

# ***Music Pro***

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# **MUSIC PRO Version 1.4**

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[NOTE FOR GENEVE OWNERS: Unfortunately, MUSIC-PRO cannot be run on the Geneve at all, due to the Geneve key buffer routine.]

## ***PRESENTATION***

MUSIC-PRO was David Caron's entry in a software contest held by the Ottawa TI-99/4A Users's Group during the Spring of 1988. It was so good that he was awarded the first prize, and so different from all other "music makers" that we decided to share our pride and pleasure with the whole TI community.

To help you make the most of MUSIC-PRO, Lucie Dorais has done some changes to make it easier to use. She designed a keyboard map and template (the text file KB/STRIP), and a picture, PICDOC\_P, which can be read and printed with any TI-ARTIST compatible graphic program (MAX-RLE, but also GRAPHX, DRAW 'N PLOT, etc: don't forget the "\_P"!).

## ***INTRODUCTION***

Unlike other "music editor" programs, this one uses a realistic musical staff to type music into the computer. We call it a "MUSICal-PROcessor system" because it works very much like a word processor, except that it deals with notes instead of letters. You can move your cursor along the sheet music, insert or delete notes, and even copy or delete whole blocks. To enter a note on the staff, you just press one key. With fast Transformation functions, you can change the duration, frequency or volume of the whole piece, or a specified range of notes.

If you can read sheet music (and even if you don't: read under CTRL E/X below), then you can write it, or at the very least be able to type in a piece out of a piano book. Try it! You might surprise yourself with what you can do. And even if you cannot read music, you can use the COMPILER portion of the program to play the music files written with MUSIC-PRO.

You need Extended Basic with 32K expansion and a disk drive; a printer is very nice if you want a hard copy of your work. If you wish to start a new disk of MUSIC-PRO, the "must" files to copy are C, EDIT-STAFF, LOAD and P, and the disk should be named MUSIC-PRO.

## ***MUSIC-PROCESSOR***

The program is auto-LOADing. While you read the title screen, it will try and find out which disk drive it was loaded from, and make it the "system drive". After the main program EDIT-STAFF is loaded (it takes a while), you will see the main menu screen with nine choices.

**NOTE FOR RAMDISK USERS:** If your ramdisk does not write the last accessed disk number at VDP address >3FF5 when this disk is the ramdisk (such as CorComp's), the LOAD program will default to DSK1; if you wish to run MUSIC-PRO from a ramdisk named other than "1", change the DEFAULTDRIVE variable in line 1 in the LOAD program. Owners of the Triton Super XB module or of CorComp's systems can POKEV their desired disk number (1-9) to VDP address 16373 (=>3FF5), but it has to be done before LOAD's CALL INIT; we suggest a line 125.

### **1- MUSIC EDITOR**

Our computer can play music on three voices. The MUSIC-PRO Editor can deal with only one voice at a time, but the Compiler will play them together. We suggest that you carefully read all the documentation before you begin entering music

You start with three empty staff lines, each with a Treble and a Bass Clef, and the computer keyboard is transformed into a section of a piano keyboard. The second and fourth rows of keys from the top represent the WHITE keys, while the first and third rows from the top represent the BLACK keys. The lowest note is "Q" (low A, 110 Hz), "P" is middle C, and "." is the highest WHITE note (high F, with its sharp on key ";", 740 Hz) that can be seen on the staff (think of the "Z" key as being shifted right and up besides the "/" key). Higher notes, up to a full octave above high sharp F, can be entered by using the Transposition feature (see below, FCTN T), but will be shown on screen as upper arrows.

The duration of each note depends on how long you hold down the key. A thirty-second note will be displayed, which will change to a sixteenth, eighth, quarter, half and whole while you keep your finger on the key (sorry, MUSIC-PRO does not handle triplets). A rest is entered with the space bar, and the same "hold down" function applies to it.

Unlike a Basic CALL SOUND, music entered with MUSIC-PRO can have different durations in the three voices. If you enter four quarter notes in voice 1 (melody), and two half notes in the harmony, they will be synchronized by the Compiler (see PICDOC\_P for examples).

A note about SHARPS and FLATS: when you press a "black" key, the program decides whether it is a sharp or a flat: if the preceding note is higher, you get a flat; if it is lower, you get a sharp. Fooling it by temporarily inserting a high note to get a flat does not work: when you delete it, you will get back your sharp! So don't panic if you see a flat G (rather rare...) where you expect a more obvious sharp F: it will sound exactly the same! Look at PICDOC\_P for examples.

If you are still confused, just print KB/STRIP, a diagram of a piano keyboard, with the name of the keys to press and their equivalent note in music, in English and French. It

will also print a template strip with all the FCTN/CTRL[+digit] keys you will need.

Here are the other keys that are operational in the Editor:

◆**FCTN 1 [DEL]** deletes the note the cursor is positioned over and shifts the following notes to the left.

◆**FCTN 2 [INS]** toggles the computer into Insert mode, and the cursor changes to a ">". When you type a note, all the following ones are shifted right. Pressing FCTN 2 again will turn off the Insert mode. It takes a while to get used to it; you must press the key a little longer to get the note on the screen. The inserted notes will be in the current volume (check the sprite at the upper left), not in the volume of the preceding note.

◆**FCTN 5 [BEGIN/HOME]** will place the cursor at the beginning of the song.

◆**FCTN 6 [PROC'D/CH VOL]** is to modify volume on already entered notes. As the cursor advances, each note it passes through has its volume changed to the current volume, indicated by a sprite in the upper left corner of the screen, and is changed by CTRL 1-8 (see below). If you step over a note which already has a volume marker under the staff, and you change its volume with FCTN 6, you can delete the symbol by entering the note again, or re-enter the current volume (CTRL 1-8). If you choose not to, all the correct volume symbols will be restored when you refresh the screen by moving up or down the score, playing the song, or when you save it.

◆**FCTN 7 [AID/HELP]** displays two brief but comprehensive help screens.

◆**FCTN 8 [REDO]** will delete the last note entered (backspace-delete), but only if the cursor is at the end of the file.

♦**FCTN 9 [BACK]** will return you to the main menu screen, but your song will still be there right where you left off.

♦**FCTN 0 [PIANO]** will allow you to "play the piano" in the current volume, without any notes actually being entered on the staff. A special cursor reminds you that you are in "Piano" mode; press FCTN 0 again to go back to Edit mode.

♦**CTRL 1-8 [VOLUME]** will allow you to change the current VOLUME setting. You have eight selections (the file KB/STRIP includes a strip template with these values):

**Press      FOR FULL NAME      TRANSLATION      TI Vol**

CTRL 1	fff	TI's fortissimo	loudest	0-3
CTRL 2	ff	fortissimo	very loudly	4-8
CTRL 3	f	forte	loudly	9-12
CTRL 4	mf	mezzo forte	moderately loudly	13-16
CTRL 5	mp	mezzo piano	moderately softly	15-20
CTRL 6	p	piano	softly	21-24
CTRL 7	pp	pianissimo	very softly	25-28
CTRL 8	ppp	TI's pianissimo	softest	29-30

When you press one of the CTRL keys, the volume flag in the upper left corner will change. This symbol will also appear below the staff when you enter your first note after you change the volume, and every note you type after will take this current volume setting. If you modify a volume symbol while editing notes already entered, don't forget to use FCTN 6 for all the notes that you want to modify; for a longer range of notes, you can use the Block function for a quick Transformation (see below, FCTN F,G).

♦**CTRL 9 [END FI]** will place the cursor at the end of the file.

♦**CTRL 0 [STATUS]** displays the status screen: current disk and filename, buffer status in terms of notes, present cursor position in the editor.

◆*FCTN S,E,D,X* work as regular CURSOR keys, from left to right, and from one staff to another.

◆*FCTN F,G* : These keys allow you to define a BLOCK. Press *FCTN F* on the first note of your block, and *FCTN G* on the last one; two white braces will appear, and will stay on until you delete them with *FCTN H*.

When a block is defined, you can stil go out of it; all function keys will be available outside the block, and most of them (except HOME) will work inside it. So what is it used for? New keys apply to a block only, and some keys get new meanings:

*FCTN H* will delete the block markers; you can press it from anywhere in the score.

*FCTN C* will copy the entire block to a new position outside it; move the cursor to the location where you want it to be copied, press *FCTN C*, then delete the markers with *FCTN H*. This function is to be used whenever a passage in a music score is framed by double bars and colons, which means "repeat once". If you wish to Move a block, just Copy it, then Delete it with *FCTN 3*.

*FCTN 3* will delete the content of the block; as a safety measure, you must position of the cursor on the first note inside the block.

*ENTER* will play only the content of the block, from beginning to end, no matter where the cursor is positioned in the score.

TRANSFORMATIONS (menu option 6) will apply only to the block: very useful to change the volume of a passage, or make it play faster, or whatever.

◆*FCTN T* will provoke a SCREEN STAFF TRANSPOSITION to allow for entering notes above the high limit of the screen staff, high sharp F (for a real key

transposition, use TRANSFORMATIONS-FREQUENCY); when you press FCTN T, all the notes on the screen will be displayed one semitone lower, and an upper pointing arrow will appear at the upper right corner of the screen. If you press a key at this point, it will appear on the screen as the note you typed (pressing "P" will display a middle C), but it will be entered in memory as the note one semitone higher, and will sound as such (middle C thus will mean its sharp value). To enter a high G, press the note one semitone lower, i.e. "F", to get a sharp high F on the screen.

If you keep pressing on FCTN T until you get twelve arrows at the right of the screen (the program will prevent you from pressing more), you will have a visual transposition of one full octave, and will be able to enter the notes more easily: typing a middle C will give you a high C, etc.; this can be used when the music book says "8va\_\_\_\_", i.e. "play one octave higher".

◆CTRL T will reverse the function, one semitone at a time; all notes that are above high sharp F will now show on screen as upper pointing arrows, but will sound OK (see the DEMO1 example).

While you are in Screen Transposition mode, the notes that are shifted below the Bass Clef will be shown as down pointing arrows, but will reverse to normal when you press CTRL T until all the arrows at the right of the screen have disappeared. All Editor functions are still active while you are in this mode, including the main menu ones and the "Piano mode" (FCTN 0).

◆FCTN U toggles the PHRASING on and off. When a sequence of notes are played under phrasing, there is no pause between them. A sprite at the top of the second Treble clef sign will remind you that you are in phrasing mode. You must press it before typing the second note of a series of notes to be attached together. To disable phrasing on a note, just re-enter it; press FCTN U again to get out of that mode.

If you phrase two similar notes (like two Gs), they will sound like one longer note: you must use it for the "dotted" notes (for a dotted half, enter a half note, then a phrased quarter note), and notes carried over a bar by a slur (see PICDOC\_P for an illustration of both). You can also use it to imitate the slurs in sheet music, or to get a "smooth", continuous sound.

◆**CTRL E** and **CTRL X** are a substitute to the MUSIC-PRO keyboard. They put a 32d note at middle C and increment it (**CTRL E**) or decrement it (**CTRL X**) by semitones. Play with both keys until you get the note you want, then press the **ENTER** key and hold it down until you have the desired duration.

◆**ENTER** will **PLAY** your song to the point where your cursor was before you pressed it (to hear the complete score, use **FCTN 9** to get to the end of the file). It can be halted with **CTRL C**, and the cursor will reappear on the note played when you pressed **CTRL C**.

◆**CTRL =** changes the screen colour; keep pressing it until you find the colour of your choice.

## 2- DISK DIRECTORY

This function will catalog any disk, either by disk number (1 to 9), or by disk name, like "DSK.MUSIC-PRO" (no ending period needed). You can Load or Save a song while in the directory.

## 3- LOAD MUSIC FILE

The program will ask you for a filename, or use the previously entered name as a default (if you change your mind, you can return to the menu by erasing the default filename with **FCTN 3**). It then will load a program image file that has been created with **SAVE MUSIC FILE**. This function loads only one voice at a time, and will remind you about the "1,2,3" suffix (see **SAVE MUSIC FILE** below).

## 4- SAVE MUSIC FILE

Same steps as above, only this time the song in memory is saved to disk in a program format. When deciding on a filename, you can use a maximum of nine characters, since the last character must be "1,2 or 3" for the voice you are composing. But do use the same characters for the name of the song, so that the three-voice Compiler can access and load all three files by using the ROOT name. (The filename you enter will be used as default in the Editor, and will be transported to the Compiler portion of the program)

```
ex: voice 1   DSK1.SONG1 \
     voice 2   DSK1.SONG2 | ROOT name:DSK1.SONG
     voice 3   DSK1.SONG3 /
```

## 5- PRINT MUSIC FILE

This option will print the music file in memory (i.e. one voice only) as sheet music. You must first give the name of your printer, the default being PIO.CR.LF (escape with FCTN 3); if you have an RS232 printer, you can enter its name, or change line 1915 of the EDIT-STAFF program (see STUFF WORTHWHILE READING below). The second prompt asks whether you are in EPSON or IBM mode, default being EPSON compatibility; if you are not sure, try both cases.

The third prompt is to define the dot graphic escape code for your printer. All dot graphic codes look like this: ESC;code;data lenght;data;... You must supply the value of code (one char.), which can be found in your printer manual; the default is "K", for EPSON mode. Finally, you can give a title to your printout, the last filename used for LOAD or SAVE being suggested as a default.

The printing can be halted by FCTN 4; however, this may take some time, as the program will only return to the Editor in between printing staff lines.

## 6- TRANSFORMATIONS

This function, which allows you to change the DURATION, FREQUENCY and/or VOLUME of the notes in your song, affects all the notes in memory, or only a block if you have defined one with FCTN F/G. It works instantaneously, but all changes can be reversed. If you try to exceed the program limits, you will be returned to the Transformation Menu. The Menu Screen also informs you about the range of notes affected by the transformations, and the current lower and higher durations, frequencies and volumes (the number is the Call Sound equivalent). This information is updated after each transformation has been completed.

**CAUTION:** most of the songs distributed with the program have been entered with an earlier version (never put on the market), and trying to transform them can lead to non compatible values, and in some case might cause the program to crash (you will then have to re-LOAD it). Depending on how you transform them, older songs might still be playable. All the songs entered with this version of the program will be fully compatible with it and with subsequent versions.

**1. CHANGE DURATION:** This will alter the length of all the notes and rests in the song or block, and the Editor will display your notes with the new durations. A value of -2 will cause the song to be played twice as fast, a value of 2 will cause it to be played twice as slow, and a value of 1 will have no effect. If you use other values, or if you transform the durations of one of the songs distributed with the program, you can encounter a "NON SYNCHRONIZED" message, and the result might be inaccurate, the song will play anyway in the Editor; however, a non synchronized file will provoke a crash when played by the Compiler, so don't save such a song! To get the best results, try to get limit values of 5,10,20,40,80 or 160 sixtieths of a second by using multiples of 2.

**2. CHANGE FREQUENCY:** This will change the key that the song or block is played in. A value of 1 will increment all the notes by one semitone (or half step), and a value of -1 will decrement them by one. Greater or smaller values may be used; limits are 110 (below low A) and 1480 Hz (above high F sharp).

**3. CHANGE VOLUME:** A value of -2 will increase the volume of each note of your song or block by shifting it up one place (remember that the loudest CALL SOUND volume is 0), and a value of 2 will decrease it by shifting it down. Some older songs will display the lowest volume as "P\*\*" in the status portion of the menu screen, because the rests were entered with a volume lower than the lowest note. The songs you enter now will never exceed the "PPP" limit; higher limit is "FFF".

## **7- CLEAR MEMORY**

This option, with confirm, resets all the variables, and presents you with an empty staff.

## **8- STATUS SCREEN**

This is the same screen as the one called from the Editor by pressing CTRL 0 (see above).

## **9- COMPILER**

This will run the three-voice Compiler portion of the program (see below). If you have modified the music in the buffer, and have not saved it yet, the program asks you if you want to do it now, as the buffer will be cleared by the Compiler.

## **0- QUIT**

This option, with confirm, returns you to the Title Screen.

# **THREE-VOICE COMPILER**

When you press "9" from the main menu, you can, at last, hear your song with all its voices in tune. There is nothing for you to do, MUSIC-PRO does all the compiling in memory. After the loading of some assembly code, you will be asked for the ROOT name of the files you wish to load (don't use the 1,2 or 3 suffix: the computer will automatically add them to the files). The second and third files are not essential (root name DEMO will load DEMO1), and you can load voice 1 with voice 2 or 3 only by temporarily renaming the voice you don't want to hear with a disk manager program. However, you must always have a voice 1, otherwise the computer will issue an error message.

Once all files are loaded (a very fast routine), the Compiler combines them into a VDP sound list, using the first file as the end marker. Voice 1 normally contains the most notes, since the melody portion of a song is usually longer than its harmony; all music files can also be of the same length. Music is compiled by adding the durations of all notes in all voices, and comparing them; a "FILE TOO SHORT/LONG" error will not prevent you from playing the song, but to "debug" it you should compare the durations bar for bar with the sheet music. Total duration is not the same as total number of notes: compare the three files of S-OF-MUS or M-SHE-WRT.

Music starts automatically; you can then press any key in the menu:

**1 LOAD AND PLAY A SONG** by entering its Root name, or erase the default value to return to the menu.

**2 RE-PLAY SONG IN MEMORY**, even if you have stopped it.

**3 STOP THE MUSIC** if you have enough, or before you load another song or catalog a disk (you can always re-start it with Option 2).

4 DISK DIRECTORY is the same as in the Music-Editor; you can Load a song by its Root name, but you cannot Save one.

5 RETURN TO EDITOR portion of the program.

6 QUIT to the Title Screen, with confirm.

## ***STUFF WORTH READING***

This program is written in both Assembly and Extended Basic. The assembly routines are unalterable, but if you want to change the printer name, or some minor display, it can be done in the EDIT-STAFF program, which is written in Extended Basic. But always leave 8000 bytes of program space free (checked with a SIZE statement): it is used by the Editor for the buffer and other functions.

EDITING: to OLD the file EDIT-STAFF, you must do a CALL FILES(1) and a NEW; do not try to run it with your changes, as it needs assembly code loaded by LOAD. The program cannot be broken while running, except by accident. If this happens, you cannot run it again, or any other program for that matter, since it completely remaps the VDP memory, so SAVE the edited program, type BYE, and run LOAD again.

If you do more than a few changes, the program might get corrupted in memory; it is a good practice to SAVE it and OLD it back from time to time, to get a "clean" program [advice based on experience...]

If you wish to LIST the EDIT-STAFF program to printer, beware of line 460, which contains control codes. Edit that line before listing by typing spaces and " [ctrl codes] " between the ""s. And, please, don't touch lines 600 to 1860, which are the heart of the program, the Editor.

IF THE PROGRAM BREAKS before you have saved your song, you can still save it by manually executing the assembly routine at line 1900: CALL LINK("SAVE", NAME\$ ). EDIT the line by typing its

number plus FCTN X, then press FCTN 8 [REDO] and erase the line number. DON'T change anything in the REAL program line, otherwise you will reset all variables to 0. You might want to check the content of your filename type PRINT NAME\$ to check its content. You may change it in direct command mode by typing NAME\$="DSKn.FILENAMEn", or write it (as "DSKn.FILENAMEn") in the edited (direct mode) line instead of NAME\$. At this point, just press ENTER. If the Save is successful, the value of EC will be 0; if not, find your error by PRINTing EC\$(EC-1), and redo the above steps.

## CONCLUSION

If you have any questions, hints or improvements for MUSIC-PRO, you can write to David Caron or Lucie Dorais, care of Asgard or the Ottawa Users's Group:

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And don't forget to send us your creations!

If music on the TI fascinates you, try to get a copy of "COMPUTE!'s Guide to TI-99/4A Sound and Graphics"; Chapter 5 deals with sound, and gives an excellent introduction on how to read music.

**Documentation by David Caron and Lucie Dorais  
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# ***DISCLAIMER***

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