CLAIMS

1. A transmitting device, comprising an encode and rate matching module, a transcode module，a data block distribution module and multiple function units, wherein,

the encode and rate matching module couples to the transcode module, the transcode module couples to the data block distribution module, and the data block distribution module couples to the multiple function units;

each function unit of the multiple function units comprises a scramble module, an alignment marker insertion module and a forward error correction, FEC encode module.

2. The transmitting device according to claim 1, wherein a sum of rates of the multiple function units matches a medium access control, MAC rate of the encode and rate matching module.

3. The transmitting device according to claim 1, comprising a physical coding sublayer, PCS configured to perform interleaving on first data based on an FEC symbol, wherein the first data is output by the FEC encode module.

4. The transmitting device according to claim 3, further comprising a physical medium attachment, PMA configured to interleave second data, wherein the second data is obtained after interleaving is performed on the first data based on the FEC symbol.

5. The transmitting device according to any one of claims 1 to 4, wherein the FEC encode module is a first-level FEC encode module in concatenated FEC encode modules.

6. The transmitting device according to claim 5, wherein the first-level FEC encode module is configured to perform Reed-Solomon, RS FEC.

7. The transmitting device according to any one of claims 1 to 4, wherein the transmitting device further comprises a reconciliation sublayer, RS module, the RS module couples to the encode and rate matching module via a media independent interface, MII.

8. The transmitting device according to claim 1, wherein the data block distribution module is configured to distribute data to the multiple function units at a granularity of 257 bits.

9. The transmitting device according to claim 2, wherein the MAC rate is 1.6 Tb/s, the multiple function units comprise two function units, and a rate of each of the two function units is 800 Gb/s.

10. The transmitting device according to any one of claims 1 to 4, wherein a rate of the FEC encoding module is 800 Gb/s.

11. The transmitting device according to any one of claims 1 to 4, wherein the transcode module is configured to perform a 64B/66B-to-256B/257B transcode.

12. A receiving device, comprising a reverse transcode module, a decode and rate matching module, a data block distribution module and multiple function units, wherein,

the decode and rate matching module couples to the reverse transcode module, the reverse transcode module is coupled to the data block distribution module, and the data block distribution module is coupled to the multiple function units;

each function unit of the multiple function units comprises a descramble module, an alignment marker removal module and a forward error correction, FEC decode module.

13. The receiving device according to claim 12, wherein a sum of rates of the multiple function units matches a MAC rate of the decode and rate matching module.

14. The receiving device according to claim 12, wherein each of the multiple function units further comprises an alignment lock module.

15. The receiving device according to any one of claims 12 to 14, wherein the FEC decode module is a first-level FEC decode module in concatenated FEC decode modules.

16. The receiving device according to any one of claims 12 to 14, wherein the receiving device further comprises a reconciliation sublayer, RS module, the RS module couples to the decode and rate matching module via a media independent interface, MII.

17. The receiving device according to claim 13, wherein the MAC rate is 1.6 Tb/s, the multiple function units comprise two function units, and a rate of each of the two function units is 800 Gb/s.

18. The receiving device according to any one of claims 12 to 14, wherein a rate of the FEC decoding module is 800 Gb/s.

19. The receiving device according to any one of claims 12 to 14, wherein the reverse

transcode module is configured to perform a 256B/257B-to-64B/66B reverse transcode.

20. A transmission method, comprising:

encoding and rate matching on first data to obtain second data;

transcoding the second data to obtain transcoded data;

scrambling, by a first function unit, a first portion of the transcoded data to obtain first scrambled data;

inserting, by the first function unit, a first alignment mark into the first scrambled data to obtain first alignment data;

encoding, by the first function unit, according to a forward error correction, FEC code, the first alignment data to obtain first encoded data;

scrambling, by a second function unit, a second portion of the transcoded data to obtain second scrambled data;

inserting, by the second function unit, a second alignment mark into the second scrambled data to obtain second alignment data; and

encoding, by the second function unit, according to the FEC code, the second alignment data to obtain second encoded data.

21. The method according to claim 20, wherein a sum of rates of the multiple function units matches a MAC rate for the first data.

22. The method according to claim 20, wherein the method further comprises:

interleaving the first encoded data and the second encoded data based on an FEC symbol at a physical coding sublayer, PCS to obtain symbol interleaved data.

23. The method according to claim 22, wherein the method further comprises:

interleaving the symbol interleaved data at a physical medium attachment, PMA.

24. The method according to any one of claims 20 to 23, wherein the FEC encoding process is a first-level FEC encode process in concatenated FEC encoding processes.

25. The method according to claim 24, wherein the first-level FEC encoding process is configured to perform Reed-Solomon, RS FEC.

26. The method according to claim 21, wherein the MAC rate is 1.6 Tb/s, the multiple function units comprise two function units, and a rate of each of the two function units is 800 Gb/s.

27. The method according to any one of claims 20 to 23, wherein a rate of the encoding

process according to the FEC code is 800 Gb/s.

28. The method according to any one of claims 20 to 23, wherein the transcoding is configured to perform a 64B/66B-to-256B/257B transcode.

29. A transmission method, comprising:

decoding, by a first function unit, according to a forward error correction, FEC code, first data to obtain first decoded data;

removing, by the first function unit, a first alignment mark from the first decoded data to obtain first alignment removal data;

descrambling, by the first function unit, the first alignment removal data to obtain first descrambled data;

decoding, by a second function unit, according to the FEC code, second data to obtain second decoded data;

removing, by the second function unit, a second alignment mark from the second decoded data to obtain second alignment removal data;

descrambling, by the second function unit, the second alignment removal data to obtain second descrambled data;

reverse transcoding the first descrambled data and the second descrambled data to obtain reverse transcoded data; and

decoding and rate matching on the reverse transcoded data to obtain third data.

30. The method according to claim 29, wherein a sum of rates of the multiple function units matches a MAC rate for the third data.

31. The method according to claim 29, wherein the FEC decoding process is a first-level FEC decode process in concatenated FEC decoding processes.

32. The method according to claim 30, wherein the MAC rate is 1.6 Tb/s, the multiple function units comprise two function units, and a rate of each of the two function units is 800 Gb/s.

33. The method according to any one of claims 29 to 32, wherein a rate of the decoding process according to the FEC code is 800 Gb/s.

34. The method according to any one of claims 29 to 32, wherein the reverse transcoding is configured to perform a 256B/257B-to-64B/66B reverse transcode.

35. A communications system, comprising the transmitting device according to any one of

claims 1 to 11 and the receiving device according to any one of claims 12 to 19.