WHAT IS CLAIMED IS:

1. A data processing method for an audio signal transmission system with enhanced audio signal recognition, wherein the audio signal transmission system includes a first device and a second device pairing with the first device, and when the first device transmits audio waves to the second device, the data processing method performed by the first device comprises steps of:

receiving a piece of information;

converting the piece of information into digital data and performing a data state conversion algorithm on the digital data to generate a time-based byte sequence;

adding a header to the byte sequence to constitute a bit sequence;

reading the bit sequence and modulating the bit sequence to a set of audio signals; and

transmitting the set of audio signals to the second device;

wherein before the step of transmitting the set of audio signals to the second device further has steps of:

compressing the set of audio signals;

performing a data comparison process on the set of audio signals;

wherein the data comparison process is performed after the piece of information in the set of audio signals is determined to be correctly readable, and when the piece of information is determined

to be not correctly readable, returning to the step of converting the piece of information into digital data and performing a data state conversion algorithm and adjusting a parameter required by the data state conversion algorithm;

wherein the data state conversion algorithm sequentially determines binary bits of the digital data according to binary values of the digital data, and when reading any binary bit of the digital data with a value one, the data state conversion algorithm represents the bit with a pulse signal appearing at a corresponding time spot of a time domain through a modulation process.

2. The data processing method as claimed in claim 1, wherein the step of adding a header to the byte sequence has a step of adding the header and a check code to the byte sequence to constitute the bit sequence.

~~3. The data processing method as claimed in claim 1, wherein the step of transmitting the set of audio signals to the second device further has steps of:~~

~~compressing the set of audio signals and performing a data comparison process on the set of audio signals, wherein the data comparison process is performed after the piece of information in the set of audio signals is determined to be correctly readable, and when the piece of information is determined to be not correctly readable, returning to the step of converting the piece of information into~~

~~digital data and performing a data state conversion algorithm and adjusting a parameter required by the data state conversion algorithm.~~

~~4.~~3. The data processing method as claimed in claim 1, wherein the piece of information is a character string.

~~5. The data processing method as claimed in claim 1, wherein the data state conversion algorithm sequentially determines binary bits of the digital data according to binary values of the digital data, and when reading any binary bit of the digital data with a value one, the data state conversion algorithm represents the bit with a pulse signal appearing at a corresponding time spot of a time domain through a modulation process.~~

~~6.~~4. The data processing method as claimed in claim 1, wherein when the first device transmits audio waves to the second device, the data processing method is performed by the second device and comprises steps of:

receiving the set of audio signals;

converting the set of audio signals to generate audio characteristics of the set of audio signals;

demodulating the converted audio characteristics to acquire digital data, converting the digital data into readable information, and reading the readable information; and

transmitting the readable information to a local side or a remote side.

~~7.~~5. The data processing method as claimed in claim ~~6~~4, wherein the step of converting the set of audio signals has a step of filtering and converting the set of audio signals.

~~8.~~6. The data processing method as claimed in claim ~~7~~5, wherein the step of demodulating the converted audio characteristics further has steps of:

reading the audio characteristics converted from the set of audio signals;

demodulating the audio characteristics to generate the digital data;

determining if a header is read from the digital data;

when the header is read, determining if the digital data are correct with a check code;

when the digital data are correct, converting the demodulated digital data into a piece of information; and

transmitting the piece of information to the local side or the remote side.

~~9.~~7. The data processing method as claimed in claim ~~8~~6, wherein in the step of determining if the header is read from the digital data, when the header is not read, changing a range of the set of audio signals to be read and returning to the step of reading the audio characteristics converted from the set of audio signals.

~~10.~~8. The data processing method as claimed in claim ~~9~~7, wherein in the step of determining if the digital data are correct with a check code,

when the digital data are not correct, changing a range of the set of audio signals to be read and returning to the step of reading the audio characteristics converted from the set of audio signals.

~~11.~~9. An audio signal transmission system with enhanced audio signal recognition, comprising:

a first device having:

an audio transmitting unit; and

a first processor connected to the audio transmitting unit and transmitting audio signals through the audio transmitting unit;

a second device having:

an audio receiving unit receiving the audio signals; and

a second processor connected to the audio receiving unit, receiving the audio signals transmitted from the audio receiving unit, and processing the audio signals or recognizing data contained in the audio signals;

wherein the first processor of the first device performs a first data processing method and the first data processing method includes steps of:

receiving a piece of information;

converting the piece of information into digital data and performing a data state conversion algorithm on the digital data to generate a time-based byte sequence;

adding a header to the byte sequence to constitute a bit sequence;

reading the bit sequence and modulating the bit sequence to a set of audio signals; and

transmitting the set of audio signals to the second device; and

wherein the second processor of the second device performs a second data processing method and the second data processing method includes steps of:

receiving the set of audio signals;

converting the set of audio signals to generate audio characteristics of the set of audio signals;

demodulating the converted audio characteristics to acquire digital data, converting the digital data into readable information, and reading the readable information; and

transmitting the readable information to a local side or a remote side;

wherein before the step of transmitting the set of audio signals to the second device further has steps of:

compressing the set of audio signals;

performing a data comparison process on the set of audio signals;

wherein the data comparison process is performed after the piece of information in the set of audio signals is

determined to be correctly readable, and when the piece of information is determined to be not correctly readable, returning to the step of converting the piece of information into digital data and performing a data state conversion algorithm and adjusting a parameter required by the data state conversion algorithm.