ator are assumed by selection.

[0018] In the CPU synthesizing mode, a musical sound is synthesized only by the CPU 10, or by combination of the CPU 10 and the co-processor 17. Further, the CPU synthesizing mode can roughly be divided into the following four submodes. The generated waveform is converted into an analog signal by the D/A converter 23 for acoustic reproduction.

FM mode: This FM mode utilizes a software module of an FM sound source for synthesizing a sound. The wave data is generated by real-time FM modulation over a basic sine wave by means of the CPU 10.

Harmonics synthesizing mode: The harmonics synthesizing mode is such that a fundamental waveform and its harmonics are synthesized altogether. With the real-time operation by the CPU 10, a fundamental waveform and its harmonics are calculated to synthesize the waveform.

Wave form memory readout mode: In this mode, the sound is synthesized by accessing a waveform memory. Prior to the synthesizing, the CPU 10 loads a plurality of basic waveforms into the RAM 20. Upon a synthesizing command entry, the CPU generates the wave data of a specified timbre at a specified pitch and volume by reading out the waveform. In the waveform memory readout mode, it is possible to synthesize a sound even with a low performance CPU, since the synthesizing is carried out by accessing RAM or ROM to read out wave data. Thus, a work load of the CPU in this mode is smaller than that in the FM mode and the harmonics synthesizing mode. However, the RAM should be allocated with a wave data area, so that shortage of a free area of the RAM 13 or 20 may be caused occasionally. Thus, the waveform memory readout mode may not be used preferably under some situations dependently on total RAM capacity and CPU addressing volume.

Physical model synthesizing mode: In the physical model synthesizing mode, the sound generation mechanism of an actual musical instrument, such as air flow in a tube, is simulated by an electronic model in order to synthesize the sound. The wave data is computed with real-time operation of devices including the CPU 10. An example of the algorithm for the physical model synthesizing is disclosed in JP-A-63-40199.

[0019] As listed above, the CPU-aided software sound source or the second waveform generator includes a plurality of digital waveform generators which are operable based on different algorithms to arithmetically create digital waveforms having different qualities. The inventive apparatus selectively operates an optimal one of the digital waveform generators according to the provided performance information. Specifically, the second waveform generator includes a digital waveform generator of the waveform memory readout type operable based on a relatively simple algorithm to create a digital waveform having a relatively low quality, and other digital waveform generators operable based on a relatively complicated algorithm to create another digital waveform having a relatively high quality.

[0020] On the other hand, in the hardware sound source synthesizing mode, the musical sound is synthesized using a specific hardware such as the LSI sound source 22. As a matter of course, in this mode, the hardware module such as the LSI sound source 22 must be installed in the system. The LSI sound source 22 synthesizes the wave data by the FM mode or the waveform memory readout mode (likewise the software sound source). The synthesizing method is determined by the hardware itself. The CPU 10 does not cover the control of the native synthesizing process of the sound source 22.

[0021] In the present embodiment, a multiple of voice channels are provided. One channel is allocated for one tone in either of the CPU synthesizing mode and the sound source synthesizing mode. A plurality of musical sounds are generated in the multiple of the channels to realize concurrent sounding of the plural voices. Since the wave data can be synthesized by both of the CPU 10 and the sound source device 22 in the present embodiment, selection of the waveform generators to be utilized is an important issue. In the present embodiment, optimum one of the waveform generators is designated according to the voice allocation upon accepting a note-on command. The allocation mode includes the followings:

CPU select mode: In the CPU select mode, the waveform synthesizing is effected by the CPU synthesizing mode at first priority. However, if the capability of the computing devices including the CPU 10 is not enough, the number of voice channels which can be used for the synthesizing is limited. In such a case, a part of the waveform synthesizing operation exceeding the capacity of the computing devices including the CPU 10 is carried out by the hardware sound source.

Sound source select mode: In the sound source select mode, the waveform synthesizing is effected by the hardware sound source at first priority. However, if the capability of the hardware sound source device 22 is not enough, the number of the channels which can be used for the synthesizing is limited. In such a case, a part of the waveform synthesizing operation exceeding the capacity of the sound source device 22 is carried out by the CPU software sound source.