



electromusic research

M I D I T R A C K
P E R F O R M E R

For use with
ANSTRAD CPC464,664 & 6128 Microcomputers
EMR ANSTRAD MIDI Interface Unit
and
MIDI-equipped musical instruments

Instruction Manual



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C O N T E N T S

	Page
Introduction to MIDITRACK.....	3
Hardware Requirements.....	5
Setting Up.....	5
Operation.....	7
Track Merge.....	8
Punch-In.....	9
Left Screen TRACK Features.....	9
Right Screen OPERATING Features.....	11
Storage of Music Pieces.....	14
Special Commands.....	15
Getting Started.....	16
Recording.....	17
Deleting a Single Track.....	18
Playback.....	18
Expanding your MIDITRACK.....	19
Command Summary.....	20

INTRODUCTION

welcome to **EMR MIDITRACK** - an innovative and expanding system that enables music to be recorded step by step or played live on MIDI instruments. In addition, the total system embraces many of the requirements of today's musician - the MIDI EDITOR for modifying recordings or instrument voice programs, the MIDIBANK for instrument sound storage and retrieval, the MIDI NOTATOR for printed music notation, and MIDI MUSIC for visual performance displays.

The combination of MIDITRACK PERFORMER software for use with an AMSTRAD computer and a EMR MIDI interface unit represents a major new direction for musicians - the use of a home computer to simulate the control of an 8-track digital tape recorder. In fact, the computer can provide exciting new areas of recording control when used with MIDI-equipped instruments such as keyboards, guitars, effects processors and rhythm units etc.

Even more significant is that all the subtle nuances of your playing, whatever your style from rock to classical, can be realised using the MIDITRACK PERFORMER - previously restricted to systems costing thousands of pounds. Yet the control possibilities and music storage will enable full length pieces to be recorded, in exact timing with your rhythm unit.

There are several ways in which you can be using the PERFORMER system depending on the number of musical instruments you have and, apart from certain rhythm units and sequencers, these will need to be equipped with a new type of control called MIDI (meaning Musical Instrument Digital Interface). Already most musical instrument manufacturers have employed MIDI control and this has dramatically extended the music making possibilities of electronic instruments, from keyboards to guitar controllers, rhythm units, samplers, effects processors and sequencers.

The EMR MIDI interface connects between the AMSTRAD CPC 464,664 and 6128 computers and MIDI-equipped instruments, passing the coded information back and forwards in order to record your music and play it back by means of the MIDITRACK PERFORMER software program on cassette, disk or other storage media.

Also, since many rhythm units have an "external clock" output - usually called SYNC, this can be connected to the "Clock Start/Stop" input on the EMR interface to replace the AMSTRAD's internal timing that normally runs the Performer system. By linking in this way, drums and your music can be recorded and played together, and started or stopped by the rhythm unit (or its footswitch). Alternatively, MIDI-controlled rhythm units can be run from one of the MIDI OUT sockets on the interface, starting and stopping with the music automatically, either by control from your AMSTRAD computer or an external rhythm unit with sync out.

Each of the 8 tracks on the PERFORMER can take all the playing "information" from a MIDI instrument - this could be a home keyboard or polyphonic synthesiser, a sound sampler, a guitar controller, a live drum solo on a MIDI rhythm unit, or even an effects unit for controlling echo or reverbation.

At the present time, the amount of coded information that can be transmitted or received by a MIDI instrument will vary from one

instrument to another, even from the same manufacturer. In other words, your choice of MIDI instrument will be important if you want to use the full potential of a micro system like the PERFORMER. Some keyboards will only send notes played down the MIDI cable - a standard hi-fi cable with 5-pin DIN sockets at both ends - while others will allow most of the controls you would play in performance to be recorded as well, including key touch, preset sound changes, pitch bend, modulation wheel, portamento, key pressure etc. It is also possible that the specification of a particular instrument in terms of its permissible tempo range etc. may be exceeded by this software.

Once your piece is recorded with the PERFORMER, it can be played back over a large tempo range without changing pitch, started from any bar with your specified time signature and transposed track by track. A "metronome" note can be sounded on your instrument to keep track of the main beat for you to play along to. If the MIDI instrument has "Channel" assignment, you can send individual tracks to a particular channel to be played back only by the instrument(s) set to that channel. This enables a number of instruments to play their own parts, just as if you are controlling a whole band or orchestra!

If this is your first venture into "computer midi", you will find EMR's booklet "MIDI, MICROS & MUSIC" provides an informative introduction.

The simplest way to use the Performer is to have one MIDI keyboard connected to an AMSTRAD computer via the EMR interface. Each recorded track can then play as many notes at once as your keyboard will allow - this is usually 4, 6, 8 or 16 notes. Provided you don't exceed the number of notes available, you can share these amongst tracks, giving for example, a bass line on track 1, melody line on track 2, 4-note chords on track 3, and so on. During playback with the PERFORMER, you'll need a mixer if you're recording more than one instrument and a conventional tape or cassette recorder if you wish to make an audio recording of your performance. Of course, the full potential of MIDI is realised when you have several instruments available - in the case of keyboards, you only need to have one "master" instrument with a music keyboard, while others could be instrument modules or anything able to be controlled by MIDI.

Then your home computer can become a major "control centre", taking on the role of a digital multitrack recorder and playback machine for a solo performance that can be stored or recalled on cassette or disk. With the 64K AMSTRAD, it is possible to record between 10 and 20 minutes of music, from a dynamic drum solo to a classical sonata, or even a dramatic full orchestra of MIDI instruments in a concert hall environment. By making full use of the Performer's unique "Arrange" feature, parts of a piece can be recorded and then arranged to play up to 64 combinations of tracks - lasting an hour or more!

Recording studios benefit tremendously from this system as the musician can now come to the studio with a prepared piece, ready for further editing, adding other musicians' tracks and doing the final mixdown, saving considerable studio time.

On stage, the MIDITRACK PERFORMER comes into its own, not just as a versatile "realtime" performance tool, but as a quickly accessible system through its single screen control.

In education, the system gives the student, from primary level upwards, valuable practical experience of composing through multitracking, playing parts together, making accompaniments for

instrumental rehearsal, musical form, transposition, time signatures and other important music theory elements, as well as the correct execution of performance techniques.

Finally, it is in the home that micro music will become a fascinating and creative way to enjoy using your AMSTRAD....with the aid of EMR's MIDITRACK PERFORMER.

HARDWARE REQUIREMENTS

The following hardware equipment is required to operate the MIDITRACK PERFORMER:

1 AMSTRAD CPC 464, 664 or 6128 microcomputer. (If you require disk operation from a 464, you will need an update to your interface and a disk version of the Performer. Contact EMR for details).

1 EMR AMSTRAD MIDI Interface unit for direct connection to the AMSTRAD computers listed above.
MIDI-equipped instrument(s)
5-pin DIN to 5-pin DIN 45-degree connecting cables (but not "mirror-wired" type). These are obtainable ready-made from most shops selling hi-fi products or can be supplied to order by EMR.

Optional:

Rhythm Units/Sequencers/Microcomposers with SYNC OUT, to connect to CLOCK START/STOP on the Interface Unit.
MIDI-equipped Rhythm or Effects Units, connected to MIDI OUT 1 or 2 on the Interface Unit.

Other programmable drum units and sync-to-tape can be utilised with the optional EMR SYNC-TO-TAPE add-on unit. Analogue synths can be controlled via a MIDI-ANALOGUE converter.

EMR's low cost MIDILINK unit is also available that gives 6 MIDI THRU (OUT) sources from one MIDI IN and will be essential for avoiding time delays in a multi-instrument system.

The MIDITRACK PERFORMER for the AMSTRAD computer consists of two main items: a software pack compatible with CPC464,664 and 6128 AMSTRAD micros, including this manual and a disk or cassette containing the operating program and demonstration pieces, plus an EMR AMSTRAD Interface Unit. The disk version allows music files to be saved and loaded from cassette as well as disk. An upgrade to disk for cassette users is available at reduced cost.

SETTING UP

1. With the AMSTRAD micro switched off, connect the EMR MIDI Interface Unit to the computer by means of its cartridge connector. Insert the

cartridge correctly into the cartridge slot on your AMSTRAD micro - if there are two of these, either slot will be suitable, leaving the second slot for connection to a disk drive. If your AMSTRAD micro is to be used with the disk drive version of the PERFORMER, for a single slot AMSTRAD micro you will need to use a suitable cartridge adaptor on its expansion socket.

2. Use connecting cable with 5-pin DIN sockets at each end to connect one or both of the MIDI OUT sockets on the Interface Unit to MIDI IN on MIDI-equipped instruments (including rhythm or effects units).

Instruments may be linked in one "line" by connecting MIDI OUT on the Interface to MIDI IN on your first instrument. Then the next cable is taken from MIDI THRU on your first instrument (if provided) to MIDI IN on a further instrument, and so on. If more than 2 MIDI instruments are to be connected and no MIDI THRU sockets are available, then you'll need EMR's MIDILINK (1 IN, 6 THRU) accessory unit.

3. For external clock timing control of the MIDI TRACK PERFORMER during record and playback, connect a 5-pin DIN cable to CLOCK START/STOP (IN) on the Interface Unit and to SYNC OUT on Roland instruments (rhythm units, microcomposers, sequencers) or to Korg (DIN) SYNC. The whole system can then be started and stopped from the external unit's footswitch. (The clock timing base is 24 clocks per quarter note and normal input is at TTL level).

For more professional applications, a SYNC-TO-TAPE unit is available as an option, handling clocks on Linndrum, Oberheim, Yamaha, Emulator units etc as well as providing variable tempo control via an audio clock "click" track on Fostex or Teac multitrack machines (or even a stereo cassette recorder).

4. For standard operation of the PERFORMER program, connect a MIDI-equipped keyboard to the Interface Unit with two 5-pin DIN leads: Keyboard MIDI IN to Interface MIDI OUT 1 or 2, and Keyboard MIDI OUT to Interface MIDI IN.

5. Re-check connections, then switch on instruments, followed by the AMSTRAD micro. If the micro does not start up correctly (a quick indication is the power LED not turning on or the Interface "DATA IN" LED not lighting when you play a key on your instrument connected to MIDI IN), then you have almost certainly linked up incorrectly and should switch off immediately and re-check.

6. Insert the "MIDI TRACK PERFORMER" cassette or disk into your cassette recorder or disk drive respectively.

7. CASSETTE USERS: Load the PERFORMER program on side 1 by typing: run "emr" followed by the <RETURN> key. Alternatively, you can press <CTRL> + <ENTER> (ie. small ENTER key) and follow AMSTRAD's usual loading procedure. The first side of the cassette contains the operating program, and the second side contains 3 demos: demo1, demo2 and demo3. Loading time for the program is around 7 minutes. At the start the screen blanks for a few seconds until the loader appears. Loading is complete when the main screen display appears. Stop the tape at this point.

8. DISK USERS: The program and demonstration pieces are provided on one 3 inch disk. Load the MIDI TRACK PERFORMER program by typing run "emr" followed by the <RETURN> key. Please do NOT use this disk for saving and loading your music pieces from the main program - use your own "formatted" disks for this purpose. Always take care of your PERFORMER program disk - in the event of damage contact EMR for replacement.

Notice the use of <> eg. <RETURN> to indicate a micro key pressed with this name.

OPERATION

All the control operations are carried out using the main screen display on completion of loading. Each of the red and white "icons" (ie. graphic shapes) indicate a feature or operating function.

The left section of the screen shows the settings for tracks 1-8 during recording and playback. These icons from left to right represent: TRACK, PLAY, CHANNEL, LOOP, CONTROL, PITCH and ARRANGE.

Apart from the ARRANGE column, any of the locations on this area may be accessed by first positioning the ARROW "sprite" shape at one of the positions in this 6x8 "parameter" block, using the micro arrow keys (LEFT, DOWN, UP, RIGHT).

A parameter may then be changed by simply pressing the SPACEBAR to enter "edit" mode and using the UP or DOWN micro arrow keys to adjust the data, followed by pressing the SPACEBAR to exit edit mode.

Alternatively, a joystick may be effectively used to control all the main operating functions of the PERFORMER. Simply use the joystick's left, right, up and down movement to locate the ARROW at the desired position in the left or right screen windows and, provided you have located a window that can be accessed, pressing the FIRE button once will produce an inverse flashing effect on the current data (a number or letter) to indicate "edit" mode. The data "parameter" can then be changed by using up or down joystick movement until correct and then pressing the FIRE button once again to leave edit mode.

The only entries not able to be changed by the joystick are ones requiring text from the micro keyboard - that covers the filing operations, text, arrange and clearing music memory.

The two vertical columns in the right section of the screen provide various setting-up options before and after recording or playing back, as well as cassette or disk saving and loading of your music "file".

The icons in the leftmost vertical column represent (reading from top to bottom): METRONOME, COUNT-IN, CLOCK, TEMPO, PLAYS, TIME SIGNATURE and STARTBAR. The next column icons represent (reading from top to bottom): SAVE, LOAD, VERIFY, CLEAR, TEXT, ARRANGE and TIME CORRECT. At the far right of the screen are two more icon blocks for disk users: CATALOGUE and DELETE, with display of the current "filename" below.

Since these icon windows are all accessed by moving the ARROW sprite to the required window by means of the micro arrow keys or joystick, in the same way as the left section parameters. Since the screen ARROW can repeatedly move in any one direction selected, it is possible to move quickly around the different locations, just like playing a computer game! If you make a mistake during an entry, simply adjust again from edit mode.

In the lower part of the screen is the "COMMAND" window and just above this are two icon windows that represent (from the left): MEMORY FREE and STOPBAR. Both these are not user-accessible and will be updated automatically after recording or playback.

Playback and recording can only take place with the ARROW positioned in the leftmost column by a TRACK number. Another type of recording called "Punch-in" is also available.

With the ARROW located at a track number, press the SPACEBAR and 4 options will be displayed in the command window: PLAY, RECORD, PUNCH-IN and EXIT. Use the micro right or left arrow keys (or joystick) to select the required operation - it will appear within the block, then press the SPACEBAR or joystick FIRE button.

On selection of PLAY, the word "PLAYING" will appear in the command window and is activated by pressing SPACEBAR or FIRE once again (unless using EXTERNAL CLOCK). If a START BAR has been set beyond the first bar, you must wait until the "PLAYING" sign appears before pressing the SPACEBAR.

Selection of recording or punch-in is started and stopped in the same way as playback and all these will be fully discussed later.

Finally, during record or playback, the up arrow key or joystick movement will speed up the tempo and the down arrow key or joystick will slow down the tempo. Recording, punch-in or playback is stopped at any time by pressing the SPACEBAR or joystick FIRE button (and the screen will update tempo, memory free, stopbar, etc automatically).

The COMMAND window in the lower part of the screen displays RECORD TRACK, PLAYING and FILING information as well as your input for 3 icon locations: CLEAR, TEXT and ARRANGE. When a command function is called, this window prompts your entry.

At the top of the screen a "music ruler" is shown and during playback and recording indicates how much memory you're using up. The bar will clear from the left until the music memory is filled. At this point recording will stop automatically.

When using instruments with pressure or modulation control, these and other rapidly varying parameter controls can use up a lot of memory, so it is sensible to limit their use to one or two tracks. Provided enough memory remains, there is no restriction on the way you fill up tracks. So a short track can become a much longer track if required and vice versa.

TRACK MERGE

An additional feature of the system is TRACK MERGE. By taking a MIDI connecting lead from MIDI OUT 1 or 2 to MIDI IN on the EMR interface, track merging is possible.

Provided enough memory remains, this will allow you to select up to 7 tracks for playback and then go into record onto a spare track in the usual way. The result will be a merging (or combining) of all selected play tracks onto the record track. During TRACK MERGE, you must set COUNT-IN to 0 and turn off the METRONOME to avoid this being copied over.

Now you can regain memory used on the original play tracks by removing the IN/OUT connector lead, linking MIDI IN to an instrument as usual, and re-recording on these tracks. If no immediate use of the

"redundant" tracks is planned, simply set record on the track to be deleted and press the SPACEBAR or joystick FIRE button until the COMMAND window clears. The track number background will change from white (which means it has a recording) back to clear to indicate an empty track. The memory free block will show the extra memory gained for each track and PLAY will be turned off.

PUNCH-IN

The PERFORMER makes the editing of tracks in realtime easy by means of its "PUNCH-IN" facility. This is called on record and allows you to jump into the music at the point you wish to change, simply by starting to play, and then continuing to record to the end of the track.

After positioning the ARROW by the track number required, record <R> is selected on the desired track and option <P> for punch-in is chosen. If you want a "rest" immediately at punch-in, simply operate a suitable performance control once briefly, such as modulation wheel. Punch-in may occur at any point during the existing track. If you wait until after the track has finished, record mode will automatically be selected so that you can continue adding music. You can abandon punch-in at any time DURING the playing of the track by pressing the spacebar or joystick fire button to stop as usual.

LEFT SCREEN TRACK FEATURES

Each track has six columns that allow several important functions of record and playback to be changed individually. These are selected by positioning the ARROW sprite at the required location. Each horizontal row is a numbered track 1 to 8 and so any changes made within one of these rows will not affect any of the other tracks.

Any of the entries to the right of the TRACK numbers may be altered at any time (except during record or playback) simply by entering edit mode and adjusting the letter or number as required.

The purpose of the six vertical rows is as follows:

TRACK This row of numbers from 1 to 8 refers to a particular track within the PERFORMER's digital recording system. This resembles the track of a multitrack tape recorder, except that it will store information transmitted from a MIDI instrument via playing information, which could be voice changes, modulation, or more or less anything that comes down the MIDI cable. What makes the system so powerful is that no degradation of these signals can occur as they are digital (instead of audio) and so the final quality depends on the way you do your instrument audio "mix".

The ARROW is only positioned at a TRACK number 1 to 8 for PLAYBACK and RECORDING. Once a recording has taken place on a particular track, the track number will appear highlighted on a white background.

PLAY One or more tracks that have already been recorded on can be switched off during playback. First, position the ARROW at the track to be edited in this column. Select the letter <O> to turn OFF or <P> to PLAY the track on playback.

CHANNEL Place the **ARROW** at the required channel to be changed, press the spacebar or joystick fire button and select a channel number from 1 to 16.

The channel is normally set to Channel 1 as this is the channel that most MIDI instruments receive information on at power-up. This important feature lets you specify a channel number from 1-16, so that only instruments set to this channel will respond to music (or control data) from this - and any other tracks with the same channel number. To put it another way, if you've recorded a bass line on TRACK 1, you could be sending that to, say, a MIDI keyboard set to its preset voice 16, and so on, to make a distinct ensemble of instruments playing from different tracks.

Several or all of the tracks can be set to the same channel. (Note that the channel no. received on record is ignored). Remember to set the MIDI instrument channel number as well as the PERFORMER channel number.

LOOP After a track is recorded, it can have LOOP set by locating the arrow and pressing the spacebar or fire button will toggle letters <L> to loop or <O> to turn off loop. There are two ways of using this feature. First, one or more tracks set to play <P> on the screen (or in ARRANGE number) can be made to LOOP so that these tracks repeat indefinitely. But a much more useful way to use loop is to have one or more tracks set to loop over a number of bars, whilst a longer "melody" track plays right through - at this point the looping will stop automatically. This, combined with ARRANGE, can open up your recording tremendously to easily produce intricate sequencer pieces.

CONTROL This is a useful memory-saving feature that enables tracks to be set to F, V, P or N options.

F=Full Control setting, so that all your performance controls (including voice changes) operated on a MIDI instrument during the recording of a music track will be stored, along with the actual music data.

V=Velocity (or loudness) received, whilst filtering out pressure (also called aftertouch).

P=Pressure received, whilst filtering out velocity.

N=No control of pressure or velocity (but still retaining other performance controls).

The most used MIDI control codes are: MODULATION WHEEL, PITCH BEND, VOICE CHANGE, PORTAMENTO, SUSTAIN PEDAL, BREATH CONTROL, AFTERTOUCH (PRESSURE), JOYSTICK CONTROL, VOLUME, plus various other parameters, according to the MIDI-equipped instruments used. Currently, only a few instruments have pressure control and since it is operated from key touch as a rapidly varying effect, it can be used up significant amounts of memory. Consequently, it is advisable to restrict the use of pressure to as few tracks as possible. In addition, selecting <N> (or <P> with minimum use of pressure) will give a saving of approximately 1/3rd of each track's memory.

PITCH Transposition of a recorded track (polyphonic or monophonic) is made easy using this feature. Simply locate the arrow at the "0" of the track to be transposed in pitch - this can only be up or down a maximum of 12 semitones in one go, but can then be repeated to give a further

transposition. Enter a number from 1 to 12 for transposing a recorded track up the required number of semitones (eg. from standard C to E pitch would be 4). To transpose down enter a semitone interval of -1 to -12.

Some care has to be taken when doing large pitch jumps (several octaves consecutively up or down) as it is possible to exceed the range limits of a particular MIDI instrument. This can result in loss of data and some notes exceeding the limit may sound as the last playable note or simply repeat the highest (or lowest) note of the same name available. The MIDI specification allows for notes 5 octaves above or below Middle C (to be exact, they are coded such that 60 = Middle C over a range of 0 to 127).

Note that only the last pitch jump value will be entered in the PITCH block selected. If several pitch jumps are made, the value shown will only be relative to the previous pitch change. Now you can have your music instantly playing at the correct transposition to accompany an orchestral instrument such as clarinet, saxophone or trumpet. Using the TRACK MERGE procedure, you could transpose one track onto another and use ARRANGE to play the tracks in sequence, without having to re-record the music.

MODE This MIDI option has been omitted on this version of the

PERFORMER - MIDI control is always set to POLYPHONIC mode, rather than MONOPHONIC or OMNI mode, because most MIDI keyboards are now POLYPHONIC. The latter usually means that more than one note at once can be played on the keyboard, although in MIDI terms it also means that the instrument can understand CHANNEL data as it is received and can respond to a single channel's information if required.

MONOPHONIC mode is only used for special solo function control on some makes of instruments. OMNI mode is not available as instruments operating only in this mode will simply respond to ALL tracks, without discrimination of channels assigned in POLYPHONIC mode. However, OMNI instruments can be used to send and receive all tracks set to play when using the PERFORMER.

RIGHT SCREEN OPERATING FEATURES

All the red and white icon blocks in the right section of the screen are operated simply by locating the arrow at the required position and pressing the spacebar or fire button. The way in which you change data or carry out the operation for a particular block will be described below.

To record a track, you'll have to reposition the **ARROW** at the TRACK number required for recording on before pressing spacebar or the fire button. This provides a form of protection against recording accidentally, although the PERFORMER program has "PROCEED Yes or No" options in many important functions.

Playback is carried out in the same way, except that the arrow can be on any track number. If you're using an external SYNC clock (connected to Clock Start/Stop on the EMI interface unit), you will need to press the start button on the controlling unit.

Tempo changes can be made during playback and record on external clock mode (E) by using the external unit's tempo control or on internal clock (I) by using the up/down arrow micro keys or joystick forward/back movement. Slight adjustments will change the speed gradually and the actual value in beats per minute will be shown in the TEMPO block after recording or playback.

Now let's take a closer look at each icon function:

METRONOME You can select whether you wish to hear a beat to record or playback with. During recording of several tracks, it may only be necessary to have it on for the first few tracks. However, in order for the bar count and synchronizing of tracks to be accurate, you must keep the to the metronome output - not an easy task for most users at first!

Locate the arrow at the metronome icon and press the spacebar. In the command window appears:

METRONOME PITCH IS 72. CHANGE?

Press (V) and type a value between 36 and 96, followed by the (ENTER) key. This means that any MIDI keyboard (or rhythm unit that can put out individual drum sounds from low pitch values) set to CHANNEL 1 will sound a brief note on every main beat at this pitch. The actual pitch value comes from the MIDI specification that assigns note MIDDLE C as 60. All other notes count in semitones up or down from this, so C an octave lower will be pitch 48 and C an octave higher will be 72.

When a rhythm unit is connected (either via Clock Start/Stop IN or MIDI OUT), it is not usually needed. When turned off, the metronome will still be heard during the count-in and a MIDI drum unit will then start after count-in.

If you don't want a pitch change, press the spacebar to continue.

In the command window appears:

METRONOME VELOCITY IS 64. CHANGE?

Press (V) and type a value between 1 and 127, followed by (ENTER). This represents an output velocity (ie. loudness) from lowest to highest setting. If you just want to toggle the metronome on or off, press the spacebar twice (to bypass pitch and velocity change) and the letter Y or N will indicate the current setting.

COUNT-IN When recording a track, it is desirable to have a count-in of a few beats prior to actual record. Enter a value from 0 to 9 to give the required number of beats as a count-in. Zero count is useful with an externally-clocked programmed rhythm unit playing a set accompaniment to your piece (and is essential during TRACK MERGE), otherwise the normal "default" count is 8 (for 2-bar count-in of 4/4 time). An external rhythm unit will start from the first beat of the count-in. A MIDI rhythm unit will start after the count-in, exactly at the start of the music.

CLOCK Enter (I) if you wish to use the micro's INTERNAL clock, or (E) if you wish to use an EXTERNAL clock. This enables the whole system to be controlled by the external SYNC OUT of a rhythm unit, sequencer, microcomposer or EMR SYNC-TO-TAPE unit via the Clock Start/Stop 3-pin DIN input socket on the EMR Interface (Pin 1 is clock start/stop, pin 3 is clock and pin 2 is ground). Both 24 and 48 clocks per quarter note systems can be used.

TEMPO The tempo (or speed) of recording or playback can be set by entering a value between 12 and 360, approximating to beats per minute, from largo to presto and much faster.

Tempo is also variable during record and playback (ie. in "real time") by simply tapping or holding the "down" arrow key to slow down or "up" arrow key to speed up (or by using the joystick forward/back movement). Unlike a conventional tape recorder, no change in pitch will result, making this a powerful editing facility. You can use it to achieve a rallentando or accelerando during your audio recording mix (or use the EMR Sync-To-Tape accessory to do this automatically). The default tempo is 120.

PLAYS This block sets the number of plays through your piece, from entry of 1 to 254 for counted repeats, or entering 255 will continuously loop until play is stopped by pressing the spacebar or joystick fire button. In order to achieve a satisfactory loop every time, over the length of the longest track, the PERFORMER will "pad out" your last note to equal a whole beat (usually a quarter note/crotchet). The stop point is particularly important when using LOOP and ARRANGE to ensure that everything keeps in time - most often, you will need to stop in the last beat of the bar.

TIME SIG A time signature can be set here to enable correct bar counting in your piece. Since no music notation is used in this program, the base value is unimportant, and you should enter a number from 1 to 9 to set the number of beats in a bar (or bar division as you need). In general, a rhythm unit's quarter note (crotchet) and the PERFORMER metronome will be placed on these main beats. The default signature is 4/4.

STARTBAR Enter the STARTBAR required for playback of one or more tracks. Make sure you enter a valid bar (ie. don't enter bar numbers above the final bar of the piece - the latter will include counting any arrangements that are present as well as to the last bar of the LONGEST track present. The total number of bars can be checked by playing your piece once through and observing the value shown in STOPBAR (see below). The default setting is BAR 1 and the possible range is 1-999.

CLEAR To clear a piece completely from memory in order to start a new recording session, press the spacebar at this block. If you wish to proceed, at the command "ARE YOU SURE? Y OR N", type (Y) for YES. To leave without CLEAR taking place, type (N) for NO. On CLEAR, the screen will reset its parameters back its original default values, ready to start a new piece. Use this command with care!

TEXT Once you start recording, you will find it necessary to keep note of details about your pieces. Press the spacebar to display previously entered text in the COMMAND window. If you wish to enter new text, use the (DEL) key to delete the existing text and then simply type in your new text. Three lines can be filled with text - there is no need to press (ENTER) at line ends. Press (ENTER) when you have finished to get back to the program. If you make a mistake, use the (DEL) key and start entry again. Do not use other edit keys. The text will be saved along with the music data.

FREE You can't change this one! FREE is automatically updated after record to show the precise amount of music memory remaining.

STOPBAR This is not accessible either. It will be updated automatically to show the BAR reached at the end of recording of the current track or after playback. Before saving a piece onto disk or cassette, it is useful to play it right through once so that the total number of bars will be stored with the music data.

STORAGE OF MUSIC PIECES

CASSETTE USERS

Before commencing, insert a blank or previously recorded cassette. Pieces will be stored as one block of digital data in a similar way to machine code MSTRAD programs.

DISK USERS

Before commencing, remove the EMR program disk and insert a suitable formatted system or data disk in your drive unit. Always remove a disk before switching on or off the drive, otherwise the data on the disk may be damaged.

All the screen information present at the time of saving will be stored along with the complete track recordings. This makes performance playback very easy as correct tempo, channel, pitch, etc will be set on loading the piece. Of course, you can edit a parameter prior to playback at any time or before saving. When recording, it is good practice to save your piece at regular intervals in case you decide to return to an earlier version.

All the filing commands are shown in the icon blocks at the top right of the screen. If an error occurs during file operations, the message "FILE OP ERROR" will be displayed. Press the spacebar and you may then try again or carry on with the program.

Since disk users may have upgraded from cassette to disk, the current filing system may be changed by entering **T** for tape or **D** for disk at the FILENAME prompt, followed by **ENTER**. After this you can press the spacebar again to carry on with your selected file operation described below.

Locate the arrow in the usual way at the icon block to be called and then press the spacebar or fire button. Next, carry out one of the following for the filing operation required:

LOAD When loading a recording from disk or cassette, the COMMAND window shows: "FILENAME:". Type the name of your piece, followed by **ENTER**.

When using cassette on any filing operation, you will be prompted to start the tape and press a key. If you wish to abort, you can press **ESCAPE** to return to the program.

SAVE When saving a recording, press the spacebar at this block. In the COMMAND window appears: "FILENAME:". Type a name for your piece (up to 6 characters), followed by **ENTER**.

OK To verify a recording press the spacebar. In the COMMAND window appears: "FILENAME:". Type the name of the piece to be verified, followed by **ENTER**. Before proceeding with cassette verify, rewind the tape to the start of the file. A correct save will show the message "VERIFY COMPLETED". If the piece was saved incorrectly, the message

"VERIFY FAILED" will be displayed. Never do verify after you've changed anything on the screen as this will obviously produce an error.

DELETE This is a disk option only. To delete a music file on disk press the spacebar. In the COMMAND window appears: "FILENAME:". Type the name of the piece to be deleted, followed by **ENTER**.

FILES To list the file names on disk, keep pressing the spacebar and these will be displayed on the screen one line at a time until all files have been shown. It may be used with cassette to check a file exists - use **ESCAPE** to exit.

SPECIAL COMMANDS

The last two icon blocks in the lower right section provide the following special commands:

ARRANGE

Pressing the spacebar/firebutton at this block will allow you to make up to 64 arrangements of the recorded tracks. In other words, you are able to play in sequence one or more of the recorded tracks - each new arrangement will commence after the longest track has finished. You can also loop tracks provided at least one track has loop off in the arrangement selected. Otherwise an indefinite loop would occur.

You are prompted for a NEW ARRANGEMENT in the COMMAND window after the existing arrangement (if "0" appears, this indicates that the previous arrangement will be the final one).

Enter the track numbers to be played in the arrangement number shown - remember that the first arrangement will always FOLLOW the tracks set to PLAY on the SCREEN.

Enter 12345678 (or the required combination of tracks) without spaces as shown, followed by **ENTER**. To complete your arrangements, enter a **0** (zero) on the next "NEW ARRANGEMENT:" prompt, followed by **ENTER** to exit ARRANGE.

To examine your arrangements at any time press the spacebar to enter ARRANGE and then use **ENTER** repeatedly (without making an entry) until you exit ARRANGE.

The ARRANGE feature should be made use of as much as possible as it greatly increases the playback time of your pieces. In fact, it is a more sophisticated way of creating music "sequences" - a term made popular a few years ago in electronic music.

TIME CORRECT

It is possible to correct your note playing by using this special automatic timing correction feature. When recording, you may find that your timing is not perfectly on the main beats. By locating the arrow at this block, you can enter a note "timing correct" setting from 1 to 24. Normally it is shown as 0, the default setting which turns auto time correction OFF. The process actually takes place during recording.

You must always ensure that the number chosen will accommodate your fastest-played notes as follows:

3 = 32nd notes	12 = 8th notes
6 = 16th notes	16 = triplet quarter notes
8 = triplet 8th notes	24 = quarter notes

Other values between 1 and 24 may be chosen. Because realtime playing can sometimes not be as exacting as required in terms of timing, it may be advisable to record a track with value 0 and then do a timing correction when using TRACK MERGE to copy to another track. Certainly, experiment with this as you'll find it can produce some very useful time syncopation that would be almost impossible to create in playing.

GETTING STARTED

The easiest way to get started is to try out the two demonstration pieces provided on the PERFORMER cassette (on side 2) or disk. You can do this after loading the main program. Both pieces will work on MIDI keyboards and play in time with a rhythm unit (if connected).

Playing a demonstration piece is done as follows:

1. Ensure your cassette recorder or disk drive is set up correctly. Also check that a MIDI-equipped keyboard is connected to the EMR Interface and is set to Channel 1 initially.

2. Locate the arrow at the "LOAD" icon block and press the spacebar or joystick fire button.

3. In the COMMAND window appears "FILENAME:". Type the keys **demo1 demo2** or **demo3**, followed by the <ENTER> key. If you make a mistake typing, use the key to delete and make your correction.

4. If using tape, you'll be asked to start the tape and press a key. Find the header tone at the start of a demo and set the cassette recorder to PLAY just before this. Press spacebar to proceed and loading will commence.

5. Once the piece has been loaded correctly, the main screen will be updated with all the parameters set on save. Each TRACK number containing music will be shown against a white background block.

6. Move the arrow to the leftmost TRACK column and press the spacebar or joystick fire button. In the lower command window appears "PLAY RECORD PUNCH-IN EXIT". The word PLAY is already highlighted to show it is selected. Press the spacebar (or fire button) again to play a demo piece. During playback, the DATA OUT LED on the interface unit will flash, indicating transmission is taking place. The "Music Ruler" will also flash on the beat and show current music memory used up. In the ARRANGE PLAY column you'll see the current tracks playing flash a vertical bar on and off in time with the beat as well.

7. Press the spacebar or joystick fire button to stop at any time or let the piece play right through and stop automatically (check PLAYS is on a low value first!). You can adjust playback tempo by tapping the "down" arrow key to slow down or "up" arrow key to speed up as described in the TEMPO paragraph earlier. (The joystick forward/back movement can also be used).

Once you have tried out these pieces in straight playback, you can try out the different editing features available - changing the channels, turning off various tracks, transposing the pitch, starting from a different bar, and so on. Locate the TEXT block, press the

spacebar and you will see details about each demo (press <ENTER> afterwards!).

RECORDING

1. Before recording check that the DATA IN LED on the EMR Interface unit is receiving data from your MIDI instrument (via its MIDI OUT socket connected to MIDI IN on the interface). As you play notes on the keyboard, the LED will flash. The channel number for transmit is unimportant as all data will be received and sent out during playback on the channel(s) selected. The next steps 2-3 are optional and are carried out on the track to be recorded on.

2. Set Control to F,V,P or N. (See "Left Screen Track Features" for explanation of these.)

3. Set Time Signature, Metronome, Tempo, Internal or External Clock, and Count-In.

4. Position the arrow at the TRACK number to be recorded on.

5. Press the spacebar or fire button and in the command window appears "PLAY RECORD PUNCH-IN EXIT". Select RECORD by moving the background block from PLAY to RECORD by means of the right arrow key or right joystick movement. Press the spacebar or fire button once more to make your selection. You can also change your mind at this point and select EXIT to return to the main program or select PUNCH-IN mode.

6. To actually start record or punch-in, you must then press the spacebar or fire button again. Either will then commence with the COUNT-IN set on the screen. When recording, play from the start of the first beat after the count-in (unless you want empty bars at the start of recording). The track being recorded on will be indicated in the lower command window.

7. Tempo (ie. record speed) may be adjusted during record by tapping up or down arrow keys (or by using joystick forward/back movement) to slow down or speed up.

8. Press the spacebar or fire button to stop recording. The track

number recorded on will show its background changed to white to remind you that it contains music/control information. The PLAY block for the track will also show "P" to indicate it is currently set to play. If you intend to loop the track or piece using LOOP or PLAY, make sure you stop during the last beat required.

9. To record another track, carry out the above procedures 2-3 as necessary for the required track and continue from step 4. There is no restriction to the number of notes you play at once. Track recording can be done in any order and any other previously recorded tracks set to "P" in the PLAY row will be heard in sync with each other. A track's length will be up to the point that you stop record and you may use a track for re-recording a longer or shorter track at any time (provided memory is available).

10. Most music has some parts repeated and can therefore make use of LOOP or ARRANGE if you plan your recording beforehand.

11. As soon as you find a mistake on a recorded track, you can employ the professional technique of PUNCH-IN. In most cases, this will be the ideal way to correct your music, especially as tempo can be changed as you record. Specific note pitches or lengths, dynamics, voice selection, and other MIDI control information can also be changed by calling the optional EDITOR program.

12. During the count-in, you can hold any notes you want to appear exactly on the first beat, provided they are released after count-in. You can also set any other MIDI performance parameter during count-in - it's particularly useful to select a voice (then hold notes if you want) in order to set up the desired sounds for each track. Then on playback, this will all take place on the first beat.

DELETING A SINGLE TRACK

1. Position the arrow at the TRACK number to be deleted and press the spacebar or fire button.

2. Select RECORD by moving the block from PLAY to RECORD using the right arrow key or right joystick movement. (To abort select EXIT instead).

3. Immediately press the spacebar or fire button until the RECORDING TRACK NO. message disappears. The TRACK number will have its background returned to clear to indicate an empty track, PLAY will be turned off and the memory FREE block will be updated.

PLAYBACK

1. Check that one or more MIDI instruments are connected (from MIDI OUT 1 or 2 on the EMR interface to MIDI IN on the instrument(s)). Also check that MIDI receive channels are correct. The next steps 2-6 are optional.

2. Set PLAY tracks on (P) or off (O).

3. Set CHANNELS required for each track (1-16).

4. Set PITCH for transposing over range -12 to +12 semitones.

5. Set STARTBAR, METRONOME, TEMPO, CLOCK, PLAYS.

6. Set ARRANGE.

7. Position the arrow in the TRACK number column and press the spacebar or fire button. The lower window shows "PLAY RECORD PUNCH-IN EXIT". PLAY is already selected, so press the spacebar or fire button again. There may be a short delay (over a few seconds) after this before the word

"PLAYING" shows in the command window. This is because a search is being made for the STARTBAR you have set. Press the spacebar or fire button to start playback only when "PLAYING" has appeared. If using external clock, do not press the spacebar/fire button unless you wish to abort ext.playback. Instead, use the external unit's start control.

8. Tempo (or playback speed) may be adjusted during playback by tapping down or up arrow keys (or joystick movement) to slow down or speed up.

9. Press the spacebar or fire button to stop. On external clock, you can also use the external unit's stop control.

10. Remember to add information about your piece prior to saving by using TEXT.

11. Also, make changes to screen parameters until you have all the required settings for a future performance, including playing the piece right through to show the final STOPBAR. Then SAVE the piece and all these settings will be retained along with the music.

EXPANDING YOUR MIDITRACK

This software is part of a series of packages designed to operate with the AMSTRAD computer and the EMR AMSTRAD MIDI interface. Further hardware and software developments are in progress to expand your MIDI studio as far as possible. Details from EMR or your local dealer.

If for any reason your MIDITRACK PERFORMER or INTERFACE should fail to operate, please return in original package to EMR, 14 Mount Close, Wickford, Essex SS11 8HG, and state clearly the problem. If the product has been damaged inadvertently or otherwise, a repair charge may be payable. No responsibility for damage or loss through the post will be accepted.

General operating enquiries should be made to your local supplier. Information on MIDI implementation for a particular MIDI-equipped instrument should be in the owners manual. EMR produce a booklet entitled "MIDI, MICROS & MUSIC" as an introduction to the subject. Otherwise, contact your supplier for further details.

EMR reserves the right to alter or amend this package in any way it may feel necessary. No responsibility will be held by EMR for inadvertent damage to the user's computer, instruments or other equipment as a result of using EMR products.

AMSTRAD MIDITRACK PERFORMER

SUMMARY OF FEATURES

- TRACKS** - 8 fully polyphonic tracks available to record and playback all current MIDI performance data. Up to 29 tracks available using TRACK MERGE facility.
- PLAY CHANNEL** - Sets individual tracks to play or "mute".
- LOOP** - Enables individual tracks to be looped continuously, each with a different length, until a non-looped track has finished. Timing adjustment is automatic.
- CONTROL PITCH** - Filter control on record of pressure and velocity.
- ARRANGE PLAY** - Shows current tracks in play.
- METRONOME** - Provides selectable pitched metronome output to MIDI instrument on Ch1. Assignable velocity and pitch.
- COUNT-IN CLOCK** - Provides 0 to 9 beat metronome count-in on record. - I (INTERNAL) or E (EXTERNAL). Accepts 24/48 CPQN. Allows use of Roland/Korg SYNC OUT to control system via Clock Start/Stop input on EMR Interface. An EMR SYNC-TO-TAPE unit also connects to this.
- TEMPO** - Tempo range 40 to 360 beats per minute.
- PLAYS** - No. of plays from 1 to 254. 255=Continuous loop.
- TIME SIG.** - 2-9 beats per bar.
- STARTBAR** - Start bar range 1 to 999.
- STOPBAR** - Shows stop bar of latest record or playback (1-999).
- FREE** - Shows memory free. Max:32348 events. Approx. 6500 notes, velocity on. 8100 notes, velocity off.
- LOAD** - Cassette/disk load of music piece plus screen data.
- SAVE** - Cassette/disk save of music piece (MIDI data).
- OK** - Verification of cassette/disk save.
- DELETE** - Deletion of disk file. Also on-screen track delete.
- FILES** - Lists files on disk. Current file always on screen.
- CLEAR** - Deletes all existing music on recorded tracks and provides basic settings ready for record.
- TEXT** - Allows text "scratch pad" input, to display information on each music piece saved.
- ARRANGE** - Allows up to 64 arrangements of recorded tracks to be played in sequence (within no. of plays).
- TIMECORRECT-RECORD** - Auto timing correction of notes recorded (1/64-1/4).
- RECORD** - Recording of 8 polyphonic tracks of MIDI data.
- PLAYBACK** - Playback of up to 8 tracks set to play.
- TRACK MERGE** - Allows one or more tracks to be combined onto another track. Original tracks can then be re-used.
- TEMPO** - Realtime change of tempo during playback or record.
- PUNCH-IN** - Allows traditional punch-in recording on a track instead of whole track recording to correct playing errors.
- START/STOP** - From micro, audio tape or external rhythm/sequencer.
- MIDI DATA** - Visual "MUSIC RULER" responding to MIDI data and indicating in realtime music memory left.

