

CONNECTING THE UMI-4McV INTERFACE TO THE BBC COMPUTER

Make sure the Beeb is switched off. Place the UMI-4M interface on top of the Beeb and pull the two ribbon cables round the back and under the Beeb. Whilst steadying the UMI-4M interface at its back lift up the front of the Beeb and have a look underneath. The connectors on the ends of the two ribbon cables must be inserted into the sockets marked '1MHz BUS' and 'User port' with the red stripes on the cables to the right in both cases. The two connectors are different sizes so it will be clear which connector goes in which socket. Take care to push the connectors home straight but do not apply excessive force. There should be a faint clicking sound as the retainers close in. To remove the connectors push the retainers outwards. This action alone will usually jettison the connectors.

FITTING THE UMI EPROMS

Remove the lid of the Beeb by unscrewing the two Philips type fixing screws at the back and the two underneath the micro. Lift off the lid.

If you are using just the Beebs five on-board ROM sockets then you will first have to remove the computer keyboard to gain access to the sockets. (It's sometimes enough just to remove the right-hand keyboard securing screw and to then rotate the keyboard slightly to clear the sockets.)

EPROM location

It is essential that ROM1 occupies the lowest priority socket in the BBC micro. If you are using an unexpanded BBC 'B' this entails keeping ROM1 to the left of ROM2 and BBC 'BASIC' on the extreme right. (Without an expansion ROM board there will be no room for ROM3, 4 etc.).

If you do have an expansion ROM board in your model 'B' then ensure that 'BBC BASIC' is in the highest numbered socket and that UMI ROM1 is located in a lower numbered socket than all other UMI ROMS. The relative positioning of other utilities should not affect the arrangement.

*When using the BBC 'Master' a *ROMS command will display the socket layout and whether you are using the internal ROM sockets or ROM-holding cartridges you should observe the conditions set out above. If you are using the Master's internal ROM sockets numbered IC37 and/or IC41, it is essential that the links numbered LK18 and/or LK19 respectively, should couple the EASTERLY two pins. The 'Master' cannot recognise the presence of ROMs inserted in these sockets unless this condition is satisfied. (See Master reference manual part 1 section F5.4).*

Inserting EPROMS

Locate the EPROM over its socket making sure that the notch at one end of the chip is pointing in the correct direction (Look at the other ROMS/EPROMS already situated). Then, making sure that the pins of the EPROM are not 'broad' of the socket push

it home. Don't be put off by the awful crunching sound the chips make when you're doing this.

Removing EPROMS

Only if you need to re-arrange your ROMS/EPROMS. Carefully remove an EPROM by rotating a flat bladed screwdriver between the chip and its socket prising it out a little each side at a time. If one corner does happen to ping out before the others then just hold that corner down (without re-inserting it) while easing out the others. Do not attempt to lift one end of the IC right out of its' socket in one go. If any pins get bent try to bend them carefully back into place

POWER UP

After switching on the Beeb type *UMI or *U. and you will be confronted with the main menu from which the various options can be selected.

(If you call up UMI having just used your BBC micro for some other purpose make sure you start by hitting CTRL-f4 to clear the memory.)

Having selected and completed an option from the main menu it is possible to jump immediately to any new option by hitting the appropriate red function key, though you may find it easier in the early stage to return always to the main menu in order to learn where things are. We shall deal with these options in the order that you are likely to use them.

WARNING

It is illegal to copy the UMI software or to clone the UMI hardware. Umusic will offer a reward for any information leading to a successful prosecution against any bootlegging operation.

Be sure that the item you purchase is one manufactured by Umusic Limited. The hardware interface contains a unique serial numbered EPROM. Umusic will not supply software updates or any service or backup whatsoever for a UMI-4M where it is apparent that it has been cloned.

Default values are designed to save time in the long run and should be altered for your particular requirements.

locate and nudge:

This convention has been adopted on most (not all) of UMI's pages to alter values. Use the up-down cursor keys to bring the flashing cursor under the value you wish to change, then nudge the value +/-1 using the right-left cursor keys.

-- clock in --

IF you are using an external drum machine to provide the time-keeping clock pulses (not MIDI clock) then set clock-in to external.

If you are using 'UMI' as the timekeeper then just set clock-in to read 'internal'. Internal tempo can be directly keyed in at the main menu. Only integer - not decimal - values can be entered and should be followed by <RETURN>. Fine adjustment can then be made using the left/right cursor keys.

When in the 'internal clock' mode and with the song-play page selected UMI will automatically slave to a MIDI clock input.

Select tapesync when slaving to the FSK code previously laid down from UMI's tapesync output.

-- midi clock out --

A constant midi clock output can be sent from the midi-out (ACIA 4 only) by setting this value to on. It could be used to drive and synchronise, for example, a drum machine which responds to a MIDI clock. The MIDI clock pulses are 'mixed in' with other music information so if MIDI clock is not required it would be better, though not essential, to switch it off.

-- click --

A click can be emitted from the Beeb's internal speaker to help you keep time when recording patterns in real-time. This will probably only be needed when an external drum machine is not being used and should be selected to accord with the time signature and the rhythmic stresses of the music being recorded. The default value of 8, which clicks on every quaver of a 4/4 bar, is likely to be the most commonly used. The click is also available for amplification on pin 5 of the MULTI 2 socket on the UMI-4M interface (pin 2 is ground).

-- count in --

When recording in real time it is useful to take a preliminary period, or count-in, to gather your faculties and set yourself to the tempo of the drum machine or 'UMI's click. Set this to as long a value as you feel necessary. 4 would be a normal choice when working in 4/4. (remember, if the click is set to 8's, a 4 beat count in is equivalent to 8 clicks)

-- pattern length --

If in working up a particular song you are likely to be recording 4 beat sections then set this value to 4. In any

case you will not be committed to the value you select here as in both real and step time modes it can be overwritten.

-- restart note --

If during the record phase of real-time record you feel that your performance is not satisfactory then hitting the relevant (restart) note on the synth will stop recording and immediately prime the entire system for a re-record. In conjunction with auto-start mode this means you can start and stop the real-time record procedure entirely at the synthesizer.

-- global transpose --

If the entire song needs to be transposed up or down, over and above the local transposition of individual patterns, then set this value accordingly. Any tracks which need to ignore (drum tracks for example) or acknowledge global transpose can be toggled to either state by hitting key T when on the relevant track in song play mode.

-- beat --

This value defines the basic rhythmic unit referred to in pattern-length above. It should be set to crotchet for time signatures such as 3/4, 4/4 etc. or to quaver for 5/8, 7/8 and the like.

-- storage --

Select DFS (disc filing system) or ADFS (optional) if you are using the BBC 'Master'.

-- midi controller --

In edit pattern (f3) it is possible to erase completely, any one of the 127 possible controllers (e.g. sustain, mod, MIDI volume etc etc). Also on the micro-edit page individual controller events can be displayed and thus inserted or deleted at will. The value pre-set here determines which controller.

-- midi filter --

Whichever value is selected here will be ignored in the record mode. This can be indispensable when using, for example, certain ROLAND keyboards which issue MIDI all-note-off commands when hands have left the keyboard. If this code is acknowledged it will interfere directly with overdubs recorded within the same pattern. Set this value to 123 to filter out this particular MIDI event.

-- disc prompt --

With this set to 'on' and with the 'manual' disc in your drive you can call up relevant 'help' pages by hitting the ESCAPE key in certain modes. When you become fluent with UMI you may find it better to leave this facility off since ESCAPE can often be hit by accident. The optional flippable disc available for the 4M package contains the disc 'manual' in 40 track format one side - 80 track the other. It has not been copy-protected so while you are learning to use UMI you should incorporate a copy of 'manual' at the beginning (for faster access) of all your song-storage discs.

-- bend range --

When the CV board is in place within the UMI hardware this governs the range of the MIDI pitch wheel in use.

-- CV channel --

Determines which MIDI channel is to be routed to the CV/GATE converter.

(N.B. As a rule of thumb when input from the computer keyboard is required, the delete key is always active and can be used in the normal way to erase an incorrect entry. It is not until you hit the RETURN key that your input is committed. Remember also that if you select the wrong option from the main menu you can always get back to the menu by hitting RETURN or you can bypass the menu and jump straight to some other option by hitting the appropriate red user-key.)

Let us assume that you have not adjusted the pattern length default value on the defaults page i.e. this is still set to 8 beats.

Having selected the "write real-time" option you will be prompted to input a pattern number. This can be any number from 1 to 127. ('written so far' at the bottom of the screen indicates those patterns that have already been written and, of course, when you start work this section will be blank. When more than sixty or so patterns have been written the resulting 'scrolling' can be 'frozen' by holding CTRL+SHIFT together immediately after selecting the page.)

So, by typing '7' and pressing RETURN you can set about recording pattern #7 for a duration of 16 beats (the default length). Should you wish to overrule the default pattern length and make pattern#7, say, 4 beats long then it is only necessary to type '7,4' followed, as usual, by RETURN. (You also have the option at this stage of specifying 'override-channel' - see below).

UMI is now waiting for you to start (we shall refer to this later as the record-ready state) but you might first need to alter one of the following options before you do so. Use the four cursor keys to select:-

rec mode:

either loop record (ideal for overlaying drum patterns one or two instruments at a time) or one-shot. If you are using the RAM or ROM drum assignments pages of the MICRO/EDITOR and have selected MIDI channels to display drum names then the system will automatically select loop record whenever those MIDI channels are selected. You can de-select it on this page if you want to.

'Loop' and 'one-shot' are also each provided with a 'nof' option. This is only for use with those drum machines that are content to operate without receiving 'note-off' events, the advantage being that only half the normal amount of memory will be required for recording such patterns. Establish suitability of this option by a simple success/fail trial. Try to ensure that patterns recorded in the 'nof' mode and subsequently overdubbed, are maintained as 'pure' 'nof' patterns, i.e. do not mix event types. Failure to observe this is not

'fatal', but it can cause slow scrolling on the micro-editor page. If you have inadvertently mixed gated and 'nof' events use key 'N' to strip note-off events in mode f3.

override channel: (see also editing) Ignores the transmitting MIDI channel of the synth connected to the UMI's MIDI input and substitutes, at the four MIDI outputs, any channel value selected here. This is an extremely important facility since many extensive MIDI set-ups have a single controlling keyboard and you would set *override-channel* to access or to 'route' to a particular synth. As this facility will often be called upon it can be implemented more readily when keying in the *pattern#* you want to record. If, say, you want to record *pattern#9* on MIDI channel 4 then key in '9,,4'. The double comma lets the software know that 4 is the chosen *override-channel*.

fixed velocity: except when set to 'off', in which case all performance nuances are observed and recorded, this ignores velocity information and substitute the velocity selected here.

pre-correct: when set to 'off' all timing nuances of your performance are preserved (to within the resolution of the 48ppq system clock). Otherwise timing is 'auto-corrected on the run' i.e. quantised at the input stage to the selected tolerance. This is particularly useful when using loop-record since each overdub can be laid over a 'tight' replay.

simulplay: (see also Editing) When set to 'on', patterns concurrent with that currently being worked upon are automatically selected from the 16 song tracks and provided for monitoring.

record after: (recstart)

In full this would read "record after the specified number of beats". Say you need to drop-in (described in the edit section which follows) at the eighth bar of an eight bar pattern. Set this value to, say, 24(beats). Once you hit the SPACE BAR you will be monitoring after the 24th beat, i.e. at the beginning of bar 7 and so you need only wait one bar before the drop-in rather than wasting time

working from the beginning of the pattern. Move even closer to the drop-in if you wish. This facility would be useful also if you wished to record say a drum fill at the end of a two bar pattern. *N.B 'count-in' on the defaults page MUST be set to zero for this facility to work properly. (In any case a non-zero count-in would be inconsistent with the aim of recstart).*

Controller 'thinning' options

It's well known now that most of the various controllers on synthesizers output far more MIDI events than are necessary to achieve their effect and that this extra and superfluous detail uses excessive amounts of computer memory. The thinning facility will operate on-the-fly and the power-up defaults can be adjusted to collect anywhere between 0% (completely filter out) and 100% (record all events) for each of ctl (MIDI controller set on defaults page), after-touch and pitch-bend. Note that the 'pac' functions described under the 'edit' section have an identical effect but that these operate after the recording of the pattern.

Having set any of the above parameters to your requirements (it is possible that none of them will require your attention) you can either initiate a count-in by hitting the SPACE-BAR and begin playing the synth after a 4 beat count-in (or whatever count-in you have selected) or you can trigger the entire system to start just by playing the synth. This last method obviously assumes that your first note(s) are to occur exactly on beat 1 and that you have decided not to use a count-in.

If you are not using an external drum machine you will find it easier to help keep time if you work to the Beeb's internal click. It can be toggled on/off using the TAB key either before or after recording or during playback and its status is always indicated on the screen.

N.B. When working with the internal clock the tempo can be adjusted, as described in clock-in above, during both the count-in and play-back periods.

Hit the SPACE-BAR (or auto-start by playing the synth keyboard) and maintain your performance for the period you have selected (4 beats, 8 beats or whatever) and then cease. The record period is now over and playback will be immediately looped back to you. You can of course continue to play along with the pattern but this will not be recorded.

If during the record period you feel that your performance could be improved then playing a note on the synth (pre-selected on the defaults page) will halt and re-prime the system for a re-record. If loop-record mode is selected then the restart option is permanently 'live' (since you are

permanently in record mode).

When recording in real time, patch changes may be recorded too.

Just hit the patch number as part of your performance and this will be recorded in much the same way as your played notes. This provides a useful way of introducing timbral variation into your work when using only one synthesizer. Note that to record a patch change from a DX7 it must be set to 'systems exclusive unavailable'.

Hitting the SPACE-BAR after initiating real-time record will stop the playback and the screen will display the pattern-editing menu. Let us deal with this in detail.

-- play pattern -- (space bar)

Looped playback of the pattern just recorded can be started and stopped by repeatedly hitting the SPACE-BAR. If using the internal clock you can adjust the tempo, as described above, using the cursor keys while the pattern is playing.

Whilst pattern is playing, hitting any one of the keys A to P will transfer playback to the MIDI channel corresponding to that letter, i.e. pressing "E" will direct playback through MIDI channel 5.

The following options are accessed from the computer keyboard using the conventional black numeric keys (not the red function keys). A full list is available on the help-disc if you find this more convenient.

-- erase notes -- (key '0')

(see also MICRO-EDITOR)

The five red columns represent the standard 61 note keyboard as 5 column-octaves. If you now repeatedly tap 'A' you will notice that your pattern is being played through event by event. (Holding down 'A' instead will fast forward this effect).

In order to erase a note or group of notes from the recorded pattern simply use 'A' to move to the appropriate part of the pattern. (It is important to stop keying as soon as the offending note first appears. If you overshoot you will have to recycle the entire pattern). Now move to the synth keyboard and play the notes you wish to erase, either individually or as a chord; they will be extinguished from the display and erased from the pattern as you do so. Use 'A' to move to various parts of the pattern and repeat the process until all 'rogue' notes have been erased.

Press RETURN to exit this routine.

-- quantise -- (key '1')

Use this to round off any timing errors in your performance. This is post rather than pre-quantise described above. Make sure first that the q-rate is set to the right value using the left-right cursor keys. If you are not sure which value would be most suitable for your particular needs then experiment with various quantise values by using the 'retrieve' function (key '5') described below.

-- pac mod -- (key '2')

You may have noticed that within the edit-pattern menu the byte count of the current pattern is displayed. This is generally of no importance to the user but if you have recorded a pattern with modulation you will notice how quickly memory is eaten up by use of the mod wheel. This option is designed to make a considerable memory saving.

Hitting key '2' will thin out the information required to generate the modulation effect and repeatedly pressing '2' will compound the process until eventually the modulation will disappear. The memory saving is exactly reflected by the

byte-count indicator. As a general rule, four consecutive pac operations will provide the best compromise between saving memory and retention of the modulation effect.

-- erase mod -- (key letter 'M')

If you have recorded a pattern with modulation that has not quite 'worked out' you can erase the mod entirely and re-enter it using the overdub facility described below.

-- pac pitch-bend -- (key '3')

See pac mod above. The principle is exactly the same however the pitch-bend effect will withstand fewer compactions, probably only two or three, before the effect becomes 'peculiar'.

-- erase pitch-bend -- (key letter 'B')

-- erase patch-change -- (key letter 'P')

-- erase after-touch -- (key letter 'T')

all operate exactly like erase mod.

-- erase drum -- (key letter 'D')

Many users are now programming their drum machines straight into UMI from keyboards using drum/note assignments. The immediate advantages are bypassing any sync requirements and the convenience of saving the entire song, drum parts and all, to the disc system.

The software on most drum machines allows the programmer to wipe an entire drum from a pattern. In the context of MIDI this is equivalent to erasing all occurrences of one particular pitch. For obvious reasons this is called 'erase drum'. Hit 'D' on the computer and then play the note you wish to erase from the pattern.

-- erase all notes 'higher' -- (key letter 'H')

Having hit key 'H' you will be prompted to play a single note on the synth. This option will then erase all notes higher than the played note.

-- erase all notes 'lower' -- (key letter 'L')

Having hit key 'L' you will be prompted to play a single note on the synth. This option will then erase all notes lower than the played note.

-- erase all note-off events -- (key letter 'N')

When using the 'nof' record option (see record-mode) and possibly later overdubbing in the conventional gated mode, the resulting mixture of events - some notes with note-off events and some without - can cause excessively slow scrolling on the micro editor page. This option will erase all note-off events.

-- re-record -- (key '4')

Select this option if you are not satisfied with the playback.

There is no need to re_enter pattern# or pattern length. Just press key '4' and follow the original record procedure.

-- cut-off -- (key '6')

If in attempting to sustain a note or a chord up to the last moment of the record period you slightly over-shoot into the playback period then the relevant notes will 'hang over' each successive loop of the playback. Use this to solve the problem.

-- retrieve -- (key '5')

Suppose you have auto-corrected a pattern which as a result seems to have lost some of its 'feel'; some music needs to be metronomic, some does not. You can immediately retrieve your original input, timing nuances and all, by selecting this option. It will also serve the same purpose on the compaction and erase options (but not on erase notes) if you feel that any of these were inadvisably used.

-- compress -- (key '<')

-- expand -- (key '>')

Providing fixed velocity is set to 'off' UMI will faithfully record all velocity information from a real time performance. There may be occasions when the playback result sounds too fierce or exaggerated or perhaps too mellow. Using the Beeb's internal sound chip, two notes, a high and a low, represent the dynamic extremes in the pattern and hitting < for compress or > for expand causes the interval between these notes, and correspondingly the dynamics of the pattern, to converge or diverge.

-- overdub -- (key letter 'O')

Will permit poly or monophonic overdubbing on the original pattern. After selecting this option hit the SPACE-BAR and start overdubbing after the count-in. (Or you can use the auto-start facility by just playing the synth but do remember there will be no count-in and the first note(s) played will define the first beat). If the overdub performance is unsatisfactory this option can be exited at any point and re-attempted. After the overdub period, playback of the basic track plus the overdub will be looped and if at this stage you are not content with the result, press SPACE-BAR to stop then repeat this section.

It is worth noting that an overdub could also be pitch bend, modulation or a patch change.

The overdub option is designed to work within one channel only.

It is not intended to function as a merge facility for different channels. Neither is this necessary, as the 'play song' option provides all the multi-channel multi-track facilities that could possibly be required).

-- fix -- (key letter 'F')

When you are quite sure that the overdub performance is ok you must use this option to signal your acceptance. It is possible to overdub again and again, up to the polyphonic limits of the synth in use, providing you remember to commit each overdub once it is complete.

Remember that 'fixing' an overdub is irreversible (although it can of course be erased using the erase notes procedure

described above -key '0').

When all the above facilities have been used as required, press the RETURN key to access the main menu or select an appropriate red user-key for another option.

-- drop-in --

This is included as a facility within the overdub mode and provides the important advantage that the proposed drop-in can be attempted as many times as you wish without losing the original material that the drop in is supposed to replace. Each attempt can be monitored and when successful hit 'F' to 'fix' the result just as you would in the overdub mode. To operate, make sure you are in 'overdub' mode, hit RETURN to drop-in and <RETURN> again to exit. Alternatively hold COPY while quickly pressing and releasing RETURN to spot erase.

-- simulplay --

When recording a new pattern in real-time it is often helpful to be able to listen to an existing pattern you have recorded so as to provide a sympathetic background to your current efforts. In fact you can select the simultaneous playback of up to 15 different patterns. Whilst in the record-ready state (see real-time record above) just key in the number of each pattern you want to monitor followed by RETURN. If you make a mistake and select the wrong pattern re-key it and it will disappear from the screen. When you have made your selection begin recording in the usual way. Playback of the 'simulplay' patterns will automatically be routed to the MIDI channels they were originally recorded on although you can choose to override the MIDI channel and the pitch of any simulplay pattern by also keying in channel number and transpose value. Values entered must be separated by commas. i.e. suppose you wish to simultaneously playback pattern#7 and direct it through channel#2 without any transpose. Key in '7,2' hit RETURN and follow the usual real-time record procedure. If simulplay is set to 'on' then all concurrent patterns found on the 16 song-play tracks will be automatically selected.

-- override channel --

This very important facility is only relevant if you are using more than one synthesizer and where the main synth is only capable of transmitting on MIDI channel 1 - a particular problem with the original Yamaha DX7. If you are using the DX7 to input all your music information you will often want to hear, while in pattern record, other modules or synths which are set to receive on differing MIDI channels. You can achieve this very simply using this facility. Just use the left-right cursor keys to alter the MIDI channel you would like the current pattern to be recorded on. When set to a number between 1 and 16 this automatically and simultaneously sends your MIDI input straight to the MIDI output to drive the relevant module/synth on the channel you have so chosen. If set to 'off' then no simultaneous output is sent and the chosen MIDI channel is taken to be that of the synth which is being used for input.

Select this option to construct an 'unplayable' pattern. Attention will first be drawn by the message on screen and by the flashing cursor to the time-base default values. These are:-

(a) beats per bar

This is straightforward. Waltz time is 3 beats/bar, most pop music is 4 beats/bar.

(b) steps per beat

This must be chosen to correspond with whatever the smallest rhythmic subdivision your pattern contains. e.g. assuming that crotchet has been selected as the default beat value on the main menu page;-

| | |
|---------------|---------------------------|
| quavers | 2 steps/beat |
| rock shuffle | 3 steps/beat |
| semi-quavers | 4 steps/beat (dflt value) |
| s.q. triplets | 6 steps/beat |

Using the four cursor keys, position and alter either of these values if necessary and then press RETURN. You will now be prompted to input pattern# and length information. To do this follow the procedure described above for REAL TIME input then press RETURN.

The screen should now display a number of different items.

- (a) a five column-octave representation of the synth keyboard
- (b) an indication of the default velocity setting
- (c) a reminder of the pattern# and its length

-- Inputing notes --

Go to the synth keyboard and play a few notes either singly or as a chord. You will notice as you play and replay any note(s) that these are toggled on/off on the display. Pressing the DELETE key at any point will also extinguish all notes currently illuminated. As soon as you have picked out the note(s) you wish to hear at a particular point (those that are illuminated) you may select their key velocity and gate length.

-- key velocity --

(Some synths have no velocity sensing at all in which case any alteration to this value will be redundant).

Hit 'V' on the computer keyboard and you will notice the flashing cursor moves to prompt you to input the velocity value you require. This should be anywhere between 1 and 127. Once selected press RETURN.

There is a much simpler way of altering velocity values if you are using a Yamaha DX7 or a synth which has a similar 'data entry' slider. Moving the slider in either direction will provide immediate control over the velocity parameter and will display any change directly on screen.

-- gate length --

In general, key in the number of steps required and then press RETURN. Should you require a particularly short gate (i.e. less than 1 step) then there are three degrees of expression available. These are:-

for a normal (75%) gate press RETURN
for a short (30%) gate press '.'
for a very short (10%) gate ':'

-- Inputing rests --

The procedure for including a number of rest steps is exactly as for notes except that no notes should be illuminated before introducing numeric input. For example, to introduce 4 steps of rests, first ensure that the representation of the keyboard is entirely red (dull in monochrome) then press '4' followed by RETURN.

The display at the bottom right-hand corner of the screen will scroll through the inputs as they are entered and show also the current bar/step number.

Progress in building up a step-time pattern can be monitored at any point, whether complete or not, by hitting SPACE-BAR. Playback will be looped until SPACE-BAR is pressed again.

Any mistakes made in keying in the data for a step-time pattern can be corrected by hitting 'B' on the computer.

This will backstep the pattern to the point at which the last note-on event occurred. Repeated use of this facility will backstep to the beginning of the pattern.

By way of an example let us build up the following pattern:

From the main menu select the STEP TIME option, make sure the defaults are set to 4 beats/bar and 4 steps/beat and hit RETURN. You will now be prompted for pattern# and length so type say '4,8' i.e. we are recording pattern#4 which is to be 8 beats long.

Go to the synth and play individually or as a chord the first 3 notes of the pattern, in this case G,C and E. Make sure these three notes are picked out on the computer display. If they are not then hit DELETE to re-enter this step or re-play notes that have been mistakenly played and play the correct notes.

Now hit 3 on the computer keyboard followed by RETURN. This completes the first entry. The scrolled display should now be requesting input for step 4.

At the synth play the notes for the next entry, namely G,B and D. If you make a mistake in playing the notes follow the routine described above. Now hit RETURN on the computer. This will log into the pattern, and show on the scrolled display, a 'normal gate' for the notes you have just played. We'll proceed for the remainder of the pattern in a tabular form:-

| | |
|-------------|--|
| bar1 step5 | make sure no notes illuminated then hit 1 on computer followed by RETURN. This enters 1 rest. |
| bar1 step6 | play G,B and D on synth then key ':' on the computer. This registers a very short gate for these notes. |
| bar1 step7 | as step5 |
| bar1 step8 | play G and hit '.' on computer. This registers a short gate. |
| bar1 step9 | play G,B and D, then key in number '6' followed by RETURN. This will record 6 steps for these notes. |
| bar1 step15 | play G,B and D. We want to make this step louder so hit 'V' and following the cursor, key in say, '90' (louder than 64), and hit RETURN. This repositions the cursor to await input for the step value. Key in '4' and hit RETURN. |
| bar2 step3 | play F,A and C on synth. Hit 'V' on the computer followed by '30' (a quieter note) and RETURN. Then key in '1' for a single step and RETURN. |
| bar2 step4 | make sure no notes illuminated and key in '1' followed by RETURN. This writes in one rest. |
| bar2 step5 | play F,A and C on synth. We are leaving the velocity at 30 so no need to alter V. Key in '1' followed by RETURN. This writes one step. |
| bar2 step6 | play D,F and A and hit '.'. This gives us a short gate over one step. |
| bar2 step7 | play F,A and C. Key in '8' and RETURN. This registers 8 steps for these notes. |
| bar2 step15 | the rest of the pattern now consists of rest so either key in '2' and RETURN to complete the 8 beat pattern or, more quickly, hit 'Q' to exit this routine. This will automatically write rests up to the end of the pattern. |

Having completed a step time input it would be as well to make a few observations.

When keying in numeric input you can as with most 'UMI' routines afford the luxury of making a mistake and then rectifying errors with DELETE.

By contrast, the shorter gates, normal gate (RETURN), short gate (.) and v.short gate (:), are single key entries. If one of these is used in error use 'B' for backstep and re-enter.

When all notes are extinguished on the keyboard display it is impossible to make any adjustments to velocity (V) (unless using the DX7 data-entry slider for velocity control). This is as it should be since an unilluminated display signals to the software that rests are about to be keyed in.

There are no useful guidelines that can be offered with regard to choice of velocity values, especially since these will interact with sensitivity settings on the synth. Experience will make the choice easier.

Remember, you can listen to a pattern, as far as it has been built up, by hitting SPACE-BAR at any point. Mistakes can be corrected using 'B' for backstep.

To listen to the pattern at any later stage use option PLAY PATTERN described below.

If you wish to add other embellishments (e.g. mod, pitch-bend, or patch-change) to a step-time pattern then this is most easily effected by using the EDIT PATTERN facility described below.

MISCELLANEOUS PATTERN FUNCTIONS

-- EDIT PATTERN -- (red key 'f3')

This facility is exactly the same as that provided on the sub-menu which appears when you stop after recording a pattern in real time. If you have any afterthoughts about a pattern recorded earlier then this facility will always be available to you. STEP TIME as well as REAL TIME patterns will yield to all the pattern editing options and this provides the easiest way of introducing, for example, a mod, pitch bend or patch change, into a pattern which has been constructed in the STEP TIME mode. To edit a particular pattern just key in its number, press RETURN, and follow the editing menu which is described above in the latter section on REAL TIME input.

You can call up a pattern for editing immediately without the need to key in the pattern number. The software makes the computer keyboard 'time' sensitive for keys f3 (edit pattern) and f7 (micro edit) and if either of these keys are given just a staccato tap the last pattern being worked upon or that which was last displayed on the song-play or chaining page will be immediately called up. If you wish to call up a different pattern when entering either of these modes then just make your key selection just fractionally more deliberate.

This is a finely adjusted but nonetheless positive control feature which you will quickly get used to.

-- APPEND/COPY PATTERN -- (red key 'f2')

This is a very extensive facility but we will first describe its most basic function. It is useful sometimes to make a backup copy of a pattern in order to try out a few editing experiments. The original pattern is then retrievable should the experiments fail. To copy, say, pattern 3 to pattern 47 type:-

'3' RETURN '47' RETURN

On-screen messages will warn you when either the pattern you are copying from does not exist or the pattern you are copying to is already written (risking overwrite). In this event press any key to return to the main menu.

Apart from its 'safety copy' function APPEND PATTERN operates as a completely universal serial merge. You can combine any segment of any length of the front, tail or middle of any pattern to that of any other pattern/s. To copy or add together segments of patterns you must specify the 'range' in terms of start and end beats. e.g. to add together the first 5 beats of pattern# 1, beat 6 of pattern# 2 and the last 2 beats of pattern# 3 (an 8 beat pattern) type

'1,5 + 2,5-6' + 3,6-8' RETURN and key in the destination pattern#.

Note commas, plus sign, and the horizontal dash (under the pound sign on the keyboard). As we are using the first 5 beats of pattern# 1 there is no need to write this as '1,0-5'

'7 + 2' RETURN will add together patterns 7 and 2

'9 + 9 + 9 + 9' RETURN will form 4 consecutive repeats of pattern# 9

and will prompt you for a suitable destination pattern# in which to store the result.

transpose in copy/append

You may also effect a transpose to any appended section or part section. This is achieved as the third parameter and must be preceded by the range information as described above. e.g ...+ 4,6,3 + ... includes the first 6 beats of pattern 4 transposed up by 3 semitones. If the range is equal to the entire pattern then the range value may be omitted but the comma must remain. i.e. 4,,3 would suffice in the above example. Transpositions below home pitch should be treated as values complement 256. i.e if you want to transpose down 4 semitones then key in the transpose value 252 (which is 256-4). Note that this differs from the direct method of keying in transpose values in song play.

channel change in copy/append mode

UMI will always preserve the MIDI channel handle of a pattern i.e. if it was recorded from a synth outputting on channel 5 then it will play on channel 5 in 'pattern play' mode. It is only in song play that all channel handles are neutralised so that any pattern can be employed on any or, if desired, all channel/s. In other words the pattern channel is over-ridden by the track channel.

Though 'simulplay' leaves you the option of re-directing a pattern to any MIDI channel this does require keying-in and so it may, on occasions, be more convenient to give a pattern a new 'natural' channel number. This can be achieved in the copy/append mode as the fourth parameter (i.e. pattern#, range, transpose, channel) where all parameters must be separated by commas. As described in transpose above, if intermediate parameters are default (i.e. full pattern length, zero transpose) then they need not be specified but commas must remain. In other words if you wish to pattern 7 to have a 'natural' MIDI channel number of 3 then just key in:-

7,,,3 <RETURN> followed by
7 <RETURN>

-- ERASE PATTERN -- (red key 'f4')

Key in the number of the pattern you wish to erase and hit RETURN.

When entering this option, and similarly with write-pattern copy-pattern and edit pattern, the bottom of the display lists those patterns that have already been worked upon. These appear in either green or white. The white is an indication that the pattern is currently being used as a link in one of the chains (more about these later) the green indicates that the pattern is not being used in any chain. If, therefore, chaining is complete the user could happily erase all those

patterns that appear green in the list.

-- ERASE ALL PATTERNS -- (SHIFT+CTRL+red key 'f4')

This option makes it possible to erase all patterns while keeping all other information intact. This can be a particularly convenient option since the entire skeleton of the song, namely the 'NOTES' page, track-channel assignments, drum-rom-assignments, drum-ram-assignments, defaults, track delay settings, all chains and in fact everything, except the patterns themselves will remain intact.

-- PLAY PATTERN -- (red key 'f1')

Key in the pattern# you wish to play, hit RETURN and then hit the SPACE-BAR to play, stop or replay. The TAB key can be used at any time to toggle the internal click on or off. Playback of the chosen pattern will be looped and will play to the MIDI channel it was originally recorded from. Hitting any key from 'A' to 'P' will transfer playback to the channel number corresponding to that letter. e.g. hitting 'K' will direct playback to channel 11.

-- NOTES -- (red key 'f0')

Select this option to jot down any information relating to the current song, e.g. tempo, names of synths, synth sounds, equalisation settings or indeed anything at all. No attention need be paid to the layout of the NOTES page which is offered only as a guide. However, if you lay out the synth names as the display suggests these will be displayed on any relevant track on the song play page and also on relevant sections of the real-time record page. Use the cursor keys to locate any part of the 512 character page and write or overwrite at this point. Saving the song to cassette or disc will save all your notes along with it.

auto-song-load

Writing the name of a song (max seven letters as per Acorn DFS) after the white square on the NOTES page will enable fast load of this song as a follow up to your current song. See 'playing song' section.

-- Midi Monitor -- (SHIFT f0)

This can be useful as a fault finder. Plug any MIDI device into UMI's MIDI 'in' to monitor its output. Both active sensing (hex FE) and MIDI clock (hex F8) are filtered out.

-- M.O.S. access on main menu --

Any BBC system operating routine can now be selected from the main menu by keying in a star '*' in the normal way.

The popular term which aptly describes the work of creating a song out of individual patterns or bars is 'chaining'. There are sixteen such chains that can be written in the 'UMI' system and each one of these (called tracks) can cover the entire range of addressable channels offered by the MIDI format. Pressing key 'f5' will put the chaining page on the screen. There is a track selection indicator at the bottom right-hand corner (showing that track 'A' has been selected if you have just powered up) and a cursor '*' which is active under all four cursor keys.

(The cursor can always be brought rapidly back to the beginning of the song by holding SHIFT and hitting the 'up' cursor key)

Let us suppose that patterns# 1 to 10 have already been written and the intention is to chain together a song (a short one for the sake of this example) out of a selection of these patterns; say the song consists of patterns#2,7,4, pattern 4 down 3 semitones, pattern 1, pattern 4 up 2 semitones, pattern 10, and finally pattern 3.

The cursor '*' is already poised next to link#1 and only requires the number of the first pattern (we have chosen pattern#2 to be played first) to be keyed in followed by RETURN. This will move the cursor down one position awaiting input for link#2, and so on. So pressing the following keys will assemble the chain.

```
'2'      RETURN (this moves the cursor down 1 line)
'7'      RETURN
'4'      RETURN
'4-3'    RETURN
'1'      RETURN
'4,2'    RETURN
'10'     RETURN
'3'      RETURN
'S'      RETURN
```

And this completes the chaining. A few points about the above:-

It is essential to press RETURN after each link number has been keyed in otherwise the cursor keys will remain inactive. The only exception to this is when jumping straight to another menu option, another track or to the copy-transpose facility described later in this section.

The DELETE key remains operative to delete an incorrect entry until RETURN is pressed.

It is only necessary to use 'S' to indicate the last entry where the song needs to stop dead. Otherwise the entire chain will loop.

Transpose of any pattern above its natural pitch is

effected by keying a comma after the pattern# followed by the transpose value in semi-tones. Do not press RETURN until both pattern# and transpose value have been keyed in.

Transpositions below the natural pitch should be preceded by a minus(-) sign instead of a comma.

Here is a list of some transpose numbers and their pitch equivalents:-

| UP | | DOWN |
|-----|-----------|------|
| ,1 | semitone | -1 |
| ,2 | tone | -2 |
| ,3 | minor 3rd | -3 |
| ,4 | major 3rd | -4 |
| ,5 | 4th | -5 |
| ,6 | | -6 |
| ,7 | 5th | -7 |
| ,8 | | -8 |
| ,9 | 6th | -9 |
| ,10 | | -10 |
| ,11 | major 7th | -11 |
| ,12 | octave | -12 |

Transpose can range anywhere between +127 and -128 though as MIDI only permits a range of 128 semitones the use of such extreme values will cause a wrap around effect.

Writing a constant transpose value over a long continuous section of a chain can be achieved in a particularly easy way. Bring the cursor alongside a link which has been given a transpose value, hold SHIFT and press COPY - the links of the rest of the chain will assume the same transpose value. Adopting the same procedure later in the chain but writing in a transpose value of zero (e.g. 17,0 or just 17 -pattern#17 with no transpose) will clear the 'tail' of the chain. This is a much faster way of introducing transpose in a song where it occurs in chunks - write the entire chain without transpose then work through the chain from the beginning to the end using the copy-transpose facility.

-- global transpose --

Apart from transposing individual patterns or sections a 'global' transpose can be imposed over the entire song. This acts over and above transpose values assigned to individual links. See defaults (CTRL-f9)

-- editing the chain --

Overwrite is achieved by moving the cursor to any link# which needs to be overwritten. As soon as numeric input is keyed in the original entry is obliterated and the new value can be keyed in as normal.

Insert. First bring the cursor to the point where insert is required, press the '^' key (this moves the entire chain up one place from the insert link#) and write in the insert value.

Delete. Bring the cursor to the link to be deleted and hit the DELETE key. The entire chain above this link# will shift down one place.

-- global editing --

The editing of links described above is effective only on the track currently displayed on the screen. There are occasions when we might need to insert or delete links or blocks of links over all tracks simultaneously.

Omni block insert. Imagine we have written a chorus section in a song and that the chorus covers links numbered from 4 to 11 inclusive. Suppose also that we have completed various tracks up to and including link# 23 and that we wish to introduce a complete chorus commencing at link# 24. Bring the cursor alongside the position of link# 24 and while holding SHIFT hit the key '^'. You will be prompted at the bottom right hand corner of the screen to 'insert at *'. Type in the range of link numbers that you wish to reproduce at the current cursor position - in this example '4,11'. Those link numbers and colour coding if you have introduced any (see below) will be written automatically into the new position. Furthermore this operation will automatically write the relevant links into all tracks of the song PROVIDING OTHER TRACKS HAVE ALREADY BEEN CONSTRUCTED. You can use this facility also to insert later blocks into earlier parts of the song.

Omni delete. Hold SHIFT while hitting the DELETE key to delete individual links across all tracks simultaneously.

-- coloured chaining --

Those writing songs which consist of musically separated sections such as intros verses and choruses will certainly want to use this facility. This enables sections of your chains to be displayed in clearly marked blocks of colour so that you can see the 'structure' of your composition at a glance. To achieve this effect you may introduce a 'colour prefix' before any link in the chain by holding SHIFT and hitting a particular 'colour key' (red user-keys) before keying in the pattern# for that particular link. Following links will assume the last colour used. If you wish at any stage to colour a particular link (and not subsequent links) then hold CTRL and SHIFT while hitting a colour key.

The colour keys are as follows:-
Hold SHIFT and hit

| | |
|----|------------|
| f1 | red |
| f2 | green |
| f3 | yellow |
| f4 | dark blue |
| f5 | pink |
| f6 | light blue |

Even those using a monochrome monitor will find this facility useful since the various colours though depicted as various shades of grey still provide a distinction.

-- writing chains for other tracks --

There are sixteen tracks in the 'UMI' program, and each one can be directed to play on any selectable MIDI channel. Use the < and > keys to alter the transmission channel. To write/edit the chain corresponding to another track enter the write/edit chain mode, hit any one of the sixteen keys A to P and follow the chaining procedure described above. It is quite acceptable to select a new track having keyed in numeric input for a particular link# on your current track without hitting RETURN.

Entire chains can be copied to other tracks with or without an offset to the link numbers. Having written a chain and whilst in the write/edit chain mode hit the COPY key. The flashing message at the bottom right hand corner of the screen will ask for track (one of letters A thru P) and offset (optional) followed by RETURN. The display will now show the track which has been copied to and with the link#s incremented by the chosen offset value. Where the choice of offset is too high (resulting in a link# greater than 127) the computer beeps and stops the copying process at this point.

Here are a few suggestions as to how this facility might be used:-

- a) copy a chain over to four or five tracks with zero offset, i.e. identical copies, and set the relevant tracks to transmit on the same channel number. This can create a close DDL type effect on certain sounds but make sure not to exceed the voicing capabilities of the synth or to push too much traffic through MIDI - this might create data error or buffer full messages.
- b) Let us suppose you have already written a master track using perhaps slightly fewer than twenty different patterns and you need to construct a parallel track different from this but with changes occurring at mostly the same places. Do a track copy with an offset of 20 and your chain is already 'pre-written'. It is now only necessary to write the individual patterns remembering that pattern#(N) on the master track corresponds to pattern#(N+20) on the parallel track. This can also be a help in real-time write-pattern when employing simulplay as you can be sure that, given an offset of 20, pattern#23 should be constructed while listening to pattern#3. It might help to keep track of things.
- c) Make an identical copy of a track i.e. zero offset and use the fast transpose facility described above to render the copy an octave above the original. Assigning the two tracks to one channel could provide a very usable 'octavider' effect on either a bass line or a chord part.

Formal music has at its disposal a very compact set of instructions (it would be worthwhile acquiring a small handbook on the rudiments of music if you are not acquainted with their use) for indicating when sections or subsections of a song should be repeated. Most of these have been incorporated into the 'UMI' language and we will discuss their implementation. They are:-

position markers

\$ before a pattern number marks 'sign'
+ before a pattern number marks 'coda'
[before a pattern number marks beginning of repeat section
' before a pattern number marks 'first time bar'
" before a pattern number marks 'second time bar'

'go to' markers

\$ after a pattern number marks 'dal segno' (go to sign)
+ after a pattern number marks 'go to coda'
] after a pattern number means beginning of repeat section

S instead of a pattern number means 'stop' (song end)

So, if the pointer is a position marker e.g. marking the position of the coda or where a section to be repeated commences, then the symbol should precede the link#. If it is a 'go to' marker e.g. 'go to coda' or 'repeat last section' then it should follow the link#. Let us construct a simple example.

We wish to finish a song consisting of links 1 to 74 with a 'repeat to fade'. Let us suppose that the repeat section runs from links 59 to 74. If link#59 is pattern#12 and link#74 is pattern#15 up 3 semitones the chain should be thus:-

```
link#1 ...
 2 ...
 3 ...
 .
 .
 .
59 [12
60 ...
61 ...
 .
 .
 .
74 15,3]
```

This will produce an endless loop. To repeat a section just twice it would be necessary to incorporate '1st and 2nd time bars'.

To illustrate all the available symbols in action we will design a short sequence and 'read' it through longhand. To make matters simpler we have made the pattern#s correspond to the link#s. So, the following chain:-

```
link#1 1
 2 $2
 3 3
 4 [4
 5 5
 6 '6]
 7 "7
 8 8
 9 9+
```

song at the previously selected point.

If having stopped you wish to recommence playing the song from the stop-point then hit key 'Z' on the computer. This action alone will set the system into play but will not perform the stop function.

Which ever point you choose to play the song from the option is always open to run into the first-time bar or the second-time bar simply by hitting black key '1' or '2' while in the ready state.

If you would prefer to hear the currently selected track playing on a different MIDI channel you can effect the change using the < and > keys. It is possible to solo the currently selected track by hitting key 'S' while in the ready state. Retrieve the multi-track mix by hitting 'S' again.

If you are using a global transposition of the song (adjustable on the defaults page) there may be certain tracks, eg those assigned to a drum machine or sampler, which need to remain unaffected by the transposition. Repeatedly hitting key 'T' will toggle the currently displayed track between transpose ignore (off) and transpose acknowledge (on).

Whereas in the pattern play page where all four ACIAs are equal and parallel the song play page keeps ACIAs under separate software control. The intrinsic slowness of MIDI can be overcome by making full use of the exclusivity of the four system ACIAs and you should organise your MIDI traffic so that it is distributed as evenly as possible between them. When on the chaining or song play page the ACIA routing can be altered by holding SHIFT and hitting the '< >' keys. THE ACIA number is depicted at the extreme bottom right hand corner of the screen immediately next to the MIDI channel number.

If you are running under internal clock the left-right cursor keys can be used, while the song is playing, to slow down or speed up the performance.

The Beeb's internal click can be toggled on or off by hitting the TAB key during song play or during the ready state.

Hit any irrelevant key (whilst not in song-play) to exit this mode or jump into another mode using the red user-keys.

-- Backscan --

If you are using MIDI volume changes and/or patch changes on any tracks and are running the song from some point other than the beginning then you will notice that all MIDI devices in the system are automatically initialised with the appropriate volume and patch settings whichever point you choose to start from. This is of vital importance when, for example, dropping-in on tape. Without 'backscan' in action it would be necessary to prime each device by hand-setting all patch changes and MIDI-feeding all volume changes. This facility operates quite automatically.

-- Midi Pointers --

The UMI-4M software has been written to respond fully to MIDI pointers. When playing songs on UMI using such a device it is necessary only to select song page. From then on all start, stop and positioning commands are received and acted upon

10 10
11 11
12 12#
13 +13
14 14
15 [15
16 16]

would play in the following sequence:-

1 2 3 4 5 6 4 5 7 8 9 10 11 12 2 3 4 5 6 4 5 7 8 9 13 14 15 16
15 16 15 16 (looping last 2 bars).

(Note that the repeat delimiters [and] described above actually appear on the screen as left and right arrows respectively)

It would be a useful exercise for those unfamiliar with pointers to follow the above example through paying particular attention to when the symbol is a prefix or a suffix. Remember you can continue to use transpose values in the normal way.

N.B. The sixteen available tracks in the UMI system are parallel and in that sense the tracks are played concurrently. There would therefore be no point, indeed there would be a conflict, in having different routemap pointers for the different tracks and for this reason pointers should only be written on track A. Attempting to introduce pointers into other tracks will corrupt the chaining data.

To exit the WRITE/EDIT CHAIN mode press the space bar to access the main menu or jump straight into another option by hitting the appropriate red user-key.

PLAY SONG (red key 'f6')

Having selected this option the screen displays the chain information of the last selected track. To display any other track whilst in the song-play ready state simply hit one of the keys A thru P.

The screen also displays various status messages. 'tr on' or 'tr off' indicates whether or not the currently displayed track will ignore or acknowledge global transpose (see below).

The yellow number at the bottom right of the screen is the MIDI channel number that the track will transmit on. The green number is the ACIA (MIDI output port on UMI's interface) that this track is assigned to.

Select any point from which to start playing the song by using the four cursor keys (hold SHIFT also for fast up/down), hit the SPACE-BAR to start playing the song and to stop the song once started. Hitting the SPACE-BAR again will restart the

*automatically without the need to hit the SPACE-BAR
or use the cursor keys.*

You may find occasionally that you are using a synth patch that has a slightly 'lazy' sound e.g. strings with a slow attack. Some synths are naturally slow in response. The above option will enable you to introduce delays and therefore, relatively, advances in any track(s). Use the up/down cursor keys to home in on a particular track and the left/right keys to nudge a delay time of anything between 0 and 15 clock pulses. Holding shift while nudging will affect all tracks except that currently located. The combination of the two types of adjustment will enable relative delaying or advancement with the minimum of key presses. At whatever tempo a delay of 12 clock pulses is equivalent to one semiquaver. In absolute terms where UMI runs at 48 ppq (whether under internal, external or MIDI clock) this represents a delay of approx 10 milliseecs per clock pulse (per increment) at a tempo of 120 bpm.

It is important to remember that track A is the 'navigating' track within the 'UMI' system - all other tracks will follow the routine of track A. Corresponding links in other tracks need only be 'spacers'. To illustrate the idea of spacers consider the following example.

Imagine that link#7 of track A is a pattern of 8 beats in length and that track D has at the same link# a pattern of length 4 beats. Track A, being the master track, will insist on playing through its full 8 beats at this point and track D will be left hanging for 4 beats while it does so. Similarly a pattern on one of the fifteen 'slave' tracks will be cut short if the corresponding pattern on track A is shorter.

So if, for example, one of the slave tracks consists mostly of silence with perhaps a few links playing in a repeat-to-fade section then this chain can be most speedily written by using a 'ghost' bar or spacer i.e. a bar which has not been written and is therefore of unspecific length; track A will determine when to move from one link to the next.

Only those links in the slave tracks which contain music need correspond exactly with their counterparts in track A.

There is a very fast way of writing a chain such as the one in the example above i.e. say 40 links of silence followed by a repeat-to-fade. Pick a pattern# which has not been written, say #99.

Write this value into link#1 of the chain and after hitting RETURN bring the cursor back alongside link#1.

Now hold down the insert (^) key and you will find that the chain automatically fills up with links of the same pattern#. Finally finish off by writing the fade section in the normal way. Pattern#99 would, from this point on, have to be reserved as a spacer and should not contain music, but remember it can behave, entirely at the whim of track A, as a spacer of any length while it is employed on one of the slave tracks.

We have already noted that particular tracks can be set to play on any channel and routed to any ACIA while in chaining mode or on the song play page. The CHANNEL-TRACK/ACIA ASSIGNMENTS page provides you with another way of doing the same job but also provides an overview of the 16 tracks and their respective MIDI/ACIA routings.

The MIDI format allows the possibility of sixteen independently addressable channels. It is probably easiest to visualise these channels as sixteen parallel tracks on a multi-track tape machine or, with equal validity, as sixteen independent synths. Most synths coming onto the market today can be switched to receive on any MIDI channel and it is this flexibility you should exploit when selecting your track-channel assignments. Any pattern written in the UMI sequencer can be included in any track and can therefore be assigned exclusively (or universally) to any one (or all) channel(s). You could, for example, have written your bass line on track#6; assigned track#6 to channel#2; copied a subsection of track#6 to track#13 and had this routed to channel#5 where the bass-line would be 'doubled' in these subsections. The possibilities are extensive.

Having selected this option use the four cursor keys to position and alter the assignment values. Hold SHIFT to alter the ACIA routings. Alternatively the channel or ACIA value can be altered directly, as mentioned previously, on the song play page or the chaining page.

A particularly useful feature for those who use the UMI system in live situations is the 'auto-song-load' facility. Once your current song has finished (clearly it will have to end with an 'S' rather than a loop fade-out) hit letter 'Q' and whichever song has been named at the end of the NOTES page will be promptly loaded. (See 'NOTES')

This facility consists of one major routine - micro editor (key f7) - and two subsidiary routines - RAM drum/note assignments (CTRL key f6) and ROM drum/note assignments (SHIFT key f6). It is not included as standard but is available as an optional extra utility

You can call up a pattern for editing without the need to key in the pattern number. The software renders the computer keyboard 'time' sensitive for keys f3 (edit pattern) and f7 (micro edit) and if either of these keys are given just a staccato tap the last pattern being worked upon or that which was last displayed on the song-play or chaining page will be immediately called up. If you wish to call up a different pattern when entering either of these modes then make your key selection just fractionally more deliberate. This is a finely adjusted but nonetheless positive control feature which you will quickly be able to take advantage of.

Micro editor

In either real or step time, record a pattern including some chords and perhaps some single notes and then select the micro editor (f7). The display will be largely self explanatory. Each row represents a complete event characterised by the four headings at the top of the screen; on, gate, pitch and velocity. When the white editing arrow (cursor) points to any one of these four columns we will in future describe it as at R1,R2,R3 or R4 respectively. Elsewhere the cursor will be described as at L (left).

on: represents the clock time, measured at 48 pulses per crotchet (192 pulses per 4/4 bar), at which the note displayed under the column 'pitch' was played or when the 'event' (see next heading) occurred. Values displayed here are modulo the current bar number i.e. at each new bar as determined by 'bts/bar' on the defaults, the count is taken to be zero. If you require the true count, scroll to the first event and hit 'Z'.

If you are editing a pattern with chords then note that some of the values in this column are dark blue. This convention has been used to show clearly those notes (events) that have occurred at the same time i.e. a 'chord indicator'. The first of a group will always be in white to distinguish from the previous event.

gate: indicates the period that the played note has been sustained for. Like note on, this is at 48 pulses per crotchet and so a value of say 24 here would indicate a sustain of one full quaver (1/8th note).

In the case of the various miscellaneous single events such as pitch-bend (when bend display enabled), patch-change, and etc gate is meaningless so under this heading will appear the abbreviations 'bnd' 'pch' 'lvl' 'sus' etc.

pitch: for note events C3 = middle C and so on.
For miscellaneous events;
a) pitch bend (0-down; 64-centred;

- 127-up)
- b) after touch (0-none, 127-max)
- c) patch change number
- d) MIDI controller setting

velocity: This is only displayed for events which include a note-on. For other events there is no entry in this column.

Any notes played on the synth whilst on the micro-editor page will be ignored while the blue 'synth safe' message shows on the middle left hand side of the screen. Hit the 'TAB' key to toggle between this and the 'synth live/' state. When playing the pattern from the m/e page the TAB key performs its normal function of toggling the click on or off.

EDITING

The UMI micro editor uses the computer keyboard in as consistent a manner as possible. There are three generalities.

- 1) Use the cursor keys for location
- 2) Use the > and < keys to nudge values up or down +/-1
- 3) Use the numeric keys for direct numeric input

HOLDING DOWN 'SHIFT' WHILE USING THE ABOVE KEY OPTIONS WILL ACHIEVE THE SAME IN CHORD (ie BLOCK) MODE.

Editing is also performed by playing the synth but we shall see that the nature of the effect depends entirely on the position of the cursor.

Altering Timings

Use the four cursor keys and it will become apparent how these are used. Scrolling up or down the pattern works whatever the position of the cursor. Notice when holding SHIFT with the up/down keys that the notes are played as chords as you scroll through them. Observe also that the measure read-out on the left-centre of the screen exactly reflects the note-on clock timings but is expressed in terms of bars (as a green number), beats (bt), steps (stp) and error (er).

Use CTRL and up or down cursor keys to get quickly to the first or the last event of the pattern.

In general:-

| | |
|--------------|--|
| SHIFT _] | put cursor at extreme right (in velocity column) |
| SHIFT [_ | put cursor at extreme left |
| CTRL { | jump to beginning of pattern |
| CTRL } | jump to end of pattern |
| CTRL SHIFT { | jump to first marker (if marker exists) |
| CTRL SHIFT } | jump to second marker (if marker exists) |
| COPY | move to next event showing the same pitch (if currently on a note event) or next 'identical' event type i.e. if currently on a patch change event move to next patch change event. |
| COPY-SHFT | move to preceding identical event type. |

N.B. patterns recorded predominantly in the 'nof' mode (these are usually drum patterns recorded so as to save memory - see record-mode) which contain a few complete gated events

(probably because of a a later overdub) may tend to scroll slowly. Use key 'N' in the pattern-edit mode (f3) to strip residual note-off events and render the pattern a pure 'nof'.

Move the cursor to R1 and use the nudge keys < and >. Hold down a nudge key and observe that while the note-on timing is being altered so does its position in the display. At R2 the 'gate' timing can be similarly nudged but there will be no change of position in the display. COMPLETE NOTE EVENTS ARE ORDERED ACCORDING TO NOTE-ON TIMINGS. Press the SPACE-BAR at any time to monitor the effects your changes have made.

At R1 use the up/down cursor keys to locate the top note of a chord (this will be in white) and hold down SHIFT while nudging the note-on timings. Relocation in the pattern is just the same as for single notes. Observe that block nudging the 'gate' value of a chord at R2 can only work when the gate timings for each note of the chord are identical. (See TIDY function described below).

Try the above at R1 or R2 but use direct numeric input with the black numeric keys. You may use the delete key at any time - the written value will not be recognised until you hit RETURN. As with nudging the SHIFT key can be held down to write chord timings.

Note that timing changes can produce odd results on identically pitched notes. An explanation is available at the end of these instructions under the heading 'overlap problem' - it is not obligatory reading.

Delay/advance specific pitch

Useful for moving particular drums earlier or later in a pattern. Irrespective of left/right cursor position, CTRL-nudge will move all occurrences of the pitch on the current line. Any event which is up against the beginning or end stops of the pattern will be ignored.

Time shift everything

As pitch-specific above but the entire pattern is moved.

Pitch and Velocity

Move the cursor to R3 and observe the effect of the nudging. Velocity can be nudged or directly keyed in numerically by moving to R4 and notice that the left/right cursor keys subdivide R4 into a coarse and fine adjustment as highlighted by the flashing cursor. The coarse/fine option relates to nudging and not to direct value keying. Once again holding SHIFT while nudging (or with RETURN after writing) gives control over an entire chord whether coarse or fine. Direct 'writing' of the velocity can also be achieved here by simply playing your MIDI keyboard. Notice too that pitch changes are registered as you play.

NOTE INSERTION

With the cursor at R4 we observed above that note changes can

be written by playing the synth. If you move the cursor away from R4 there are two types of note insertion available.

Sympathetic insert

Use the up/down cursor keys to locate the first note of a chord. At either R1,R2 or R3 play a note or chord on the synth preferably (but not necessarily - see overlap problem) different from the notes already making up the chord. It will be inserted into the chord and will automatically be given the same note-on timing and gate length.

Pre-set Insert

Now move the cursor to 'L', to any one of three positions corresponding to bar (br) beat (bt) and step (stp). (There is also an entry for error (er) but no cursor position exists for this). You can nudge - but not key in numerically - any of the values bar, beat or step at L and if you now play a note or a chord you will see that it is introduced into the display at a note-on clock timing pre-set by your beat-bar-step value. You should verify that the clock-pulse value is indeed equivalent so that you become familiar with the relationship between these values. The flashing cursor has offered you a gate time equal to the default gate time shown on the lower left of the screen (adjustment of this described later) and you can either agree it by hitting RETURN or write in your own value followed by RETURN. The cursor always points to 'step' after this type insert so that fast input of chords in step-time fashion can be achieved this way.

IF YOU TRY A PRE-SET INSERT LOCATED BEYOND THE END OF THE PATTERN A WARNING BEEP WILL SOUND.

If you want to jump to a particular point in the pattern then set this up on 'bar/beat/step' and then hit <RETURN>.

INSERTING OTHER EVENTS

Four other insert types are possible.

- 1) pitch-bend
- 2) after-touch
- 3) patch-change
- 4) MIDI controller

As with note inserts the timing will either be sympathetic at R1, R2, R3 or R4 or pre-set at L.

insert pitch-bend - hit key 'B'

You must first hit 'SHIFT-B' to enable pitch bend to be displayed (subsequently disable by hitting SHIFT-B again - you will generally not want to see bend information clutter the display).

At the simplest possible level this facility has been incorporated so that a pitch bend cancel can be written. This is particularly useful if your pattern finishes on a non-zero (non-centred) pitch-bend - it can jeopardise the smoothness of the effect if you are dogged by the obligation to snap the wheel back to centre before the pattern is over. This way you can either set the cancel at the end of the pattern containing the bend or at the beginning of the next pattern in the sequence. Then, if

you know where you want the cancel to occur, pre-set it with the cursor at L then hit 'B' or, and probably less effort, hit 'B' at any old place and re-write the event time at R1.

The pitch bend insert facility can be most neatly exploited when used in conjunction with the slope (S) facility described later. By so doing it is possible to actually write, in a step time sense, (though much faster) a sequence of pitch bend events and to shape them exactly to your own requirements.

insert after-touch - hit key 'T'

The display of after-touch is enabled by SHIFT-'T' and thereafter an after-touch event can be inserted by hitting 'T' alone. After-touch is completely manipulatable as all other events.

insert patch-change - hit key 'P'

Sympathetic or pre-set insert as before and adjust the timing by nudging or writing. This facility always writes patch number 01 and is displayed in the 'pitch' column. It can be nudged to another value or directly overwritten at R3. The advantage of having system-resolution control over the timing of patch change is that you can adjust for minimum glitch - especially when switching from a patch with long release.

insert controller - hit key 'C'

The MIDI controller option encompasses a huge range of control options amongst the most common and consistent being modulation (value 1) sustain (hex40) and, of enormous use for automated mix-down, MIDI volume (value 7). To use this facility set the controller value to your choice according to the default adjustment method described below. Whichever controller value is selected will a) enable the display of all control events corresponding to that number and that number only - thereby avoiding clutter - and b) enable an insert of that particular control event every time C is hit. Write or nudge the magnitude of the event at R3 and adjust the timing at R1. Hold down key C to insert a string of controller events and use 'slope' described below to shape a dynamic event to your requirements.

(MIDI volume:

Many synths, the DX7 for example, respond to this rather obscure controller parameter but unfortunately seem only to do so on seven discreet levels so smooth MIDI 'fades' are not always possible. However this can very effectively be used in conjunction with patch-changes, which often produce level changes, to simplify some mixing problems.)

DELETING EVENTS

Delete a complete note event (ie note-on and note-off) at R3. The note-on event only can be deleted at R1. This will of course leave a lone note-off event so the absence of it's partner note-on is indicated by a light blue 'non'. Similarly the note-off event can be selectively deleted in R2 leaving a 'nof' marked in red in this column. This facility can be most

useful when trying to organise a 'push' or a tie between two patterns in a sequence. A beep signals when the impossible is being tackled e.g. trying to delete a 'non' or a 'nof' which are, by definition, not there.

Miscellaneous events can be deleted at R1, R2 or R3.

Even-up - hit key 'E'

The relentless pursuit to dehumanise music will tempt many to use this facility.

When playing chord passages in real time, unevenness will arise for two possible reasons.

- 1) Some notes are louder than others.
- 2) Though the pattern might have been auto corrected any decent quantising algorithm will preserve the gate times of the individual notes and these may not all be the same. Unless you're a complete robot you will probably notice this when perusing, under the micro-editor, the gate times of some of your real-time input.

Even-up gates

Irrespective of the up/down position of the cursor go to R2 and hit 'E'. This routine will examine each chord in turn and neutralise any gate length discrepancy to within two clock pulses.

Even-up velocities

Now move to R4 and hit 'E' again. Each chord's velocity values are summed, averaged out and reassigned to each note.

In each of the above cases the integrity of each chord is preserved. The 'Even-up' routine does not make equal all chords in the pattern.

LINE-UP - hit key 'L'

For ease of reading and locating particular notes, when a pattern is first selected for editing, chords will be displayed with their notes in descending order so that the highest note appears at the top of each chord. If subsequent editing causes any re-arrangement the order can be re-established by hitting 'L' irrespective of the cursor position. Using the following facility where symbols rather than notes are displayed, 'line-up' is in ascending order so that the lower drums occur first in the list. This improves the sense of position.

INSERT MARKER - key 'M'

Hit key M to mark any event. The marked event will show a dark red square at the extreme right of the event-line. Only two events can be marked at any one time so attempting to mark a third will undo an earlier marking.

REMOVE MARKERS - key 'R'

Remove one or both markers if currently set.

SLOPE - key 'S'

Having marked two like events (both note-on, both pitch bend, both mod etc) hitting key S when the cursor is at R1 will

interpolate the arithmetic mean for the timing of all the events between and including those marked. Beware when sloping complete note-on/note-off pairs that unless the gate length for all events is expanded considerably there could be the danger that a note-off event occurs before its corresponding and newly located note-on. The result could be a mass of unpartnered 'nofs' and 'nons'. Make a safety copy of your pattern before attempting this. This problem will not occur with single or miscellaneous events and so the timings of pitch-bend events, modulations, MIDI volumes etc. can all be sloped with ease.

Much more predictable, safer, more fun and generally more useful is to slope the magnitude of various controller events *in conjunction with* their timings. The general approach here is to insert a bunch of events by holding down B (for bend) or C (for controller), to write in the first value as minimum the last as maximum and to hit S (at R3) to slope between those values. If the timings are also sloped it becomes very easy to construct quickly and with unequalled precision almost any dynamic event you might choose. Also very useful for smooth snare drum press rolls or general 'timbral' crescendo is to slope velocities. Exactly the same procedure as described but with the cursor at R4.

ZERO COUNTER - key 'Z'

Working your way through a long pattern can make the arithmetic for the event timings extremely unwieldy. Hit Z at any point and this will set your currently pointed event to be at pulse zero and for subsequent event timings to be counted from there on. Set a new zero at any point to wipe the old one and return to normal 'true' timings by hitting key N.

NORMAL COUNTER - key N

To normalise the counter after zeroing as described above.

UNIVERSAL GATE options - key G

In general the various gate options are selected by keying <G> and then keying in a value as prompted by the message at the top left of the screen. The particular facility selected is determined by the position of the edit-cursor. Namely:-

| | |
|--|----------------|
| Anywhere in the 'L' region (bar-bt-step) | universal |
| at R1 | minimum |
| at R2 | maximum |
| at R3 | pitch-selected |

Universal gate imposes the keyed in value for every note-on/note-off pair in the pattern.

Minimum gate will leave unaltered all gates greater than the specified value but will modify all gates currently less than it.

This would be useful where a pattern contains both short staccato notes and long sustained chords. The staccato notes would respond to this option while leaving the sustained chords unaffected.

Max gate is the exact inverse of min gate.

Pitch-selected gate allows the setting of a fixed gate to all occurrences of the pitch being currently pointed to; if the

pattern in question were, for example, a drum pattern being played through a sampler and with the release time governed by gate-length then this could be used to set all snares to a particular gate length.

BUTT JOIN - key J

If you want to render the chords or notes of a pattern with a close, non-overlapping legato use this command and enter the gap value as prompted, followed by <RETURN>. A zero gap will butt-join the note events. This facility has no effect on other MIDI events.

This feature provides a particularly fast way of setting up slow chord-pad type patterns. Rather than bother to calculate the number of steps for each chord just enter the chords on the m/e using the 'preset' method, give each chord the default gate length by hitting RETURN and then finish off with <J> - inputting required gap.

UNIVERSAL VELOCITY options - key V

These options are the exact counterpart of 'universal gate options' described above.

Defaults

The editor incorporates a number of default values. Holding down letter 'D' use the four cursor keys to locate and nudge any value here. ptn-PC represents the total length of the skeleton of the pattern you are currently working on so altering this value provides you with a quick way of converting say a two bar into a four bar pattern or of slight shrinking or stretching of a count-in bar when used in conjunction with track delay offsets. The 'gate' value showing here will be used as the 'offered' gate when pre-set inserting. The controller value is identical to that on the defaults page. On this page however it is displayed as a hex value to conform to many of the current synth instruction manuals which use this representation.

Playing the pattern in the MICRO/EDITOR

As in all other modes <SPACE-BAR> provides normal play from beginning of pattern.

SHIFT - PLAYfrom current bar (current to cursor)

CTRL-SHIFT PLAYfrom first marker (if marker is set)

CTRL-PLAY.....precisely from cursor.

This last feature is most useful in conjunction with the STOP command while in pattern play in the micro-editor. Hit 'S' while the pattern is playing - play will immediately cease and the display will line up at the event occurring when 'S' was keyed. CTRL - PLAY will confirm that you have stopped at the correct point and will reflect any changes you might effect to the event on this line.

Exit Micro-Editor

Use <Q> to exit the m/e or select another function using the red keys.

RAM Drum/note Assignments

Select this option with CTRL -key f6

Many are now sequencing their drum parts directly into UMI and whilst the micro-editor display for drum patterns is very satisfactory the pitch column can sometimes be quite confusing for the eye with runs of A3's for the hi-hats punctuated by the occasional A2 (bass drum) or E2 (snare).

The first entry in the column will enable drum symbols - instead of pitch - to be displayed on whichever channel you select providing the particular pattern being edited was recorded on this channel.

The other entries on this page indicate which notes are automatically translated to which drum symbol. The power up defaults are those used by the RX11 - a fairly sensible scheme which largely agrees with the original music-stave notation for written drum parts - but you may set anything you wish. In addition you may completely rename the drum abbreviations that are offered on power up and your own selection will be saved with the song to disc.

Use the four cursor keys and note that:-

on the first line you will use the left/right keys to either disable symbols entirely or to enable them on a particular channel.

On all other lines the left/right cursor keys will 'wrap round' a five-character word. You may write anything you like here - all typewriter symbols, upper and lower case, are available to you - including colour and flashing. The use of colour here is much more flexible than on the chaining page and you will need to know a little about the use of Teletext colour codes to make full use of this powerful display facility.

The available colour codes are as for the chaining page with the addition of flashing and flashing-cancel.

Hold SHIFT and hit

| | |
|----|-----------------------|
| f1 | red |
| f2 | green |
| f3 | yellow |
| f4 | dark blue |
| f5 | pink |
| f6 | light blue |
| f7 | white (colour cancel) |
| f8 | flashing |
| f9 | flashing cancel |

There are two things to remember.

- 1) The Teletext code itself is invisible. It effects all the characters that follow the code until either, a) the end of the current line of text or, b) a new code is typed in which case successive characters on the line will adopt this new colour.
- 2) Though the code is invisible to you it does occupy one character position.

Clearly then, if you use colour and/or flashing without cancelling these effects within the five character word you are allotted, then the corresponding entry in the pitch-number column will be affected too. Of course you will see this for yourself and, on the assignments page, will rightly dismiss this as unimportant, but you must remember that the micro editor page itself will be similarly 'corrupted' in the fourth

(velocity) column. Naturally you will have your own preferences but a better presented, less confusing, display will result if you adopt a scheme which leaves the velocity column unaffected. So, anarchy excepted

- 1) If your word is all in white you may use anything up to the full 5 characters.
- 2) If you must use colour and flash then only one visible character is available namely the central one.

You'll find that in spite of the restrictions the possibilities are endless and well worth exploiting to make the editing task easier.

The drum/note values themselves can be altered by moving the cursor to the correct row (any character position) and directly playing the synth keyboard.

ROM Drum/note Assignments

SHIFT + key6

Much the same as above except that if this is assigned to a different channel then both ROM and RAM facilities are available to you. Here you can only change the note assignments in the manner as described above.

The 'overlap' problem

If, when experimenting for the first time with the micro editor, you notice that shifting the note-on or gate time for a particular note seems to affect the gate of another note of the same pitch in the pattern then the following explanation will throw some light on the approach you should adopt if you are trying to introduce 'overlap' into a pattern - certainly a legitimate and very useable musical effect. (Though the explanation is offered in the abstract it would be quite simple to set the practical experiment up on the micro editor.)

Below is a graphic representation (not to scale) of two complete events. A middle C is played (note-on) at 0 pulses (the beginning of the pattern) sustained for 10 clock pulses, and then released (note-off). The same note is replayed at 30 clock pulses and sustained for a further 10 pulses to be released at 40 pulses.

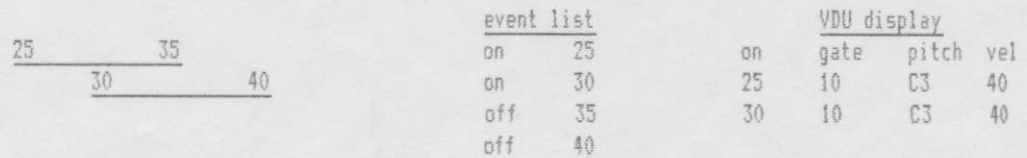
A table headed 'event list' goes through the events sequentially. Since the line drawing is a pure abstraction it is the event list that the software must rely on to construct its own picture of what is happening. The 'VDU display' is the result of that construction as the UMI micro-editor presents it to the user.

Remember that the gate time is the difference between the times of the note-on and note-off events so in the case of the second note, gate = 40-30 = 10.

You should verify that the two tables do indeed correspond with the line drawing.



So, a middle C has been played, released, and a little while later has been played and released again. Now supposing we pick up that first complete event (i.e. note on and note off) and move it later (to the right) in the pattern. We can do this very easily by nudging or writing the note-on time at R1. This automatically preserves the gate length and both on-event and off-event will be moved to the right together. If we make the note-on time for the first event 25 instead of 0 the following scenario will prevail. It should be possible to imagine the sound of this especially if there is any phasing during the overlap period. Once again satisfy yourself that the two tables correspond with the drawing. Look in particular at 'VDU display'. It is important to note that the editor has construed this overlap correctly i.e. as two events of equal duration. The gate times are exactly as they were before the overlap occurred. Call this overlap type 'a'.



type 'a'

Now let us take a completely different starting point.

| | | | | <u>event list</u> | <u>VDU display</u> | | | |
|----------|-----------|-----------|-----------|-------------------|--------------------|------|-------|-----|
| <u>0</u> | <u>15</u> | <u>30</u> | <u>35</u> | on 0 | on | gate | pitch | vel |
| | | | | off 15 | 0 | 15 | C3 | 40 |
| | | | | on 30 | 30 | 5 | C3 | 40 |
| | | | | off 35 | | | | |

We are still playing a middle C twice but the first sustain, or gate, is longer, the second shorter. Let us now perform a similar change i.e. make the first complete event later by keying in a note on count of 25 pulses. We would end up with the situation as depicted in the line drawing below. Let's call this overlap type 'b'.

NOW NOTE THAT THE EVENT LIST FOR TYPE 'b' IS IDENTICAL TO THAT FOR TYPE 'a'

We have seen that the event list provides the only tangible information available and given the same information the software has to provide the same explanation. The 'VDU display' will therefore show the gate times for overlap 'b' as though they originated from a type 'a' i.e. the two gate lengths of 5 and 15 respectively will have been construed as two equal gates of length 10. (Incidentally, if the first event had been nudged up to 25 pulses rather than written the result would be different again - you could try this for yourself).

| | | | | <u>event list</u> | <u>VDU display</u> | | | |
|-----------|-----------|-----------|-----------|-------------------|--------------------|------|-------|-----|
| <u>25</u> | <u>30</u> | <u>35</u> | <u>40</u> | on 25 | on | gate | pitch | vel |
| | | | | on 30 | 25 | 10 | C3 | 40 |
| | | | | off 35 | 30 | 10 | C3 | 40 |
| | | | | off 40 | | | | |

type 'b'

The paradox centres on this problem.

Given an 'event list' containing two note-on events and two note-off events, which note-on and note-off events should be partnered? (The question has to be asked whether they should even be partnered at all?; when 'non' and 'nof' events are brought into the picture the event list is open to some very bizarre interpretations indeed!)

Clearly the software has to make a consistent decision about the way it handles the available data - it cannot be allowed any fickleness in its match-making - so within the UMI micro editor the first note-on event is always partnered with the first note-off event i.e. it is taken to be type 'a' and the gates are calculated on this basis.

The UMI micro editor is capable of interpreting a three-deep overlap (to cater for more would slow down the scrolling and in any case this occurrence should be rare) but remember when moving identically pitched note-off events past each other, gate times might not be depicted quite as you expect to see them. In case you have lost faith in the 'event list' - reporting two supposedly different situations as identical -

You will find on following this 'thought' experiment through that overlaps 'a' and 'b' do indeed sound identical; Clearly where different pitches are involved there is no ambiguity at all. Still, with the convention adopted in UMI it is quite acceptable to write chord sections which overlap and you may occasionally find this an effect you want to use.

The current version of the 'UMI-4M' program allows storage to disc using the DFS and/or ADFS if you are using the BBC 'Master'. It should not be used with an ADFS update for the model 'B'.

Important for ADFS users only

Depending on your use of UMI you will need to create the following directories

For storage of songs:-

*CDIR 0

*CDIR 1

For storage of patterns

*CDIR p

For storage of banks or voices if you have the 'sys-ex' dumps Rom:-

*CDIR B

*CDIR v

Songs or individual patterns can be saved and an auxiliary systems exclusive ROM holds synthesizer dump routines which will enable you to save or load voices or banks of sounds. We will deal first with song storage.

SAVE SONG (CTRL and red key 'f8')

Having selected this option the screen will display the current song catalogue.

Once you have sequenced a song and wish to save it for future retrieval it must be given a name. The DFS limits file names to seven letters and the ADFS allows ten so song names must be similarly restricted. Any attempt to give a song a longer name than the filing system allows will result in an error message. When an error message occurs simply hit any key to access the main menu and start again.

Key in the song name and hit RETURN or use the cursor keys to highlight the file you wish to save or load and then hit RETURN. A screen message will warn you if you are about to overwrite an existing file or if the file you are trying to load does not exist.

Star (*) commands can be entered on all the file saving/loading pages and drives other than 'zero' should be accessed by keying in the appropriate command.

LOAD SONG (CTRL and red key 'f7')

This procedure is exactly as for SAVE SONG.

SAVE PATTERN (SHIFT and red key 'f8')

You may save any one of the 127 patterns that are recordable within the UMI program. This routine will ask which pattern# you would like to save and then will prompt you to give the pattern a name. As described above you may use any name you like providing you observe the filing system's rules limiting the file name to seven (DFS) or ten (ADFS) letters. In practise though, and remembering that the numbers can be used too, it is generally wise to name a pattern by its number.

LOAD PATTERN (SHIFT and red key 'f7')

You may load into UMI any previously saved pattern. You will first be asked for the name the saved pattern was originally filed under and then prompted for a destination pattern. If you select a pattern# which has already been recorded you will be warned before overwriting.

SAVING AND LOADING SYNTHESIZER SOUNDS (Sys-ex dumps)

This general utility is at CTRL-f0 and the final selection is made according to the on-screen prompts. Unfortunately very few manufacturers employ the same systems-exclusive protocol so you will find that a voice or a Bank, a dump (save) or a load, might be either sent or requested and that 'handshaking' could be involved as well. Accordingly, on-screen arrows indicate whether you need MIDI in, or MIDI out, or both MIDI in and out cables connected to UMI - when in doubt connect both. <Q> to quit the dumps page.

-- notes on UMI files --

SHADOW RAM CAN ONLY BE UTILISED IN THE BBC 'MASTER' SERIES OR ON ANY MODEL 'B' FITTED WITH EITHER THE ARIES B20 OR THE ARIES B32.

The software of the UMI-4M is designed to automatically utilise suitably switched shadow RAM, where this exists, for extra song storage. Though this usage is entirely transparent to the user (apart from the fact that stored songs can be longer!) it will become apparent when your discs are catalogued from 'BASIC' that songs saved in the extra-memory environment are saved as two distinct files. So, for example, if your song is called 'SONG' this will be saved as:-

0.SONG and
1.SONG

Songs saved in systems without shadow RAM are saved as the single file:-

0.SONG

-- voice and BANK dumps --

When a voice is saved to disc the UMI-4M software automatically puts this into directory V. Similarly BANKS of sounds are

created in directory B. The advantage here is that you may save a song a voice and a BANK with identical names - the software makes the necessary distinction between them. Note therefore that if you save a voice called 'strings' and try to load the voice, in error, as a BANK, this will result in the 'no such file' or 'not found' error message.

Synchronising the UMI-4M to drum machines via CLOCK/SYNC IN

Connect the CLOCK OUT on the drum machine to the CLOCK/SYNC IN on the UMI-4M interface. Connect the START-momentary on the UMI-4M interface to the START/STOP IN on the drum machine. Select external clock mode as described under 'defaults'. Make sure the UMI-4M and the drum machine are both in 'STOP' mode. Having selected an appropriate 'PLAY' option from the main menu you will be able to simultaneously start the UMI-4M and the drum machine by pressing the SPACE BAR on the computer. In this configuration, tempo should be controlled from the drum machine. Pressing the SPACE BAR again will stop both units.

Synchronising drum machines to the UMI-4M via CLOCK/SYNC OUT

Connect the CLOCK/SYNC OUT on the UMI-4M interface to the CLOCK IN on the drum machine. Connect the START-momentary on the UMI-4M interface to the START/STOP IN on the drum machine. Select internal clock mode on the UMI-4M defaults page as described under 'defaults'. Make sure the UMI-4M and the drum machine are both in 'STOP' mode. Having selected an appropriate 'PLAY' option from the main menu you will be able to simultaneously start the UMI-4M and the drum machine by pressing the SPACE BAR on the computer. In this configuration, tempo should be controlled from the UMI-4M. Pressing the SPACE BAR again will stop both units.

Synchronising drum machines to the UMI-4M via MIDI OUT

Connect a 5 pin 'DIN' lead from ACIA 4 of the UMI-4M interface's MIDI OUTs to the MIDI IN on the drum machine. Select 'internal' clock mode on the UMI-4M defaults page and MIDI CLOCK OUT to 'on' as described under 'defaults'. Make sure the UMI-4M and the drum machine are both in 'STOP' mode. Having selected an appropriate 'PLAY' option from the main menu you will be able to simultaneously start and stop the UMI-4M and the drum machine by pressing the SPACE BAR on the computer with the tempo controlled from the UMI-4M.

Synchronising drum machines to the UMI-4M via SYNC-24 OUT

A sync-24 connection can be made from the MULTI 2 socket on UMI's interface (see hardware section). Select internal clock mode on the UMI-4M defaults page as described under 'defaults'. Make sure the UMI-4M and the drum machine are both in STOP mode. Having selected an appropriate 'PLAY' option from the main menu you will be able to simultaneously start and stop the UMI-4M and the drum machine by pressing the SPACE BAR on the computer with the tempo controlled from the UMI-4M.

Synchronising the UMI-4M to tape

Recording the UMI-4M interface's sync code onto tape

A sync-to tape connection can be made from the MULTI 1 socket on UMI's interface (see hardware section). Connect this to a line input on the mixer. Assign the sync code to one track of the tape machine (usually one of the outside tracks). Switch out any noise reduction on that track if possible and put that track into READY. Select internal clock mode on the UMI-4M defaults page as described under 'defaults'. Having selected the PLAY SONG option from the main menu, start the UMI-4M by pressing the SPACE BAR on the computer and adjust the level of the sync code at the mixer to read -7dB on the tape machine's VU meter (see note at end of this section). Stop the UMI-4M and put the tape machine into RECORD, wait 5 seconds and start the UMI-4M. Record the sync code for the duration of the song (it is better to record too much code rather than too little).

Overdubbing the UMI-4M to the original master recording

Connect the line output from the tape machine's sync code track to the UMI-4M interface's MULTI 1 socket (use sync-from-tape -see hardware section). Select tapesync mode on the defaults page as described under 'defaults'. Having selected the PLAY SONG option from the main menu, rewind the tape to a point 5 seconds before the start of the sync code, put the tape machine into PLAY and press the SPACE BAR on the computer whereupon the UMI-4M will start playing as soon as the sync code starts. Pressing the SPACE BAR again will stop the UMI-4M.

Synchronising drum machines to tape via the UMI-4M interface

The UMI-4M still outputs valid clock signals when synchronised to tape, so it is possible to re-record drum machine parts by connecting the appropriate output(s) on the UMI-4M interface to the drum machine and following the steps outlined in the sections on synchronising drum machines to the UMI-4M and synchronising the UMI-4M to tape.

Note:- The UMI-4M interface will read sync code from tape over the range -12 dBm to +2 dBm. This corresponds to varying levels in terms of 'VU' depending on the number of tracks the tape machine has and its manufacturer. UMUSIC recommend a level of -7 VU for professional 24 track machines though a somewhat higher level of around 0 VU may be required when using semi-professional 8 or 16 track tape machines. In general, if the UMI-4M plays slower than the original recording then the UMI-4M interface is not getting enough level from the sync code track, if it plays faster then it's getting too much level from the sync code track. With some experimentation you should be able to find an ideal operating range for your particular tape machine.

5 Pin (180 deg) 'DIN' sockets:-

MIDI IN: serial data input to ACIA via opto-isolator to prevent ground loops.

MIDI OUTs: four sockets providing serial data output from ACIA (asynchronous communications interface adaptor) running at 31.25 kBaud. Each socket is separately addressed by the software to provide an effective data transmission of 125 kBaud

multi 1: pin# 1) sync to tape
 4) external clock in
 2) ground
 5) foot-switch in
 3) sync from tape

F.S.K. (frequency shift keying) tape sync

low=1.4k (less than 1.5 = low)
 high=2.4k (greater than 1.7=high)

sync-from-tape: min input 22mV rms = -33dBm = -37Vu
 sync-to-tape: 240mV rms = -16Vu = -12dBm

multi 2: pin# 1) start continuous (in conjunction with clock out for ROLAND sync-24)
 4) start momentary in
 2) ground
 5) click out
 3) clock out

34 and 20 way ribbon cables terminated with IDC connectors for connection to the BBC computers's 1MHz bus and User port sockets.

Should the Beeb 'crash' or freeze at any point whilst running 'UMI' it can be cleared by pressing the BREAK key.

No playback after real-time input.

Check your MIDI connections to and from the synth and 'UMI'.

If the clock-in on the Defaults section of the main menu is set to anything other than internal then make sure you have a drum machine connected to the clock-in of 'UMI'.

ENSURE YOU HAVE THE SELECTED THE CORRECT CLOCK RATE FROM THE default OPTION (CTRL and red key 'f9') otherwise this could make nonsense of any count-in period you might have selected.

Check the count-in period on the default option. If you are waiting for a count other than that selected you could be 'missing' some of the record phase.

No playback on some or all channels in PLAY SONG mode.

Look at TRACK ASSIGNMENTS (CTRL and red key 'f5'). Possibly a track is routed to a channel# no synth is selected for.

First notes missing and/or last notes 'hanging over' on playback of a real-time recorded pattern.

If your performance is just fractionally early of the record phase the note-on MIDI codes will be missing. Similarly if the last notes you play are released even an instant after the record phase is over then the note-off codes will be missing, hence the sustain. Re-record the pattern or use the auto-start and cut_off facilities as described in the real-time input section.

(C) 1987 The specification of 'UMI' is subject to change without notice.

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