeating a part of a riff can create a new one.

**METHODS** of song arrangement.

Earlier we looked at methods of song arrangement. It would be beyond the scope of this brief tutorial to go into greater depth.

Hopefully by now, we have shown you some of the functions and processes that are possible with PRO 24. We trust that having mastered the basics we have covered you will have the confidence and enthusiasm to master the rest of this program.

### ***Good Luck and happy sequencing!***

PS ... Don't forget who's in control. PRO 24 is merely a tool to help you create and record music. Use it wisely.

## IDEAS IN SEQUENCING

Let's take a brief look at some sequencing techniques that we can use.

### ***Changing the sound:***

The most obvious technique is to change the sound. For example, playing a bass part with a string sound can give an interesting accompaniment. You can use the transpose function to put the part into a more suitable octave (pitch range). You can also use the minimum length option in the Grid Edit page, which can be used to make the notes sustain for longer, resulting in a more legato style.

### ***Layering:***

Layering is just a technique for playing the same part with two (or more) different sounds from two (or more) instruments.

This is achieved on PRO 24 by copying the part or track to a new track and changing the MIDI channel on it for another instrument. This means that the part will play with two sounds. If you use two pad type sounds you will get a much richer sound. If you layer a pad sound with a percussive or bell like sound, you will give an edge to the sound.



### **Transposing:**

By transposing a part into a new octave range (pitch), either up or down, the sound and feel of the part can be changed. For instance, transposing a bass line up by 24 semitones, turns it into a lead type line.

By copying a part and then transposing the copy instant harmonies can be achieved, either simple octave doubling or musical harmonies such as 3rds, 5ths and 7ths.

By doing a number of copies and transposing each differently, chords can be built up out of solo or bass lines.

### **Echo type effects:**

By copying a part, and then with a mixture of delay, velocity shift (loudness up or down) and transposing, interesting effects can be created.

### **Global transposition:**

By using the global transposition function, found under the track menu, the key of part or whole of the song can be changed by setting the range of the song to be transposed with the left and right locators. For instance, this lets us transpose the song into a new key that a singer can work with, rather than rerecording the whole song.

It is important to keep any percussion tracks muted when you use this function, so that they are not affected, otherwise the percussion sounds will also be transposed causing different percussion sounds to be played. Note, any tracks that are muted will not be transposed.

Setting the left and right locators for just a section of the song, will transpose that section. This is useful for doing key changes say just at the end of the song.

### **Global cut and insert:**

This is found under the track menu of PRO 24.

Global cut and insert will remove or insert a blank section of tape between the left and right locators, on any tracks that are not muted. This is useful for adding or removing sections of the song, ie inserting a 4 bar percussion break in the middle of the song.

### **Reverse:**

In the grid edit page there is a reverse function, which will reverse the order of the notes within that pattern. This can give some interesting new ideas for riffs.

But for real riffs and inspiration check out Dr Tiricc, the inspirational composers' tool, that can create music, drum patterns and lyrics ... it speaks to you and does impersonations too.

NOTE.

As with all functions in the grid edit page, if the set range function is used the function will only effect that range. In this way only a section of the pattern can be reversed, quantised, etc.

### **Step time:**

By using the Step time data entry facility on the grid edit (or score) page, fantastic arpeggios and riffs can be created by simply inserting notes (such as 16ths) bearing in mind the key signature and scale. Using rests will increase the interest of the creation.

### **Slowing the tempo down:**

By slowing down the tempo when recording, difficult and dexterous passages can be recorded in real time and then played back at normal speed.

### **Mixdown:**

By soloing a track and selecting a new track to record onto, the mixdown function, found under the pattern menu, allows you to select double and half speed bounces. This can give some interesting harmonies both rhythmically and melodically.



### **Overdubbing controllers:**

By selecting to record on a new track, set to the same MIDI channel as another, the pitch bend, modulation and sustain controllers, etc, can be overdubbed onto another track. This means that a number of attempts or versions can be made of the controller, without destroying the original piece.

## **TIPS...**

If a dialog box, ie a window with two options such as cancel and ok, is open, and the OK option is heavily outlined, then pressing return will select this option as the default option. In Grid edit, return confirms any changes made. Selecting cancel, omits (ignores/forgets) any changes made.

### **Mixdown:**

If you get any problems with the length of a pattern, solo the track, selecting a new track to record on, set the left and right locators for the required new length of the pattern, and then select mixdown (under the pattern menu) at normal speed.

To arrange a song quickly after you have recorded all the parts, try bouncing all the tracks onto new track, by setting the left and right locators for each section of the song and using the normal speed mixdown function, (under the pattern menu). Solo this new track and set it to MIDI channel NO (for No change - use original MIDI channels as when recorded). Now the whole song is on one track, in the desired length sections, for easy copying.

### **Global Cut and Insert:**

Can be used to remove or insert a blank section of our virtual tape, between the left and right locator positions.

### **Storing patch data:**

The data for the sounds in your MIDI instruments can be stored in the PRO 24 Dump Utility page, under the MIDI menu. See the PRO 24 manual for more details.

## **TRACK INFO**

If you double click on a track's fast access box, or select the track info icon in the fast access window, a new window opens up. In this you can set certain parameters such as below:

**Sound** - Sends MIDI patch change command. To set the instrument to the correct sound number.

**Volume** - sets the output level of the MIDI instrument.

**Velocity** - increases or decreases the played loudness of each note.

**Delay** - delays sending the performance on that pattern ahead or behind of the other tracks.

These parameters will be set every time the beginning of the pattern is played.

Holding control when you change any of these values, will make the change happen live.

### **Desktop patchers:**

Rather than dealing with just a patch number to select the sound that you wish to use, you may like to use a desktop accessory patch changer, such as PC128. This can be set to show you the names of the sounds in your instrument, and patch set ups can be stored for each song to disk.

We also do a desktop track planner, which can be used to enter multitrack tape or sequencer information.

**Right locator.** When setting the right locator, you need not work out in your head on which bar the recording should end. After hitting R to select entry for the Right locator, you can type in '+' from the numeric keypad and then the number of bars required, and PRO 24 will work out the end bar for you.



# GLOSSARY

- BARS** Used to split a piece of music into easily manageable chunks, so that a particular point can be found easily.
- BEATS** Related to the time signature, a beat is the number of sub divisions of a bar. In 4/4 time, a bar is split into 4 beats of a quarter (4) note. In 3/4 time, a bar is split into 3 beats of a quarter (4) note. In 7/8 time, there are 7 beats of an eighth note each. A beat is the comfortable walking or hand clapping pace - 1,2,3,4 etc.
- BOUNCE** Combining or copying 1 or more tracks to another track. Normally used to free the number of working tracks. Particularly useful in PRO 24 to create a single track (on MIDI channel NO) which contains all of the parts of the song. This can then be easily copied and rearranged.
- In PRO 24 bouncing is achieved with the MIX-DOWN function (under the track menu). Any parts on a different MIDI channel can later be unbounced by using the REMIX function (under track menu).
- BPM (Beats Per Minute)** A measure of the tempo.
- CLICKING** Using the left mouse button to select or change the item under the mouse pointer.
- COPYING** A means of making an identical copy of the original, leaving the original intact and in its original position. Useful for copying verses and choruses into a song order.
- CYCLE** The section between the locators is just repeated again and again. Can also be used for recording, to build up overdubs, say for a drum track.
- DESKTOP** The original boot up screen, which shows the drive and trash icons.
- DESKTOP ACCESSORY** A program that is available from within another program. Accessed under the extreme left hand menu.
- DOUBLE CLICKING** The act of clicking the left mouse button twice very quickly. Used to open the disk drive or run a program directly.
- DISK** The 3 1/2" DSDD (Double Sided, Double Density) magnetic media, used for storing programs and data (ie songs).
- DOUBLE/SINGLE SIDED** A double sided disk uses both of its sides to store twice the data. There is no reason for using anything else, except when you need to exchange data with a single sided only disk drive owner. Double sided disks cost pennies more than single sided.
- DONGLE** The small black (or blue) plastic box that allows the program to run. Must be inserted the correct way up, with the power off. NEVER insert or remove the dongle with the power on. Do not lose the dongle; the disk costs a couple of quid to replace, the dongle costs the entire program.
- DRAWING** The act of selecting an item by pointing the mouse over it, then pressing the left mouse button, and keeping it held, while you move the mouse pointer to the new location and then let go.
- FORMAT** A means of preparing a disk for use. You must format a disk before you can save on it. You cannot format from within PRO 24, ensure you have an empty formatted disk pre-prepared.
- FSK CODE** Frequency Shift Keying. A type of synchronisation code, recorded on the last edge track of a tape machine. Used to synchronise the start time and tempo between the tape and the MIDI sequencer/drum machine.
- ICON** The name for the pictorial representation of an object.
- INTRINSIC TECHNOLOGY Ltd** A company set up to fill the gaps in the market, providing user friendly, quality products, at value prices. Products born out of necessity, not marketing.
- KEYBOARD** A device with piano style keys, used as a musical instrument.
- KEYBOARD** The qwerty keyboard unit including the disk drive, memory and computer brain.
- KEYS** A sequence of notes that have a set relationship to each other, which are melodic and (can be) pleasant to listen to.
- HEX** The system of counting and showing base 16 instead of the normal decimal base 10. ie 1-9, then A=10, B=11, C=12, D=13, E=14, F=15. Allows larger number to be represented with fewer digits.
- LOCATORS** The left and right position indicators used to determine length of recording and points to cycle between.
- MIDI MODE** Instruments have four basic states of operation called modes. They consist of the variations of two factors.
- 1) whether the instrument is set to receive in OMNI ON (all channels) or OMNI OFF (channel is selectable).
  - 2) Whether the instrument will play monophonically (only one note at a time) or polyphonically (more than one note at a time).
- For modern multi timbral instruments these MIDI modes are not so important, as they usually default to Mode 3 - Omni off, Poly On. However if you ever get an instrument playing more than its fair share of parts, double check that its Omni mode is off.
- MIDI CHANNEL** The MIDI channel is like a MIDI instrument's personal telephone number. Once selected it will only play information sent on this channel. A bit like the MIDI cable being a television aerial, and the instrument a TV. You have to tune into the channel that you want to use.
- MIDI** Stands for Musical Instrument Digital Interface. Physically the five pin DIN MIDI IN, OUT and THRU ports, that allow MIDI units to connect and communicate with each other.
- MIDI IN** This port is used to receive MIDI data. (listens to) sent from another MIDI instrument's MIDI out port.
- MIDI OUT** This port is used to send MIDI data to the MIDI IN of another MIDI instrument. (speaks to).
- MIDI THRU** This port is used to daisy chain a number of MIDI units together so that they can all have access to listen to MIDI data sent from a single MIDI instrument (ie sequencer). The OUT of the source is connected to the IN on the first unit, the THRU of this is then connected to the IN of the next, the THRU of that to the IN of the next and so on.
- MIDI CLOCK** Is the timing signal sent from a MIDI instrument which tells the other MIDI units what tempo to run at.



<b>MIDI controller</b>	Any MIDI instrument capable of originating a MIDI event, such as notes from a MIDI keyboard, MIDI drum machine or MIDI drum pad.	<b>PUNCH IN</b>	The act of replacing a section of a recording by replacing it with a new recording in that section. Also called Drop In.
<b>Specific</b>	MIDI data created by the use of one of the controllers on a MIDI instrument, such as the modulation wheel and sustain pedal.	<b>RAM</b>	Random Access Memory that can store data created by a user.
<b>MIDI TIME CODE (MTC)</b>	A new standard for MIDI. Comprises of SMPTE time information converted to quarter frame MIDI messages, combined with MIDI controlling commands, such as start, rewind, etc. Can allow the integration and control of MIDI and audio/video equipment. ie The Fostex MTC1 with the Steinberg Cubase sequencer, allows control of the Fostex R8 multitrack tape machine. In both terms of synchronisation and multitrack record functions such as drop ins.	<b>ROM</b>	Read Only Memory from where data can be read. Data can NOT be stored here by a user.
<b>MIXER</b>	A device used to combine a number of audio inputs together allowing routing and processing of each signal.	<b>SAMPLING</b>	Recording a sound digitally into a memory for real time manipulation and triggering. Allows the sound to be transposed in pitch. ie recording a glass breaking and playing a tune with the sampled sound.
<b>MULTITRACK</b>	A tape recorder consisting of more than two tracks. Each track can be recorded at separate times, or treated individually.	<b>SMPTE</b>	Society of Motion Picture and Television Engineers. A body who created a standard type of Time Code which is used to synchronise MIDI, audio and video machines together. Consists of a code containing the time in hours, minutes, seconds frames and sub frames. There are four different rates for the frames, depending in which area of the industry the code is used. The most common for music and video is 25 frames. Also called EBU code.
<b>MIXDOWN</b>	Found under the track menu. Allows 1 or more tracks to be copied, combined and bounced onto another track. (The originals stay where they were) Audio - The process of recording a number of tracks to a lesser number, such as in mixing a multitrack tape of 16 tracks into a stereo mix on a two track mastering machine.		24 frame is used for film work. 30 frame is for black and white American TV. 30 drop frame (29.97) is used for colour American TV. The rates revolve around the number of pictures per second shown in each area.
<b>MASTERING</b>	The process of recording a final mix version onto a format for distribution and copying. ie making a cassette copy of your sequencer work, to send to a friend.	<b>SONG POINTERS</b>	Refers to the synchronisation of a MIDI device with either audio or video tape (via an FSK or SMPTE synchroniser) or with another MIDI unit (ie linking a drum machine and a sequencer).
<b>MASTERTRACK</b>	The section used to define time signature and tempo changes that occur through a song.		Instead of just continuous MIDI clocks being sent to keep the tempo, a song pointer is sent (the number of MIDI clocks since the beginning of the song). This allows a MIDI device, such as a sequencer, to start from the correct bar whenever the tape is played. Without songpointers, the tape must be played from the beginning if the two are to stay in time.
<b>MODULE</b>	A term used to describe a MIDI instrument that consists of the sound generating part of a keyboard, but NOT the actual keyboard. A keyboard without the keys.	<b>SYSTEMS EXCLUSIVE</b>	A type of MIDI data used to describe and alter the sounds or settings of a MIDI unit. This data can be stored and recalled as a block of data (ie a new bank of sounds for a synth) or in real time, ie to alter the Reverb time of an effects unit in real time.
<b>MULTI EFFECT</b>	An effects unit capable of providing more than one effect type at a time, ie Reverb and Delay simultaneously. In the present generation of units, only 1 set of inputs and outputs is provided. This means that any sounds treated will be treated with all the effects, ie both Reverb and Delay together.  The MIDI function on such units only allows the patch changing and selection of the effects types' memories. A common misunderstanding is that by connecting your keyboard to the effect with MIDI, each MIDI channel can have an effect added to it. They can't. The effects have to be added by connecting the audio system.	<b>TEMPO</b>	The speed at which music is played.
<b>PATTERNS</b>	A section of music on a track. A pattern does not have to have any relationship (length or otherwise) with any pattern on any other track.	<b>TIME SIGNATURE</b>	The number of beats of a musical value, in a bar. ie 5/8 is 5 beats of an eighth note each, in a bar.
		<b>TRACKS</b>	A place where data is stored. The track can be accessed individually.
		<b>TRANSCOPE</b>	Shifts the notes of a performance to play in another key.

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# KEYBOARD SHORT CUTS

A large number of the functions selectable with the mouse on PRO 24, are also available by hitting a key on the qwerty keyboard. The main ones are shown below:

+	Raise value
-	Lower value
Enter/return	Play
0 (numeric keypad)	Return to zero
Space bar	Stop
.	Record
(	Jump to left locator
)	Jump to right locator (Use right hand numeric keypad brackets)
L	Set left locator
R	Set right locator (NOTE caps lock must be off)
/	Set destination locator
F1 to F10	Recall L & R locator positions
Shift & F1 to F10	Store left and right locator positions
Alternate & F1 to F10	Recall track mutes.
Shift & Alternate & F1 to F10	Store track mutes.
Cursor arrows (< >)	Select track for record
Shift & < >	cursor arrows Select pattern for fast access
Numbers 1 to 9	To select tracks 1 to 9 for fast access
Left Shift & 1 to 9	To select tracks 10 - 19 for fast access.
Right Shift & 0 to 4	To select tracks 20 - 24 for fast access.
Esc	To mute current track.
C	Cycle mode on/off
A	Auto record on/off
N	Name pattern
S	track Solo on/off
T	Master track on/off
M	Sync mode - Internal, MIDI, Ext
B	Metronome beep off
X	Select tape/sequence mode

For other keyboard commands from within the Grid edit and Score edit screens, see your PRO 24 manual.