PREAMBLE SENDING METHOD, POWER CONTROL METHOD, TERMINAL, AND DEVICE

~~[0001] This application claims priority to Chinese Patent Application PCT/CN2014/072098, filed with the Chinese Patent Office on February 14, 2014, and entitled "PREAMBLE SENDING METHOD, POWER CONTROL METHOD, TERMINAL, AND DEVICE", which is incorporated herein by reference in its entirety.~~

TECHNICAL FIELD

[0002] The present invention relates to the field of mobile communications, and in particular, to a Preamble sending method, a power control method, a terminal, and a network-side device.

BACKGROUND

[0003] The Universal Mobile Telecommunications System (UMTS, Universal Mobile Telecommunications System) is a mainstream 3G wireless communications standard formulated by the Third Generation Partnership Project (3GPP, Third Generation Partnership Project). In order to meet an ever-increasing rate requirement of users, a High Speed Packet Access (HSPA, High Speed Packet Access) technology, including High Speed Downlink Packet Access (HSDPA, High Speed Downlink Packet Access) introduced in Release 5 and High Speed Uplink Packet Access (HSUPA, High Speed Uplink Packet Access) introduced in Release 6, is introduced to the UMTS to improve spectral efficiency, and mainly provides a higher data rate, a lower delay, and a higher system capacity.

[0004] In 3GPP Release 7, a Continuous Packet Connectivity (CPC, Continuous Packet Connectivity) feature supporting discontinuous transmission/discontinuous reception is

introduced. This feature allows discontinuous reception and transmission for a UE (User Equipment, user Equipment). When there is no data being transmitted, an uplink discontinuous transmission function allows termination of DPCCH transmission in the uplink, so as to reduce uplink interference. In order to maintain power control and link synchronization, the UE (User Equipment, user terminal) periodically sends DPCCH (Dedicated Physical Control Channel, dedicated physical control channel) control information within a discontinuous transmission period. With further in-depth study on the 3GPP standards, a Further Enhanced Uplink Enhancement (Further EUL Enhancement) feature is being studied in 3GPP Release 12, where there is a technology called a lean carrier (lean carrier) and is also called a dedicated secondary carrier (dedicated secondary carrier); and the core idea of this technology lies in that, when a UE does not send data, a DPCCH is no longer periodically sent either.

[0005] Through repeated research and practice, it is discovers that, in the dedicated secondary carrier scheme, a UE sends a DPCCH only when transmitting data in the uplink; therefore, when the UE initiates uplink transmission, a base station cannot control uplink transmission power because there is no data scheduling for the UE for a relatively long time before.

SUMMARY

[0006] In view of this, a purpose of embodiments of the present invention is to provide a preamble (Preamble) sending method, so as to solve a problem that a base station cannot control uplink transmission power when the base station does not receive a DPCCH for a long time.

[0007] According to a first aspect of the embodiments of the present invention, a ~~preamble Preamble~~preamble sending method is provided, including:

acquiring a first uplink transmission gap, where the first uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission; and

when the first uplink transmission gap is greater than or equal to at least one time

threshold in a first preset time threshold, sending a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information to a network-side device.

[0008] With reference to the first aspect, in a first possible implementation manner, the method further includes:

when the first uplink transmission gap is less than a smallest time threshold in the first preset time threshold, skipping sending a Preamble that includes DPCCH control information to the network-side device.

[0009] With reference to the first aspect, in a second possible implementation manner, the first preset threshold includes a first time threshold and a second time threshold, and

the sending a Preamble that includes DPCCH control information to a network-side device includes:

when the first uplink transmission gap is between the first time threshold and the second time threshold, obtaining first sending duration of the Preamble; and

sending, in the first sending duration, the Preamble that includes the DPCCH control information to the network-side device.

[0010] With reference to the second possible implementation manner of the first aspect, in a third possible implementation manner, the first preset threshold further includes a third time threshold, and the first, the second, and the third time thresholds are in ascending order; and

the sending a Preamble that includes DPCCH control information to a network-side device includes:

when the first uplink transmission gap is between the second time threshold and the third threshold, obtaining second sending duration of the Preamble; and sending, in the second sending duration, the Preamble that includes the DPCCH control information to the network-side device, where the second sending duration is greater than the first sending duration; or

when the first uplink transmission gap is greater than the third threshold, obtaining third sending duration of the Preamble; and sending, in the third sending duration, the Preamble that includes the DPCCH control information to the network-side device, where the third sending duration is greater than the second sending duration.

[0011] With reference to the first aspect, or the first possible implementation manner of

the first aspect, or the second possible implementation manner of the first aspect, or the third possible implementation manner of the first aspect, in a fourth possible implementation manner, the method further includes:

receiving uplink grant signaling sent by the network-side device, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

the acquiring a first uplink transmission gap includes:

acquiring the first uplink transmission gap according to the uplink grant signaling.

[0012] According to a second aspect of the embodiments of the present invention, a terminal is provided, including:

a first acquiring unit, configured to acquire a first uplink transmission gap, where the first uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission; and

a first sending unit, connected to the first acquiring unit and configured to, when the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, send a ~~preamble Preamble~~preamble that includes dedicated physical channel DPCCH control information to a network-side device.

[0013] With reference to the second aspect, in a first possible implementation manner, the first preset threshold includes a first time threshold and a second time threshold, and

the first sending unit includes:

a first sending subunit, configured to: when the first uplink transmission gap is between the first time threshold and the second threshold, obtain first sending duration of the Preamble; and send, in the first sending duration, the Preamble that includes the DPCCH control information to the network-side device.

[0014] With reference to the first possible implementation manner of the second aspect, in a second possible implementation manner, the first preset threshold further includes a third time threshold, and the first, the second, and the third time thresholds are in ascending order; and

the first sending unit further includes:

a second sending subunit, configured to: when the first uplink transmission gap is between the second time threshold and the third time threshold, obtain second sending

duration of the Preamble; and send, in the second sending duration, the Preamble that includes the DPCCH control information to the network-side device, where the second sending duration is greater than the first sending duration; and

a third sending subunit, configured to: when the first uplink transmission gap is greater than the third time threshold, obtain third sending duration of the Preamble; and send, in the third sending duration, the Preamble that includes the DPCCH control information to the network-side device, where the third sending duration is greater than the second sending duration.

[0015] With reference to the second aspect, or the first possible implementation manner of the second aspect, or the second possible implementation manner of the second aspect, in a third possible implementation manner, the terminal further includes:

a first receiving unit, connected to the first acquiring unit and configured to receive uplink grant signaling sent by the network-side device, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission.

[0016] According to a third aspect of the embodiments of the present invention, a power control method is provided, including:

sending uplink grant signaling to a terminal, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

when a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information and is sent by the terminal is received, controlling uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

[0017] With reference to the third aspect, in a first possible implementation manner, the method further includes:

when a Preamble that includes DPCCH control information and is sent by the terminal is not received, controlling current uplink transmission power of the terminal according to DPCCH control information in a most recently received Preamble sent by the terminal.

[0018] According to a fourth aspect of the embodiments of the present invention, a network-side device is provided, including:

a second sending unit, configured to send uplink grant signaling to a terminal, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

a control unit, connected to the second sending unit and configured to, when a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information and is sent by the terminal is received, control uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

[0019] With reference to the fourth aspect, in a first possible implementation manner, the control unit is further configured to, when a Preamble that includes DPCCH control information and is sent by the terminal is not received, control current uplink transmission power of the terminal according to DPCCH control information in a most recently received Preamble sent by the terminal.

[0020] According to a fifth aspect of the embodiments of the present invention, a ~~preamble Preamble~~preamble sending method is provided, including:

sending physical layer signaling to a terminal, where the physical layer signaling instructs the terminal to determine, according to the physical layer signaling when receiving the physical layer signaling, whether to send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information; and

when the terminal sends a Preamble of dedicated physical control channel DPCCH control information, receiving the ~~preamble Preamble~~preamble that is of the dedicated physical control channel DPCCH control information and is sent by the terminal.

[0021] With reference to the fifth aspect, in a first possible implementation manner, before the sending physical layer signaling, the method further includes:

acquiring a second uplink transmission gap, where the second uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

when the second uplink transmission gap is greater than or equal to at least one time threshold in a second preset time threshold, the physical layer signaling further includes Preamble duration information, where the Preamble duration information is Preamble sending duration.

[0022] With reference to the first possible implementation manner of the fifth aspect, in a second possible implementation manner, the method further includes:

when the second uplink transmission gap is less than at least one time threshold in a second preset time threshold, there is no information in the physical layer signaling, so as to instruct the terminal not to send a Preamble that includes a DPCCH.

[0023] With reference to the fifth aspect, or the first possible implementation manner of the fifth aspect, or the second possible implementation manner of the fifth aspect, in a third possible implementation manner, the physical layer signaling and code of an enhanced dedicated channel E-DCH absolute grant channel E-AGCH are sent by using a same physical channel.

[0024] With reference to the fifth aspect, or the first possible implementation manner of the fifth aspect, or the second possible implementation manner of the fifth aspect, in a fourth possible implementation manner, information, which indicates whether to send a Preamble, in the physical layer signaling is carried by using two bits.

[0025] According to a sixth aspect of the embodiments of the present invention, a network-side device is provided, including:

a third sending unit, configured to send physical layer signaling to a terminal, where the physical layer signaling instructs the terminal to determine, according to the physical layer signaling when receiving the physical layer signaling, whether to send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information; and

a second receiving unit, connected to the third sending unit and configured to, when the terminal sends a Preamble of dedicated physical control channel DPCCH control information, receive the ~~preamble Preamble~~preamble that is of the dedicated physical control channel DPCCH control information and is sent by the terminal.

[0026] With reference to the sixth aspect, in a first possible implementation manner, the network-side device further includes:

a second acquiring unit, configured to acquire a second uplink transmission gap, where the second uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission.

[0027] According to a seventh aspect of the embodiments of the present invention, a preamble ~~Preamble~~ sending method is provided, including:

receiving physical layer signaling sent by a network-side device, where the physical layer signaling is used to indicate whether a terminal sends a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information; and

determining, according to the physical layer signaling, whether to send a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0028] With reference to the seventh aspect, in a first possible implementation manner, the determining, according to the physical layer signaling, whether to send a Preamble that includes a DPCCH includes:

when there is no information in the physical layer signaling, skipping sending a Preamble that includes a DPCCH.

[0029] With reference to the seventh aspect, in a second possible implementation manner, the determining, according to the physical layer signaling, whether to send a Preamble that includes a DPCCH includes:

when the physical layer signaling further includes Preamble duration information, sending a Preamble that includes a DPCCH, where the Preamble duration information is Preamble sending duration.

[0030] According to an eighth aspect of the embodiments of the present invention, a terminal is provided, including:

a third receiving unit, configured to receive physical layer signaling sent by a network-side device, where the physical layer signaling is used to indicate whether a terminal sends a preamble (Preamble) that includes dedicated physical control channel DPCCH control information; and

a determining unit, connected to the third receiving unit and configured to determine, according to the physical layer signaling, whether to send a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0031] According to a ninth aspect of the embodiments of the present invention, a preamble ~~Preamble~~ sending method is provided, including:

receiving uplink grant signaling sent by a network-side device; and

when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, sending a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0032] With reference to the ninth aspect, in a first possible implementation manner, the sending a Preamble that includes a DPCCH includes:

acquiring a third uplink transmission gap, where the third uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission; and

comparing the third uplink transmission gap with a time threshold in a third preset threshold, where the third preset threshold includes a fourth time threshold and a fifth time threshold; when the third uplink transmission gap is between the fourth time threshold and the fifth time threshold, obtaining fourth sending duration of the Preamble; and sending, in the fourth sending duration, the Preamble that includes the DPCCH control information

[0033] With reference to the first possible implementation manner of the ninth aspect, in a second possible implementation manner, the third preset threshold further includes a sixth time threshold, and the fourth, the fifth, and the sixth time thresholds are in ascending order; and

further, when the third uplink transmission gap is between the fifth time threshold and the sixth threshold, fifth sending duration of the Preamble is obtained, where the fifth sending duration is greater than the fourth sending duration; and the Preamble that includes the DPCCH control information is sent in the fifth sending duration;

or,

when the third uplink transmission gap is greater than the sixth threshold, sixth sending duration of the Preamble is obtained, where the sixth sending duration is greater than the fifth sending duration; and the Preamble that includes the DPCCH control information is sent in the sixth sending duration.

[0034] According to a tenth aspect of the embodiments of the present invention, a terminal is provided, including:

a fourth receiving unit, configured to receive uplink grant signaling sent by a

network-side device; and

a fourth sending unit, connected to the fourth receiving unit and configured to, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, send a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0035] With reference to the tenth aspect, in a first possible implementation manner, the fourth sending unit includes:

an acquiring subunit, configured to acquire a third uplink transmission gap, where the third uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission; and

a comparing subunit, configured to compare the third uplink transmission gap with a time threshold in a third preset threshold.

[0036] According to an eleventh aspect of the embodiments of the present invention, a preamble ~~Preamble~~ sending method is provided, including:

sending uplink grant signaling to a terminal, where the uplink grant signaling instructs the terminal to send, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information; and

receiving the Preamble that includes the DPCCH control information and is sent by the terminal.

[0037] According to a twelfth aspect of the embodiments of the present invention, a network-side device is provided, including:

a fifth sending unit, configured to send uplink grant signaling to a terminal, where the uplink grant signaling instructs the terminal to send, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information; and

a fifth receiving unit, connected to the fifth sending unit and configured to receive

the determining method includes at least one manner of the following manners:

when the physical layer signaling instructs to use transmit power of most recent DPCCH control information, sending, by the terminal, the DPCCH control information by using the transmit power of the most recent DPCCH control information; and

when the physical layer signaling instructs not to use the transmit power of the most recent DPCCH control information, determining new DPCCH transmit power in a manner different from using power of the most recent DPCCH, and sending the DPCCH control information by using the new DPCCH transmit power.

[0042] With reference to the fifteenth aspect, in a first possible implementation manner, the physical layer signaling is an HS-SCCH order, or an encoding manner of the physical layer signaling is the same as that of an enhanced dedicated channel E-DCH absolute grant channel E-AGCH.

[0043] According to a sixteenth aspect of the embodiments of the present invention, a terminal is provided, including:

a sixth receiving unit, configured to receive physical layer signaling sent by a network side, and determine transmit power of DPCCH control information according to the physical layer signaling;

a seventh sending unit, connected to the sixth receiving unit and configured to, when the physical layer signaling instructs to use transmit power of most recent DPCCH control information, send, by a terminal, the DPCCH control information by using the transmit power of the most recent DPCCH control information; and

an eighth sending unit, connected to the sixth receiving unit and configured to, when the physical layer signaling instructs not to use the transmit power of the most recent DPCCH control information, determine new DPCCH transmit power in a manner different from using power of the most recent DPCCH, and send the DPCCH control information by using the new DPCCH transmit power.

[0044] It can be learned from the foregoing technical solutions provided in the embodiments of the present invention that, in a preamble ~~Preamble~~ sending method provided in the embodiments of the present invention provide, when a terminal initiates uplink transmission, the terminal acquires a time interval between initiation, by the terminal, of

current uplink transmission and termination of most recent uplink transmission; and when the time interval is greater than or equal to at least one time threshold in a preset time threshold, the terminal sends a Preamble that includes a DPCCH to a network side, so that a network-side device located at a base station can control uplink transmission power of the terminal according to the DPCCH sent by the terminal.

BRIEF DESCRIPTION OF DRAWINGS

[0045] To describe the technical solutions in the embodiments of the present invention more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments. Apparently, the accompanying drawings in the following description show merely some embodiments recorded in the present application, and persons of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

[0046] FIG. 1 is a flowchart of a ~~preamble Preamble~~preamble sending method according to an embodiment of the present invention;

[0047] FIG. 2 is a detailed flowchart of a Preamble sending method according to an embodiment of the present invention;

[0048] FIG. 3 is another detailed flowchart of a Preamble sending method according to an embodiment of the present invention;

[0049] FIG. 4 is a schematic structural diagram of a terminal according to an embodiment of the present invention;

[0050] FIG. 5 is a detailed schematic structural diagram of a terminal according to an embodiment of the present invention;

[0051] FIG. 6 is another detailed schematic structural diagram of a terminal according to an embodiment of the present invention;

[0052] FIG. 7 is a schematic diagram of a hardware structure according to an embodiment of the present invention;

[0053] FIG. 8 is a flowchart of a power control method according to an embodiment of the present invention;

[0054] FIG. 9 is a detailed flowchart of a power control method according to an embodiment of the present invention;

[0055] FIG. 10 is a schematic structural diagram of a network-side device according to an embodiment of the present invention;

[0056] FIG. 11 is a schematic structural diagram of a communications system according to an embodiment of the present invention;

[0057] FIG. 12 is a flowchart of a ~~preamble Preamble~~preamble sending method according to an embodiment of the present invention;

[0058] FIG. 13 is a schematic structural diagram of a network-side device according to an embodiment of the present invention;

[0059] FIG. 14 is a detailed schematic structural diagram of a network-side device according to an embodiment of the present invention;

[0060] FIG. 15 is a flowchart of a ~~preamble Preamble~~preamble sending method according to an embodiment of the present invention;

[0061] FIG. 16 is a schematic structural diagram of a terminal according to an embodiment of the present invention;

[0062] FIG. 17 is a ~~schematic structural diagram~~flowchart of a preamble (Preamble) sending method according to an embodiment of the present invention;

[0063] FIG. 18 is a flowchart~~detailed schematic structural diagram~~ of a Preamble sending method according to an embodiment of the present invention;

[0064] FIG. 19 is a schematic structural diagram of a terminal according to an embodiment of the present invention;

[0065] FIG. 20 is a detailed schematic structural diagram of a terminal according to an embodiment of the present invention;

[0066] FIG. 21 is a flowchart of a ~~preamble Preamble~~preamble sending method according to an embodiment of the present invention;

[0067] FIG. 22 is a schematic structural diagram of a network-side device according to an embodiment of the present invention;

[0068] FIG. 23 is a flowchart of a method for sending DPCCH control information according to an embodiment of the present invention;

[0069] FIG. 24 is a schematic structural diagram of a terminal according to an embodiment of the present invention;

[0070] FIG. 25 is a flowchart of a method for sending DPCCH control information according to an embodiment of the present invention; and

[0071] FIG. 26 is a schematic structural diagram of a terminal according to an embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

[0072] To make the solutions of this application more comprehensible for persons in the art, the following clearly describes the technical solutions in the embodiments of the present invention with reference to the accompanying drawings in the embodiments of the present invention. Apparently, the described embodiments are merely a part rather than all of the embodiments of the present invention. All other embodiments obtained by persons of ordinary skill in the art based on the embodiments of the present application without creative efforts shall fall within the protection scope of the present application.

[0073] An embodiment of the present invention provides a ~~preamble Preamble~~preamble sending method. The method provided in this embodiment of the present invention applies to a terminal, and an execution body of the method may be a terminal device such as a mobile phone or a tablet computer. Referring to FIG. 1, FIG.1 shows a flowchart of the ~~preamble Preamble~~preamble sending method, where the method includes:

[0074] Step S101: Acquire a first uplink transmission gap, where the first uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission.

[0075] When receiving uplink grant signaling sent by a network-side device, the terminal acquires the first uplink transmission gap according to the received uplink grant signaling, where the first uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission. In this embodiment of the present invention, the network-side device may be a base station, and the network-side device sends the uplink grant signaling to the terminal, where the uplink grant

signaling is used to indicate a time when the terminal initiates uplink transmission.

[0076] Step S102: When the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information to a network-side device.

[0077] The acquired first uplink transmission gap is compared with each time threshold in the first preset time threshold; and when the first uplink transmission gap is greater than or equal to at least one time threshold in the first preset time threshold, the terminal sends the Preamble to the network-side device, where the Preamble includes a DPCCH.

[0078] In this embodiment of the present invention, in a case in which a terminal does not perform uplink transmission or does not send a DPCCH to a network-side device for a long time, when the network-side device delivers uplink grant signaling to the terminal to instruct the terminal to perform uplink transmission, by using the ~~preamble Preamble~~preamble sending method provided in the present invention, a first uplink transmission gap is acquired when the uplink grant signaling delivered to the terminal by the network-side device is received, where the first uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination, by the terminal, of most recent uplink transmission. When the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, the terminal first sends a Preamble to the network-side device, where the Preamble includes a DPCCH, so that the network-side device can control uplink transmission power of the terminal according to the received DPCCH. In this embodiment of the present invention, when the Preamble includes only the DPCCH, it can be construed as that a Preamble message is a DPCCH, that is, the terminal directly sends the DPCCH to a base station.

[0079] Referring to FIG. 2, FIG. 2 shows a detailed flowchart of a ~~preamble Preamble~~preamble sending method according to an embodiment of the present invention, where the method includes:

step S201 to step S204, where step S201 is the same as step S101 in FIG. 1, and is not described herein again.

[0080] Step S202: Determine whether the first uplink transmission gap is greater than or

equal to at least one time threshold in a first preset time threshold. When the first uplink transmission gap is greater than or equal to at least one time threshold in the first preset time threshold, execute step S203; otherwise, execute step S204.

[0081] Step S203: Send a ~~preamble Preamble~~preamble that includes DPCCH control information to a network-side device.

[0082] Step S204: Skip sending a Preamble that includes DPCCH control information to a network-side device.

[0083] It can be learned from the foregoing steps that, in this embodiment of the present invention, when the first uplink transmission gap is less than a smallest time threshold in the first preset time threshold, the terminal does not send a Preamble that includes DPCCH control information to the network-side device.

[0084] In the ~~preamble Preamble~~preamble sending method provided in this embodiment of the present invention, the first preset threshold includes a first time threshold and a second time threshold. Referring to FIG. 3, the sending a Preamble that includes DPCCH control information includes:

[0085] Step S301: When the first uplink transmission gap is between the first time threshold and the second time threshold, obtain first sending duration of the Preamble.

[0086] Step S302: Send, in the first sending duration, the Preamble that includes the DPCCH control information to the network-side device.

[0087] In the ~~preamble Preamble~~preamble sending method provided in this embodiment of the present invention, further, the first preset threshold further includes a third time threshold, where the first time threshold, the second time threshold, and the third time threshold are in ascending order.

[0088] FIG. 3 shows a process of sending a Preamble, which includes DPCCH control information, when the first uplink transmission gap is between the first time threshold and the second time threshold.

[0089] In this embodiment of the present invention, when the first uplink transmission gap is between the second time threshold and the third time threshold, the process of sending a Preamble that includes DPCCH control information is similar to the process shown in FIG. 3:

[0090] When the first uplink transmission gap is between the second time threshold and

transmission gap T; and when the first uplink transmission gap meets T(M-1) <= T < T(M), a Preamble with a sending length of L(M) is sent. When T0 <= T < T1, a DPCCH with one TTI is sent before data transmission; when T1 <= T < T2, a DPCCH with four TTI is sent before data transmission; when T > T2, a DPCCH with 15 TTI is sent before data transmission; and a terminal initiates an uplink physical random access channel PRACH before data transmission.

[0095] It can be known from the foregoing instance that, in this embodiment of the present invention, a specific time point of sending a Preamble or duration of sending a Preamble is determined according to a specific length of T. Before transmitting data to a base station, the terminal first transmits a Preamble message that includes a DPCCH pulse.

[0096] In this embodiment of the present invention, when T < T0, no Preamble is sent.

[0097] Corresponding to the ~~preamble Preamble~~preamble sending method shown in FIG. 1, an embodiment of the present invention provides a terminal, where the terminal may be a terminal device such as a mobile phone or a tablet computer. A schematic structural diagram of the terminal is shown in FIG. 4, and the terminal includes:

a first acquiring unit 401, configured to acquire a first uplink transmission gap, where the first uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

a first sending unit 402, connected to the first acquiring unit 401 and configured to, when the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, send a ~~preamble Preamble~~preamble that includes dedicated physical channel DPCCH control information to a network-side device.

[0098] In this embodiment of the present invention, in a case in which a terminal does not perform uplink transmission or does not send a DPCCH to a network-side device for a long time, when the network-side device delivers uplink grant signaling to the terminal, so as to instruct the terminal to perform uplink transmission, when the terminal provided in the present invention receives the uplink grant signaling delivered by the network-side device, a first acquiring unit 401 acquires a first uplink transmission gap, where the first uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination, by the terminal, of most recent uplink transmission. When the first uplink transmission gap is greater than or equal to at least one time threshold in a first

to receive uplink grant signaling sent by the network-side device, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission.

[0102] In this embodiment of the present invention, another schematic structural diagram of the terminal shown in FIG. 4 is further provided. For the schematic structural diagram of the terminal, reference may be made to a schematic diagram of a hardware structure shown in FIG. 7. The terminal 501 includes a CPU 502 and a memory 503 in hardware, where the CPU 502 can execute at least the following steps by running a software program 504 stored in the memory 503 or invoking data stored in the memory 503:

acquire a first uplink transmission gap, where the first uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

when the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information to the network-side device.

[0103] For specific details of the foregoing steps, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0104] The CPU 502 and the memory 503 may be integrated in a same chip, or may be two independent components.

[0105] The program 504 in this embodiment of the present invention may specifically include:

a first acquiring unit and a first sending unit. For detailed structures and functions of the first acquiring unit and the first sending unit, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0106] An embodiment of the present invention provides a power control method, where the method applies to a network-side device, where the network-side device may be a base station. FIG. 8 shows a flowchart of the power control method, where the method includes:

[0107] Step S601: Send uplink grant signaling to a terminal, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission.

[0108] When instructing the terminal to perform uplink data transmission, the network-side device sends the uplink grant signaling to the terminal, where the uplink grant

signaling is used to indicate a time when the terminal initiates uplink transmission.

[0109] Step S602: When a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information and is sent by the terminal is received, control uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

[0110] When receiving the Preamble that includes the DPCCH control information and is sent by the terminal, the network-side device controls the uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

[0111] Referring to FIG. 9, FIG. 9 shows a detailed ~~schematic structural diagram~~flowchart of a power control method in an embodiment of the present invention, and the method includes:

[0112] Step S701: Send uplink grant signaling to a terminal, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission.

[0113] Step S702: Determine whether a preamble ~~Preamble~~ that includes DPCCH control information and is sent by the terminal is received. If yes, execute step S703; otherwise, execute step S704.

[0114] Step S703: Control uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

[0115] Step S704: Control current uplink transmission power of the terminal according to DPCCH control information in a last received Preamble sent by the terminal.

[0116] In the power control method provided in this embodiment of the present invention, when a Preamble that includes DPCCH control information and is sent by the terminal is not received, a network-side device controls the current uplink transmission power of the terminal according to the DPCCH control information in the last received Preamble sent by the terminal.

[0117] In this embodiment of the present invention, when a network-side device sends uplink grant signaling to instruct a terminal to initiate uplink transmission, a terminal side determines, according to the preamble ~~Preamble~~ sending method shown in FIG. 1, whether the terminal sends a Preamble that includes a DPCCH to the network-side device. When the terminal side does not send a Preamble that includes a DPCCH, the network-side device may perform uplink synchronization, path search, and power control according to a DPCCH in last

received Preamble sent by the terminal or according to a DPCCH reception condition on another carrier under a condition in which multiple carriers are supported in the uplink. If an uplink transmission gap exceeds a preset time threshold, the network-side device performs uplink synchronization, path search, and power control according to a Preamble sent by the terminal. The network-side device may be a base station.

[0118] Corresponding to the power control method shown in FIG. 8, an embodiment of the present invention provides a network-side device, where the network-side device may be a base station. For a schematic structural diagram of the network-side device, refer to FIG. 10. The network-side device includes:

a second sending unit 801, configured to send uplink grant signaling to a terminal, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

a control unit 802, connected to the second sending unit 801 and configured to, when a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information and is sent by the terminal is received, control uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

[0119] In the network-side device provided in this embodiment of the present invention, the control unit 802 is further configured to, when a Preamble that includes DPCCH control information and is sent by the terminal is not received, control current uplink transmission power of the terminal according to DPCCH control information in a last received Preamble sent by the terminal.

[0120] In this embodiment of the present invention, the control unit 802 may independently execute control on uplink transmission power of the terminal, or may execute power control using blocks. For example, the control unit 802 may include a first control subunit and a second control subunit, where the first control subunit is configured to, when a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information and is sent by the terminal is received, control uplink transmission power of the terminal according to the DPCCH control information in the Preamble; and

the second control subunit is configured to, when a Preamble that includes DPCCH control information and is sent by the terminal is not received, control current uplink

transmission power of the terminal according to DPCCH control information in a last received Preamble sent by the terminal.

[0121] In this embodiment of the present invention, another schematic structural diagram of the network-side device shown in FIG. 10 is further provided. For the schematic structural diagram of the network-side device, reference may also be made to the schematic diagram of the hardware structure shown in FIG. 7. The network-side device is the same as the hardware structure shown in FIG. 7 in structural composition of hardware, but different in a function executed by each piece of hardware.

[0122] The network-side device may also include a CPU and a memory in hardware, where the CPU may execute at least the following steps by running a software program stored in the memory or invoking data stored in the memory:

send uplink grant signaling to a terminal, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

when a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information and is sent by the terminal is received, control uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

[0123] For specific details of the foregoing steps, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0124] The CPU and the memory may be integrated in a same chip, or may be two independent components.

[0125] The program in this embodiment of the present invention may specifically include:

a second sending unit and a control unit. For detailed structures and functions of the second sending unit and the control unit, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0126] In an embodiment of the present invention, as shown in FIG. 11, the terminal shown in FIG. 4 and the network-side device shown in FIG. 10 are combined, where the terminal may be a terminal device such as a mobile phone or a computer, and the network-side device may be a base station.

[0127] As shown in FIG. 11, when a base station 902 needs to instruct a terminal 901 to

initiate uplink transmission, the base station 902 sends uplink grant signaling to the terminal 901, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission. When receiving the uplink grant signaling, the terminal 901 acquires a first uplink transmission gap, where the first uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission.

[0128] When the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information is sent to the network-side device. Otherwise, the terminal does not send a Preamble that includes DPCCH control information to the network-side device.

[0129] When receiving a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information and is sent by the terminal 901, the base station 902 controls uplink transmission power of the terminal according to the DPCCH control information in the Preamble. When a Preamble that includes DPCCH control information and is sent by the terminal is not received, the base station 902 controls current uplink transmission power of the terminal according to DPCCH control information in a last received Preamble sent by the terminal.

[0130] Referring to FIG. 12, FIG. 12 shows a flowchart of a ~~preamble Preamble~~preamble sending method, where the method applies to a network device side, and the network device may be a base station. The method includes:

[0131] Step S1001: Send physical layer signaling to a terminal, where the physical layer signaling instructs the terminal to determine, according to the physical layer signaling when receiving the physical layer signaling, whether to send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information.

[0132] Step S1002: When the terminal sends a Preamble of dedicated physical control channel DPCCH control information, receive the preamble ~~Preamble~~ that is of the dedicated physical control channel DPCCH control information and is sent by the terminal.

[0133] In the preamble ~~Preamble~~ sending method provided in this embodiment of the present invention, before sending the physical layer signaling, the network-side device first

acquires a second uplink transmission gap, where the second uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission.

[0134] When the second uplink transmission gap is greater than or equal to at least one time threshold in a second preset time threshold, the physical layer signaling sent to the terminal includes Preamble duration information, so as to instruct the terminal to send a Preamble that includes a DPCCH, where the Preamble duration information is Preamble sending duration.

[0135] When the second uplink transmission gap is less than at least one time threshold in a second preset time threshold, there is no information in the physical layer signaling sent to the terminal, so as to instruct the terminal to not to send a Preamble that includes a DPCCH.

[0136] In the preamble ~~Preamble~~ sending method provided in this embodiment of the present invention, preferably, the physical layer signaling and code of an enhanced dedicated channel E-DCH absolute grant channel E-AGCH are sent by using a same physical channel.

[0137] In the preamble ~~Preamble~~ sending method provided in this embodiment of the present invention, preferably, information, which indicates whether to send a Preamble, in the physical layer signaling is carried by using two bits.

[0138] In this embodiment of the present invention, the physical layer signaling may be sent before uplink grant signaling, or may be sent along with the uplink grant signaling. When the physical layer signaling sent by the network-side device is sent along with the uplink grant signaling, the physical layer signaling and the uplink grant signaling may be jointly encoded, and a single physical channel or a single piece of physical signaling may also be used to instruct the terminal, for example, an HS-SCCH (Shared Control Channel for HS-DSCH, shared control channel) order is used for instruction.

[0139] In the preamble ~~Preamble~~ sending method provided in this embodiment of the present invention, an HS-SCCH order may also be used to indicate whether a Preamble is sent, or a Preamble sending time point or length.

[0140] In this embodiment of the present invention, Preamble sending duration may be determined in the following manner: in a specific implementation manner, the network-side device may predefine multiple time thresholds in a manner of setting multiple time thresholds

network-side device, whether to send a Preamble, or a Preamble sending time point or length.

[0145] In an embodiment of the present invention, corresponding to the ~~preamble Preamble~~preamble sending method shown in FIG. 12, a network-side device is further provided. The schematic structural diagram of the network-side device is shown in FIG. 13, and the network-side device includes:

a third sending unit 1101, configured to send physical layer signaling to a terminal, where the physical layer signaling instructs the terminal to determine, according to the physical layer signaling when receiving the physical layer signaling, whether to send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information; and

a second receiving unit 1102, connected to the third sending unit 1101 and configured to, when the terminal sends a Preamble of dedicated physical control channel DPCCH control information, receive the ~~preamble Preamble~~preamble that is of the dedicated physical control channel DPCCH control information and is sent by the terminal.

[0146] On a basis of FIG. 13, FIG. 14 further shows a detailed schematic structural diagram of the network-side device, where the network-side device further includes:

a second acquiring unit 1103, configured to acquire a second uplink transmission gap, where the second uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission.

[0147] In the network-side device provided in this embodiment of the present invention, before the third sending unit 1101 sends the physical layer signaling to the terminal, the second acquiring unit 1103 first acquires the second uplink transmission gap, where the second uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission.

[0148] When the second uplink transmission gap is greater than or equal to at least one time threshold in a second preset time threshold, the physical layer signaling further includes Preamble duration information, where the Preamble duration information is Preamble sending duration.

[0149] Further, when the second uplink transmission gap is less than at least one time threshold in a second preset time threshold, there is no information in the physical layer

signaling, so as to instruct the terminal to not to send a Preamble that includes a DPCCH.

[0150] In the network-side device provided in this embodiment of the present invention, the physical layer signaling and code of an enhanced dedicated channel E-DCH absolute grant channel E-AGCH are sent by using a same physical channel. Information, which indicates whether to send a Preamble, in the physical layer signaling is carried by using two bits.

[0151] In this embodiment of the present invention, another schematic structural diagram of the network-side device shown in FIG. 13 is further provided. For the schematic structural diagram of the network-side device, reference may also be made to the schematic diagram of the hardware structure shown in FIG. 7. The network-side device is the same as the hardware structure shown in FIG. 7 in structural composition of hardware, but different in a function executed by each piece of hardware.

[0152] The network-side device may also include a CPU and a memory in hardware, where the CPU may execute at least the following steps by running a software program stored in the memory or invoking data stored in the memory:

send physical layer signaling to a terminal, where the physical layer signaling instructs the terminal to determine, according to the physical layer signaling when receiving the physical layer signaling, whether to send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information; and

when the terminal sends a Preamble of dedicated physical control channel DPCCH control information, receive the ~~preamble Preamble~~preamble that is of the dedicated physical control channel DPCCH control information and is sent by the terminal.

[0153] For specific details of the foregoing steps, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0154] The CPU and the memory may be integrated in a same chip, or may be two independent components.

[0155] The program in this embodiment of the present invention may specifically include:

a third sending unit and a second receiving unit. For detailed structures and functions of the third sending unit and the second receiving unit, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0156] Referring to FIG. 15, an embodiment of the present invention provides a preamble

~~Preamble~~ sending method, where the method applies to a terminal, and an execution body of the method may be a terminal device such as a mobile phone or a tablet computer. The method includes:

[0157] Step S1201: Receive physical layer signaling sent by a network-side device, where the physical layer signaling is used to indicate whether the terminal sends a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0158] Step S1202: Determine, according to the physical layer signaling, whether to send a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0159] The terminal receives the physical layer signaling sent by the network-side device. When there is no information in the physical layer signaling, the terminal does not send a Preamble that includes a DPCCH to the network-side device; and when the physical layer signaling includes Preamble duration information, the terminal sends a Preamble that includes a DPCCH to the network-side device, where the Preamble duration information is Preamble sending duration.

[0160] Corresponding to the ~~preamble Preamble~~preamble sending method shown in FIG. 15, an embodiment of the present invention further provides a terminal, where the terminal may be a terminal device such as a mobile phone or a tablet computer. A schematic structural diagram of the terminal is shown in FIG. 16, and the terminal includes:

a third receiving unit 1301, configured to receive physical layer signaling sent by a network-side device, where the physical layer signaling is used to indicate whether the terminal sends a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information; and

a determining unit 1302, connected to the third receiving unit 1301 and configured to determine, according to the physical layer signaling, whether to send a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0161] The third receiving unit 1301 in the terminal receives the physical layer signaling sent by the network-side device; and the determining unit 1302 determines, according to the physical layer signaling received by the third receiving unit 1301, whether the terminal sends a Preamble that includes DPCCH control information to the network-side device. When there

is no information in the physical layer signaling, the terminal does not send a Preamble that includes a DPCCH to the network-side device; and when the physical layer signaling includes Preamble duration information, the terminal sends a Preamble that includes a DPCCH to the network-side device, where the Preamble duration information is Preamble sending duration.

[0162] In this embodiment of the present invention, another schematic structural diagram of the terminal shown in FIG. 15 is further provided. For the schematic structural diagram of the terminal, reference may also be made to the schematic diagram of the hardware structure shown in FIG. 7. The terminal is the same as the hardware structure shown in FIG. 7 in structural composition of hardware, but different in a function executed by each piece of hardware.

[0163] The terminal may also include a CPU and a memory in hardware, where the CPU may execute at least the following steps by running a software program stored in the memory or invoking data stored in the memory:

receive physical layer signaling sent by a network-side device, where the physical layer signaling is used to indicate whether the terminal sends a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information; and

determine, according to the physical layer signaling, whether to send a preamble ~~Preamble~~ that includes dedicated physical control channel DPCCH control information.

[0164] For specific details of the foregoing steps, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0165] The CPU and the memory may be integrated in a same chip, or may be two independent components.

[0166] The program in this embodiment of the present invention may specifically include:

a third receiving unit and a determining unit. For detailed structures and functions of the third receiving unit and the determining unit, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0167] Referring to FIG. 17, an embodiment of the present invention provides a preamble ~~Preamble~~ sending method, where the method applies to a terminal, and the terminal may be a terminal device such as a mobile phone or a tablet computer. The method includes:

[0168] Step S1401: Receive uplink grant signaling sent by a network-side device.

[0169] Step S1402: When a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information.

[0170] In the ~~preamble Preamble~~preamble sending method provided in this embodiment of the present invention, when receiving the uplink grant signaling sent by the network-side device, when an uplink ~~TTI~~ TTI corresponding to a time when the uplink grant signaling becomes effective is an active HARQ process, the terminal does not send a Preamble that includes a DPCCH to the network-side device; and when an uplink TTI~~1~~ corresponding to a time when the uplink grant signaling becomes effective is an inactive HARQ process, the terminal sends a Preamble that includes a DPCCH to the network-side device. The network-side device may be a base station.

[0171] In the ~~preamble Preamble~~preamble sending method provided in this embodiment of the present invention, a terminal UE determines, according to uplink grant signaling and an effective HARQ process, whether to send a Preamble, or a Preamble sending time point or Preamble sending duration.

[0172] In this embodiment of the present invention, it is considered that, not all HARQ processes on a carrier are allocated to a UE supporting a dedicated secondary carrier, that is, a lean UE, for example, HARQ processes 0, 1, 2, and 3 are for scheduling a UE not supporting a dedicated secondary carrier, that is, a legacy UE; and HARQ processes 4, 5, 6, and 7 are for scheduling the UE supporting a dedicated secondary carrier, scheduling of the UE by using the HARQ processes 4, 5, 6, and 7 can be implemented by disabling HARQ processes 0, 1, 2, and 3 of the lean UE.

[0173] If a network delivers an E-AGCH to initiate uplink data transmission, and a corresponding time when the E-AGCH becomes effective is HARQ process 4, the lean UE does not need send a Preamble because HARQ process 4 is an effective uplink HARQ process. If a network delivers an E-AGCH to initiate uplink data transmission, and a corresponding time when the E-AGCH becomes effective is HARQ process 0, the lean UE may send a Preamble in uplink processes 0, 1, 2, and 3 to help a base station perform uplink synchronization, path search, and power control because HARQ process 0 is an ineffective

uplink HARQ process.

[0174] Referring to FIG. 18, FIG. 18 shows a process of sending a Preamble that includes a DPCCH in an embodiment of the present invention, where the process specifically includes:

[0175] Step S1501: Acquire a third uplink transmission gap, where the third uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission.

[0176] Step S1502: Compare the third uplink transmission gap with a time threshold in a third preset threshold, where the third preset threshold includes a fourth time threshold and a fifth time threshold.

[0177] Step S1503: When the third uplink transmission gap is between the fourth time threshold and the fifth time threshold, obtain fourth sending duration of the Preamble; and send, in the fourth sending duration, the Preamble that includes DPCCH control information.

[0178] In the ~~preamble Preamble~~preamble sending method provided in this embodiment of the present invention, the third preset threshold further includes a sixth time threshold, and the fourth, the fifth, and the sixth time thresholds are in ascending order.

[0179] FIG. 18 shows the process of sending a Preamble that includes DPCCH control information when the third uplink transmission gap is between the fourth time threshold and the fifth time threshold.

[0180] In this embodiment of the present invention, when the third uplink transmission gap is between the fifth time threshold and the sixth time threshold, the process of sending a Preamble that includes DPCCH control information is similar to the process shown in FIG. 18:

when the third uplink transmission gap is between the fifth time threshold and the sixth threshold, obtain fifth sending duration of the Preamble, where the fifth sending duration is greater than the fourth sending duration; and send, in the fifth sending duration, the Preamble that includes the DPCCH control information; and

further, when the third uplink transmission gap is greater than the sixth threshold, obtain sixth sending duration of the Preamble, where the sixth sending duration is greater than the fifth sending duration; and send, in the sixth sending duration, the Preamble that includes the DPCCH control information.

[0181] In this embodiment of the present invention, a network-side device may also determine, according to an uplink data transmission gap or a data size of a lean UE, whether to send a Preamble, or a Preamble sending time point or Preamble sending duration; and determine, according to the number of HARQ processes supported by the lean UE, an E-AGCH sending time point.

[0182] Corresponding to the ~~preamble Preamble~~preamble sending method shown in FIG. 17, an embodiment of the present invention provides a terminal, where the terminal may be a terminal device such as a mobile phone or a tablet computer. A schematic structural diagram of the terminal is shown in FIG. 19, and the terminal includes:

a fourth receiving unit 1601, configured to receive uplink grant signaling sent by a network-side device; and

a fourth sending unit 1602, connected to the fourth receiving unit 1601 and configured to, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information.

[0183] Further, referring to FIG. 20, the fourth sending unit 1602 in the terminal includes:

an acquiring subunit 1603, configured to acquire a third uplink transmission gap, where the third uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

a comparing subunit 1604, configured to compare the third uplink transmission gap with a time threshold in a third preset threshold.

[0184] In the terminal provided in this embodiment of the present invention, the acquiring subunit 1603 acquires the third uplink transmission gap, where the third uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

the comparing subunit 1604 compares the third uplink transmission gap with a time threshold in the third preset threshold, where the third preset threshold includes a fourth time threshold and a fifth time threshold; when the third uplink transmission gap is between the fourth time threshold and the fifth time threshold, obtains fourth sending duration of the

Preamble; and sends, in the fourth sending duration, the Preamble that includes the DPCCH control information.

[0185] The third preset threshold further includes a sixth time threshold, where the fourth, the fifth, and the sixth time threshold are in ascending order; and

further, when the third uplink transmission gap is between the fifth time threshold and the sixth threshold, fifth sending duration of the Preamble is obtained, where the fifth sending duration is greater than the fourth sending duration; and the Preamble that includes the DPCCH control information is sent in the fifth sending duration;

or,

when the third uplink transmission gap is greater than the sixth threshold, sixth sending duration of the Preamble is obtained, where the sixth sending duration is greater than the fifth sending duration; and the Preamble that includes the DPCCH control information is sent in the sixth sending duration.

[0186] In this embodiment of the present invention, another schematic structural diagram of the terminal shown in FIG. 19 is further provided. For the schematic structural diagram of the terminal, reference may also be made to the schematic diagram of the hardware structure shown in FIG. 7. The terminal is the same as the hardware structure shown in FIG. 7 in structural composition of hardware, but different in a function executed by each piece of hardware.

[0187] The terminal may also include a CPU and a memory in hardware, where the CPU may execute at least the following steps by running a software program stored in the memory or invoking data stored in the memory:

receive uplink grant signaling sent by a network-side device; and

when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, send a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information.

[0188] For specific details of the foregoing steps, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0189] The CPU and the memory may be integrated in a same chip, or may be two

independent components.

[0190] The program in this embodiment of the present invention may specifically include:

a fourth receiving unit and a fourth sending unit. For detailed structures and functions of the fourth receiving unit and the fourth sending unit, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0191] Referring to FIG. 21, an embodiment of the present invention provides a ~~preamble Preamble~~preamble sending method, where the method applies to a network-side device, where the network-side device may be a base station. The method includes:

[0192] Step S1701: Send uplink grant signaling to a terminal, where the uplink grant signaling instructs the terminal to send, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information.

[0193] Step S1702: Receive the Preamble that includes the DPCCH control information and is sent by the terminal.

[0194] Corresponding to the ~~preamble Preamble~~preamble sending method shown in FIG. 21, FIG. 22 provides a network-side device, where the network-side device may be a base station and include:

a fifth sending unit 1801, configured to send uplink grant signaling to a terminal, where the uplink grant signaling instructs the terminal to send, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information; and

a fifth receiving unit 1802, connected to the fifth sending unit 1801 and configured to receive the Preamble that includes the DPCCH control information and is sent by the terminal.

[0195] In this embodiment of the present invention, another schematic structural diagram of the terminal shown in FIG. 22 is further provided. For the schematic structural diagram of the terminal, reference may also be made to the schematic diagram of the hardware structure shown in FIG. 7. The terminal is the same as the hardware structure shown in FIG. 7 in

structural composition of hardware, but different in a function executed by each piece of hardware.

[0196] The terminal may also include a CPU and a memory in hardware, where the CPU may execute at least the following steps by running a software program stored in the memory or invoking data stored in the memory:

send uplink grant signaling to a terminal, where the uplink grant signaling instructs the terminal to send, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, a ~~preamble Preamble~~preamble that includes dedicated physical control channel DPCCH control information; and

receive the Preamble that includes the DPCCH control information and is sent by the terminal.

[0197] For specific details of the foregoing steps, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0198] The CPU and the memory may be integrated in a same chip, or may be two independent components.

[0199] The program in this embodiment of the present invention may specifically include:

a fifth sending unit and a fifth receiving unit. For detailed structures and functions of the fifth sending unit and the fifth receiving unit, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0200] It may be clearly understood by persons skilled in the art that, for ease and brevity of description, for a detailed working process of the foregoing devices and modules, reference may be made to a corresponding process description in the foregoing method embodiments, and details are not described herein again.

[0201] Referring to FIG. 23, FIG. 23 shows a method for sending dedicated physical control channel DPCCH control information according to an embodiment of the present invention, where the method applies to a terminal, and an execution body of the method may be a terminal device such as a mobile phone or a tablet computer. The method includes:

[0202] Step S1901: Acquire a fourth uplink transmission gap, where the fourth uplink transmission gap is a time interval between initiation, by a terminal, of current uplink

transmission and termination of most recent uplink transmission, or a time interval between reception, by a terminal, of current uplink scheduling and reception of most recent uplink scheduling.

[0203] When receiving uplink grant signaling sent by a network-side device, the terminal acquires the fourth uplink transmission gap according to the received uplink grant signaling, where the fourth uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission, or a time interval between reception, by the terminal, of current uplink scheduling and reception of most recent uplink scheduling.

[0204] Step S1902: When the fourth uplink transmission gap is less than or equal to a seventh threshold, send DPCCH control information to a network-side device by using transmit power of most recent DPCCH control information, where the seventh threshold is predefined by a network and the terminal or delivered to the terminal by the network-side device.

[0205] In this embodiment of the present invention, the network-side device may be a base station or a radio network controller RNC, and the network-side device sends the uplink grant signaling to the terminal, where the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission.

[0206] The acquired fourth uplink transmission gap is compared with the seventh threshold; and when the fourth uplink transmission gap is less than or equal to the seventh threshold, the terminal sends the DPCCH control information to the network-side device by using the transmit power of the most recent DPCCH control information.

[0207] The ~~first~~ seventh threshold may be preset by the terminal, or may be preset by a network set and sent to the terminal.

[0208] In this embodiment of the present invention, in a case in which a terminal does not perform uplink transmission or does not send a DPCCH to a network-side device for a long time, when the network-side device delivers uplink grant signaling to the terminal to instruct the terminal to perform uplink transmission, by using the method for sending DPCCH control information provided in the present invention, power for sending a DPCCH by the terminal is DPCCH power in most recent uplink transmission. Because a channel attenuation change in

structural composition of hardware, but different in a function executed by each piece of hardware.

[0211] The terminal may also include a CPU and a memory in hardware, where the CPU may execute at least the following steps by running a software program stored in the memory or invoking data stored in the memory:

acquire a fourth uplink transmission gap, where the fourth uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission, or a time interval between reception, by the terminal, of current uplink scheduling and reception of most recent uplink scheduling; and

when the fourth uplink transmission gap is less than or equal to a seventh threshold, send DPCCH control information to a network-side device by using transmit power of most recent DPCCH control information, where the seventh threshold is predefined by a network and the terminal or delivered to the terminal by the network-side device.

[0212] For specific details of the foregoing steps, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0213] The CPU and the memory may be integrated in a same chip, or may be two independent components.

[0214] The program in this embodiment of the present invention may specifically include:

a third acquiring unit and a sixth sending unit. For detailed structures and functions of the third acquiring unit and the sixth sending unit, reference may be made to the foregoing records in the specification, and details are not described herein again.

[0215] Referring to FIG. 25, FIG. 25 shows a method for sending dedicated physical control channel DPCCH control information according to an embodiment of the present invention, where an execution body of the method may be a terminal. The method includes:

[0216] Step S2101: Receive physical layer signaling sent by a network side, and determine transmit power of the DPCCH control information according to the physical layer signaling~~; and receive physical layer signaling sent by a network side, and determine transmit power of the DPCCH control information according to the physical layer signaling~~.

[0217] Step S2102: When the physical layer signaling instructs to use transmit power of most recent DPCCH control information, the terminal sends the DPCCH control information

CLAIMS

1. A method for sending dedicated physical control channel, DPCCH, control information, comprising:

acquiring (S1901), by a terminal, a fourth uplink transmission gap, wherein the fourth uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

when the fourth uplink transmission gap is less than or equal to a seventh threshold, sending (S1902), by the terminal, DPCCH control information to a network-side device by using transmit power of most recent DPCCH control information.

2. The method according to claim 1, wherein the seventh threshold is received by the terminal from the network-side device.

3. The method according to claim 1, further comprising:

when the fourth uplink transmission gap is larger than the seventh threshold, sending, by the terminal, DPCCH control information to the network-side device by using transmit power which is obtained by introducing an offset on a basis of the most recent DPCCH power.

4. A terminal, comprising:

a third acquiring unit (2001), configured to acquire a fourth uplink transmission gap, wherein the fourth uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

a sixth sending unit (2002), connected to the third acquiring unit and configured to, when the fourth uplink transmission gap is less than or equal to a seventh threshold, send DPCCH control information to a network-side device by using transmit power of most recent DPCCH control information.

5. The terminal according to claim 4, wherein the sixth sending unit is further configured to when the fourth uplink transmission gap is larger than the seventh threshold, send a DPCCH to the network-side device by using transmit power which is obtained by introducing an offset on a basis of the most recent DPCCH power.

6. A computer-readable product, comprising computer program code, which is executed, to enable the computer to perform the steps of any one of of claims 1 to 3.

CLAIMS

1. A preamble Preamble sending method, comprising:

acquiring a first uplink transmission gap, wherein the first uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission; and

when the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, sending a preamble Preamble that comprises dedicated physical control channel DPCCH control information to a network-side device.

2. The method according to claim 1, further comprising:

when the first uplink transmission gap is less than a smallest time threshold in the first preset time threshold, skipping sending a Preamble that comprises DPCCH control information to the network-side device.

3. The method according to claim 1, wherein the first preset threshold comprises a first time threshold and a second time threshold; and

the sending a Preamble that comprises DPCCH control information to a network-side device comprises:

when the first uplink transmission gap is between the first time threshold and the second time threshold, obtaining first sending duration of the Preamble; and

sending, in the first sending duration, the Preamble that comprises the DPCCH control information to the network-side device.

4. The method according to claim 3, wherein the first preset threshold further comprises a third time threshold, and the first, the second, and the third time thresholds are in ascending order; and

the sending a Preamble that comprises DPCCH control information to a network-side device comprises:

when the first uplink transmission gap is between the second time threshold and the third threshold, obtaining second sending duration of the Preamble; and sending, in the second sending duration, the Preamble that comprises the DPCCH control information to the

network-side device, wherein the second sending duration is greater than the first sending duration; or

when the first uplink transmission gap is greater than the third threshold, obtaining third sending duration of the Preamble; and sending, in the third sending duration, the Preamble that comprises the DPCCH control information to the network-side device, wherein the third sending duration is greater than the second sending duration.

5. The method according to any one of claims 1 to 4, wherein the method further comprises:

receiving uplink grant signaling sent by the network-side device, wherein the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

the acquiring a first uplink transmission gap comprises:

acquiring the first uplink transmission gap according to the uplink grant signaling.

6. A terminal, comprising:

a first acquiring unit, configured to acquire a first uplink transmission gap, wherein the first uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

a first sending unit, connected to the first acquiring unit and configured to, when the first uplink transmission gap is greater than or equal to at least one time threshold in a first preset time threshold, send a preamble Preamble that comprises dedicated physical channel DPCCH control information to a network-side device.

7. The terminal according to claim 6, wherein the first preset threshold comprises a first time threshold and a second time threshold; and

the first sending unit comprises:

a first sending subunit, configured to: when the first uplink transmission gap is between the first time threshold and the second threshold, obtain first sending duration of the Preamble; and send, in the first sending duration, the Preamble that comprises the DPCCH control information to the network-side device.

8. The terminal according to claim 7, wherein the first preset threshold further comprises a third time threshold, and the first, the second, and the third time thresholds are in ascending order; and

the first sending unit further comprises:

a second sending subunit, configured to: when the first uplink transmission gap is between the second time threshold and the third time threshold, obtain second sending duration of the Preamble; and send, in the second sending duration, the Preamble that comprises the DPCCH control information to the network-side device, wherein the second sending duration is greater than the first sending duration; and

a third sending subunit, configured to: when the first uplink transmission gap is greater than the third time threshold, obtain third sending duration of the Preamble; and send, in the third sending duration, the Preamble that comprises the DPCCH control information to the network-side device, wherein the third sending duration is greater than the second sending duration.

9. The terminal according to any one of claims 6 to 8, further comprising:

a first receiving unit, connected to the first acquiring unit and configured to receive uplink grant signaling sent by the network-side device, wherein the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission.

10. A power control method, comprising:

sending uplink grant signaling to a terminal, wherein the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

when a preamble Preamble that comprises dedicated physical control channel DPCCH control information and is sent by the terminal is received, controlling uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

11. The method according to claim 10, further comprising:

when a Preamble that comprises DPCCH control information and is sent by the terminal is not received, controlling current uplink transmission power of the terminal according to DPCCH control information in a most recently received Preamble sent by the terminal.

12. A network-side device, comprising:

a second sending unit, configured to send uplink grant signaling to a terminal, wherein the uplink grant signaling is used to indicate a time when the terminal initiates uplink transmission; and

a control unit, connected to the second sending unit and configured to, when a preamble

Preamble that comprises dedicated physical control channel DPCCH control information and is sent by the terminal is received, control uplink transmission power of the terminal according to the DPCCH control information in the Preamble.

13. The network-side device according to claim 12, wherein the control unit is further configured to, when a Preamble that comprises DPCCH control information and is sent by the terminal is not received, control current uplink transmission power of the terminal according to DPCCH control information in a most recently received Preamble sent by the terminal.

14. A preamble Preamble sending method, comprising:

sending physical layer signaling to a terminal, wherein the physical layer signaling indicates the terminal to determine, according to the physical layer signaling when receiving the physical layer signaling, whether to send a preamble Preamble that comprises dedicated physical control channel DPCCH control information; and

when the terminal sends a Preamble of dedicated physical control channel DPCCH control information, receiving the preamble Preamble that is of the dedicated physical control channel DPCCH control information and is sent by the terminal.

15. The method according to claim 14, wherein before the sending physical layer signaling, the method further comprises:

acquiring a second uplink transmission gap, wherein the second uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission; and

when the second uplink transmission gap is greater than or equal to at least one time threshold in a second preset time threshold, the physical layer signaling further comprises Preamble duration information, wherein the Preamble duration information is Preamble sending duration.

16. The method according to claim 15, further comprising that:

when the second uplink transmission gap is less than at least one time threshold in a second preset time threshold, there is no information in the physical layer signaling, so as to instruct the terminal not to send a Preamble that comprises a DPCCH.

17. The method according to claim 14, 15, or 16, wherein the physical layer signaling and code of an enhanced dedicated channel E-DCH absolute grant channel E-AGCH are sent

by using a same physical channel.

18. The method according to claim 14, 15, or 16, wherein information, which indicates whether to send a Preamble, in the physical layer signaling is carried by using two bits.

19. A network-side device, comprising:

a third sending unit, configured to send physical layer signaling to a terminal, wherein the physical layer signaling instructs the terminal to determine, according to the physical layer signaling when receiving the physical layer signaling, whether to send a preamble Preamble that comprises dedicated physical control channel DPCCH control information; and

a second receiving unit, connected to the third sending unit and configured to, when the terminal sends a Preamble of dedicated physical control channel DPCCH control information, receive the preamble Preamble that is of the dedicated physical control channel DPCCH control information and is sent by the terminal.

20. The network-side device according to claim 19, further comprising:

a second acquiring unit, configured to acquire a second uplink transmission gap, wherein the second uplink transmission gap is a time interval between initiation, by the terminal, of current uplink transmission and termination of most recent uplink transmission.

21. A preamble Preamble sending method, comprising:

receiving physical layer signaling sent by a network-side device, wherein the physical layer signaling is used to indicate whether a terminal sends a preamble Preamble that comprises dedicated physical control channel DPCCH control information; and

determining, according to the physical layer signaling, whether to send a preamble Preamble that comprises dedicated physical control channel DPCCH control information.

22. The method according to claim 21, wherein the determining, according to the physical layer signaling, whether to send a Preamble that comprises a DPCCH comprises:

when there is no information in the physical layer signaling, skipping sending a Preamble that comprises a DPCCH.

23. The method according to claim 21, wherein the determining, according to the physical layer signaling, whether to send a Preamble that comprises a DPCCH comprises:

when the physical layer signaling further comprises Preamble duration information, sending a Preamble that comprises a DPCCH, wherein the Preamble duration information is

Preamble sending duration.

24. A terminal, comprising:

a third receiving unit, configured to receive physical layer signaling sent by a network-side device, wherein the physical layer signaling is used to indicate whether a terminal sends a preamble Preamble that comprises dedicated physical control channel DPCCH control information; and

a determining unit, connected to the third receiving unit and configured to determine, according to the physical layer signaling, whether to send a preamble Preamble that comprises dedicated physical control channel DPCCH control information.

25. A preamble Preamble sending method, comprising:

receiving uplink grant signaling sent by a network-side device; and

when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, sending a preamble Preamble that comprises dedicated physical control channel DPCCH control information.

26. The method according to claim 25, wherein the sending a Preamble that comprises a DPCCH comprises:

acquiring a third uplink transmission gap, wherein the third uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission; and

comparing the third uplink transmission gap with a time threshold in a third preset threshold, wherein the third preset threshold comprises a fourth time threshold and a fifth time threshold; when the third uplink transmission gap is between the fourth time threshold and the fifth time threshold, obtaining fourth sending duration of the Preamble; and sending, in the fourth sending duration, the Preamble that comprises the DPCCH control information

27. The method according to claim 26, wherein the third preset threshold further comprises a sixth time threshold, and the fourth, the fifth, and the sixth time thresholds are in ascending order; and

further, when the third uplink transmission gap is between the fifth time threshold and the sixth threshold, fifth sending duration of the Preamble is obtained, wherein the fifth

sending duration is greater than the fourth sending duration; and the Preamble that comprises the DPCCH control information is sent in the fifth sending duration; or,

when the third uplink transmission gap is greater than the sixth threshold, sixth sending duration of the Preamble is obtained, wherein the sixth sending duration is greater than the fifth sending duration; and the Preamble that comprises the DPCCH control information is sent in the sixth sending duration.

28. A terminal, comprising:

a fourth receiving unit, configured to receive uplink grant signaling sent by a network-side device; and

a fourth sending unit, connected to the fourth receiving unit and configured to, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, send a preamble Preamble that comprises dedicated physical control channel DPCCH control information.

29. The terminal according to claim 28, wherein the fourth sending unit comprises:

an acquiring subunit, configured to acquire a third uplink transmission gap, wherein the third uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission; and

a comparing subunit, configured to compare the third uplink transmission gap with a time threshold in a third preset threshold.

30. A preamble Preamble sending method, comprising:

sending uplink grant signaling to a terminal, wherein the uplink grant signaling instructs the terminal to send, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, a preamble Preamble that comprises dedicated physical control channel DPCCH control information; and

receiving the Preamble that comprises the DPCCH control information and is sent by the terminal.

31. A network-side device, comprising:

a fifth sending unit, configured to send uplink grant signaling to a terminal, wherein the

uplink grant signaling instructs the terminal to send, when a hybrid automatic repeat request HARQ process corresponding to the uplink grant signaling at the time when the uplink grant signaling becomes effective is in an inactive state, a preamble Preamble that comprises dedicated physical control channel DPCCH control information; and

a fifth receiving unit, connected to the fifth sending unit and configured to receive the Preamble that comprises the DPCCH control information and is sent by the terminal.

32. A method for sending dedicated physical control channel DPCCH control information, comprising:

acquiring a fourth uplink transmission gap, wherein the fourth uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission, or a time interval between reception, by a terminal, of current uplink scheduling and reception of most recent uplink scheduling; and

when the fourth uplink transmission gap is less than or equal to a seventh threshold, sending DPCCH control information to a network-side device by using transmit power of most recent DPCCH control information.

33. The method according to claim 32, wherein the seventh threshold is predefined by the terminal or delivered to the terminal by a network side.

34. A terminal, comprising:

a third acquiring unit, configured to acquire a fourth uplink transmission gap, wherein the fourth uplink transmission gap is a time interval between initiation, by a terminal, of current uplink transmission and termination of most recent uplink transmission, or a time interval between reception, by a terminal, of current uplink scheduling and reception of most recent uplink scheduling; and

a sixth sending unit, connected to the third acquiring unit and configured to, when the fourth uplink transmission gap is less than or equal to a seventh threshold, send DPCCH control information to a network-side device by using transmit power of most recent DPCCH control information.

35. A method for sending dedicated physical control channel DPCCH control information, comprising: receiving physical layer signaling sent by a network side; and determining transmit power of DPCCH control information according to the physical layer

signaling, wherein

the determining method comprises at least one manner of the following manners:

when the physical layer signaling instructs to use transmit power of most recent DPCCH control information, sending, by a terminal, the DPCCH control information by using the transmit power of the most recent DPCCH control information; and

when the physical layer signaling instructs not to use the transmit power of the most recent DPCCH control information, determining new DPCCH transmit power in a manner different from using power of the most recent DPCCH, and sending the DPCCH control information by using the new DPCCH transmit power.

36. The method according to claim 35, wherein the physical layer signaling is an HS-SCCH order, or an encoding manner of the physical layer signaling is the same as that of an enhanced dedicated channel E-DCH absolute grant channel E-AGCH.

37. A terminal, comprising:

a sixth receiving unit, configured to receive physical layer signaling sent by a network side, and determine transmit power of DPCCH control information according to the physical layer signaling;

a seventh sending unit, connected to the sixth receiving unit and configured to, when the physical layer signaling instructs to use transmit power of most recent DPCCH control information, send, by a terminal, the DPCCH control information by using the transmit power of the most recent DPCCH control information; and

an eighth sending unit, connected to the sixth receiving unit and configured to, when the physical layer signaling instructs not to use the transmit power of the most recent DPCCH control information, determine new DPCCH transmit power in a manner different from using power of the most recent DPCCH, and send the DPCCH control information by using the new DPCCH transmit power.