## CLAIMS

What is claimed is:

1. A relay communication method, comprising:

receiving, by a relay device, first information sent by a access network ~~host~~ device, wherein the first information indicates to turn on~~is used to determine whether the relay device turns on~~ an amplify-and-forward function on a first time domain resource unit in a first time domain resource set, the first time domain resource set comprises one or more time domain resource units, and the first time domain resource unit is any time domain resource unit in the first time domain resource set; and

performing, by the relay device, relay forwarding based on the first information.

~~2. The method according to claim 1, wherein the first information indicates to turn off the amplify-and-forward function on the first time domain resource unit, or the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit.~~

~~3~~2. The method according to claim ~~2~~1, wherein the performing, by the relay device, relay forwarding based on the first information comprises:

~~when the first information indicates to turn off the amplify-and-forward function on the first time domain resource unit, turning off, by the relay device, the amplify-and-forward function on the first time domain resource unit; or~~

~~when the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit, and~~ if the first time domain resource unit is configured for uplink transmission, turning on, by the relay device, an uplink amplify-and-forward function on the first time domain resource unit; or

~~when the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit, and~~ if the first time domain resource unit is configured for downlink transmission, turning on, by the relay device, a downlink amplify-and-forward function on the first time domain resource unit; or

~~when the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit, and~~ if the first time domain resource unit comprises at least one first time domain resource subunit and at least one second time domain resource subunit, the first time domain resource subunit is configured for uplink transmission, and the second time domain

resource subunit is configured for downlink transmission, turning on, by the relay device, an uplink amplify-and-forward function on the at least one first time domain resource subunit, and turning on a downlink amplify-and-forward function on the at least one second time domain resource subunit.

3. The method according to claim 1 or 2, wherein before the performing, by the relay device, relay forwarding based on the first information, the method further comprises:

receiving, by the relay device, a common TDD configuration; or

receiving, by the relay device, a dedicated TDD configuration.

4. The method according to claim 3, the method further comprises:

determining, based on the common TDD configuration or the dedicated TDD configuration, a time domain resource used for uplink forwarding and a time domain resource used for downlink forwarding in the first time domain resource set.

5. The method according to claim 4, the determining step comprises:

an uplink slot/symbol in the first time domain resource set is a slot/symbol used for uplink forwarding;

a downlink slot/symbol in the first time domain resource set is a slot/symbol used for downlink forwarding;

a flexible slot/symbol in the first time domain resource set is a slot/symbol not used for uplink forwarding and downlink forwarding.

~~4. The method according to claim 1, wherein the first information indicates at least one of the following information: a status of an uplink amplify-and-forward function on the first time domain resource unit, and a status of a downlink amplify-and-forward function on the first time domain resource unit.~~

~~5. The method according to claim 4, wherein the first information comprises at least one of the following information: first sub information and second sub information, wherein the first sub information indicates the status of the uplink amplify-and-forward function on the first time domain resource unit, and the second sub information indicates the status of the downlink amplify-and-forward function on the first time domain resource unit.~~

~~6. The method according to claim 4, wherein the first information comprises at least one of a first indication state, a second indication state, a third indication state, and a fourth indication state;~~

~~the first indication state indicates that both the uplink amplify-and-forward function and the~~

downlink amplify-and-forward function on the first time domain resource unit are in an on state;

the second indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in an off state, and the downlink amplify-and-forward function is in the on state;

the third indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in the on state, and the downlink amplify-and-forward function is in the off state; and

the fourth indication state indicates that both the uplink amplify-and-forward function and the downlink amplify-and-forward function on the first time domain resource unit are in the off state.

7. The method according to any one of claims 4 to 6, wherein the first time domain resource unit comprises at least one first time domain resource subunit and at least one second time domain resource subunit, the first time domain resource subunit is configured for uplink transmission, and the second time domain resource subunit is configured for downlink transmission; and

the performing, by the relay device, relay forwarding based on the first information comprises:

if the first information indicates that the uplink amplify-and-forward function on the first time domain resource unit is to be in the off state, turning off, by the relay device, the uplink amplify-and-forward function on the at least one first time domain resource subunit; or

if the first information indicates that the uplink amplify-and-forward function on the first time domain resource unit is to be in the on state, turning on, by the relay device, the uplink amplify-and-forward function on the at least one first time domain resource subunit.

8. The method according to any one of claims 4 to 7, wherein the first time domain resource unit comprises at least one first time domain resource subunit and at least one second time domain resource subunit, the first time domain resource subunit is configured for uplink transmission, and the second time domain resource subunit is configured for downlink transmission; and

the performing, by the relay device, relay forwarding based on the first information comprises:

if the first information indicates that the downlink amplify-and-forward function on the first time domain resource unit is to be in the off state, turning off, by the relay device, the downlink amplify-and-forward function on the at least one second time domain resource subunit; or

if the first information indicates that the downlink amplify-and-forward function on the first time domain resource unit is to be in the on state, amplifying, by the relay device, a downlink signal from the host device and forwarding the amplified downlink signal to a terminal device on

~~the at least one second time domain resource subunit.~~

~~9. The method according to any one of claims 1 to 8, wherein the performing, by the relay device, relay forwarding based on the first information comprises:~~

~~when the first information indicates that the amplify-and-forward function on the first time domain resource unit is to be in the off state, turning on, by the relay device, the amplify-and-forward function on a time domain resource of a specific signal, wherein the first time domain resource unit comprises the time domain resource of the specific signal.~~

~~10. The method according to claim 9, wherein the specific signal comprises at least one of the following signals: a synchronization signal/physical broadcast channel block SSB, a system information block 1 SIB1 physical downlink control channel PDCCH, a SIB1 physical downlink shared channel PDSCH, a channel state information reference signal CSI-RS, a tracking reference signal TRS, a physical random access channel PRACH, and a sounding reference signal SRS.~~

~~11~~6. The method according to claim 1 or 2~~any one of claims 1 to 10~~, wherein before the performing, by the relay device, relay forwarding based on the first information, the method further comprises:

receiving, by the relay device, second information, wherein the second information indicates at least one of the following information: a start position of uplink transmission in a first periodicity, an end position of uplink transmission in the first periodicity, a start position of downlink transmission in the first periodicity, and an end position of downlink transmission in the first periodicity; and

determining, by the relay device based on the second information, a time domain resource used for uplink forwarding and a time domain resource used for downlink forwarding in the first time domain resource set, wherein the first time domain resource set comprises one or more time domain resources in the first periodicity.

7. The method according to any one of claims 1 to 6, wherein a downlink forwarding timing of the relay device is the same as a downlink reception timing of the relay device.

8. The method according to any one of claims 1 to 7, wherein an uplink forwarding timing of the relay device is the same as an uplink timing of a control link of the relay device.

~~12. The method according to any one of claims 1 to 11, wherein before the performing, by the relay device, relay forwarding based on the first information, the method further comprises:~~

~~receiving, by the relay device, an uplink forwarding timing advance sent by the host device.~~

~~13. The method according to any one of claims 1 to 11, wherein before the performing, by the relay device, relay forwarding based on the first information, the method further comprises:~~

~~determining, by the relay device, an uplink forwarding timing advance based on an initial advance.~~

~~14. The method according to any one of claims 1 to 11, wherein before the performing, by the relay device, relay forwarding based on the first information, the method further comprises:~~

~~determining, by the relay device, an uplink forwarding timing advance based on an interval of switching from downlink forwarding to uplink forwarding and a guard period between a time domain resource used for downlink transmission and a time domain resource used for uplink transmission.~~

~~15. The method according to any one of claims 1 to 11, wherein before the performing, by the relay device, relay forwarding based on the first information, the method further comprises:~~

~~for a start position of uplink transmission, determining, by the relay device, an uplink forwarding timing advance based on an interval of switching from downlink forwarding to uplink forwarding and a guard period between a time domain resource used for downlink transmission and a time domain resource used for uplink transmission; and~~

~~for an end position of the uplink transmission, determining, by the relay device, an uplink forwarding timing advance based on an initial advance.~~

~~16~~9. A relay communication method, comprising:

determining, by a access network ~~host~~ device, first information, wherein the first information indicates to turn on~~is used to determine whether a relay device turns on~~ an amplify-and-forward function on a first time domain resource unit in a first time domain resource set, the first time domain resource set comprises one or more time domain resource units, and the first time domain resource unit is any time domain resource unit in the first time domain resource set; and

sending, by the access network ~~host~~ device, the first information to the relay device.

10. The method according to claim 9, wherein the method further comprises:

sending, by the access network device, a common TDD configuration; or

receiving, by the access network device, a dedicated TDD configuration.

~~17. The method according to claim 16, wherein the first information indicates to turn off the amplify-and-forward function of the relay device on the first time domain resource unit, or the first~~

~~information indicates to turn on the amplify-and-forward function of the relay device on the first time domain resource unit.~~

~~18. The method according to claim 17, wherein the first information indicates at least one of the following information: a status of an uplink amplify-and-forward function on the first time domain resource unit, and a status of a downlink amplify-and-forward function on the first time domain resource unit.~~

~~19. The method according to claim 18, wherein the first information comprises at least one of the following information: first sub information and second sub information, wherein the first sub information indicates the status of the uplink amplify-and-forward function on the first time domain resource unit, and the second sub information indicates the status of the downlink amplify-and-forward function on the first time domain resource unit.~~

~~20. The method according to claim 18, wherein the first information comprises at least one of a first indication state, a second indication state, a third indication state, and a fourth indication state;~~

~~the first indication state indicates that both the uplink amplify-and-forward function and the downlink amplify-and-forward function on the first time domain resource unit are in an on state;~~

~~the second indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in an off state, and the downlink amplify-and-forward function is in the on state;~~

~~the third indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in the on state, and the downlink amplify-and-forward function is in the off state; and~~

~~the fourth indication state indicates that both the uplink amplify-and-forward function and the downlink amplify-and-forward function on the first time domain resource unit are in the off state.~~

~~21~~11. The method according to ~~any one of~~ claim~~s 16~~9 ~~to 19~~, wherein the method further comprises:

sending, by the access network ~~host~~ device, second information to the relay device, wherein the second information indicates at least one of the following information: a start position of uplink transmission in a first periodicity, an end position of uplink transmission in the first periodicity, a start position of downlink transmission in the first periodicity, and an end position of downlink transmission in the first periodicity, wherein the first time domain resource set comprises one or

more time domain resources in the first periodicity.

~~22. The method according to any one of claims 16 to 20, wherein the method further comprises:~~

~~sending, by the host device, an uplink forwarding timing advance to the relay device.~~

~~23~~12. A relay communication apparatus, comprising a transceiver unit, a processing unit, and an amplification unit, wherein the amplification unit is configured to amplify and forward a signal;

the transceiver unit is configured to receive first information sent by a ~~host~~access network device, wherein the first information indicates to turn on~~is used to determine whether to turn on~~ an amplify-and-forward function on a first time domain resource unit in a first time domain resource set, the first time domain resource set comprises one or more time domain resource units, and the first time domain resource unit is any time domain resource unit in the first time domain resource set; and

the processing unit is configured to control, based on the first information, whether the amplification unit turns on the amplify-and-forward function on the first time domain resource unit in the first time domain resource set.

~~24. The apparatus according to claim 23, wherein the first information indicates to turn off the amplify-and-forward function on the first time domain resource unit, or the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit.~~

~~25~~13. The apparatus according to claim ~~24~~12, wherein the processing unit is specifically configured to:

~~when the first information indicates to turn off the amplify-and-forward function on the first time domain resource unit, control the amplification unit to turn off the amplify-and-forward function on the first time domain resource unit; or~~

~~when the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit, and~~ if the first time domain resource unit is configured for uplink transmission, control the amplification unit to turn on an uplink amplify-and-forward function on the first time domain resource unit; or

~~when the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit, and~~ if the first time domain resource unit is configured for downlink transmission, control the amplification unit to turn on a downlink amplify-and-forward function

on the first time domain resource unit; or

~~when the first information indicates to turn on the amplify-and-forward function on the first time domain resource unit, and~~ if the first time domain resource unit comprises at least one first time domain resource subunit and at least one second time domain resource subunit, the first time domain resource subunit is configured for uplink transmission, and the second time domain resource subunit is configured for downlink transmission, control the amplification unit to turn on an uplink amplify-and-forward function on the at least one first time domain resource subunit, and turn on a downlink amplify-and-forward function on the at least one second time domain resource subunit.

14. The method according to claim 12 or 13, wherein the transceiver unit is specifically configured to:

receive a common TDD configuration; or

receive a dedicated TDD configuration.

15. The apparatus according to claim 14, wherein the processing unit is specifically configured to:

determine, based on the common TDD configuration or the dedicated TDD configuration, a time domain resource used for uplink forwarding and a time domain resource used for downlink forwarding in the first time domain resource set.

16. The apparatus according to claim 15, wherein:

an uplink slot/symbol in the first time domain resource set is a slot/symbol used for uplink forwarding;

a downlink slot/symbol in the first time domain resource set is a slot/symbol used for downlink forwarding;

a flexible slot/symbol in the first time domain resource set is a slot/symbol not used for uplink forwarding and downlink forwarding.

~~26. The apparatus according to claim 23, wherein the first information indicates at least one of the following information: a status of an uplink amplify-and-forward function on the first time domain resource unit, and a status of a downlink amplify-and-forward function on the first time domain resource unit.~~

~~27. The apparatus according to claim 26, wherein the first information comprises at least one of the following information: first sub-information and second sub-information, wherein the first~~

sub information indicates the status of the uplink amplify-and-forward function on the first time domain resource unit, and the second sub information indicates the status of the downlink amplify-and-forward function on the first time domain resource unit.

28. The apparatus according to claim 26, wherein the first information comprises at least one of a first indication state, a second indication state, a third indication state, and a fourth indication state;

the first indication state indicates that both the uplink amplify-and-forward function and the downlink amplify-and-forward function on the first time domain resource unit are in an on state;

the second indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in an off state, and the downlink amplify-and-forward function is in the on state;

the third indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in the on state, and the downlink amplify-and-forward function is in the off state; and

the fourth indication state indicates that both the uplink amplify-and-forward function and the downlink amplify-and-forward function on the first time domain resource unit are in the off state.

29. The apparatus according to any one of claims 26 to 28, wherein the first time domain resource unit comprises at least one first time domain resource subunit and at least one second time domain resource subunit, the first time domain resource subunit is configured for uplink transmission, and the second time domain resource subunit is configured for downlink transmission; and

the processing unit is specifically configured to:

if the first information indicates that the uplink amplify-and-forward function on the first time domain resource unit is to be in the off state, control the amplification unit to turn off the uplink amplify-and-forward function on the at least one first time domain resource subunit; or

if the first information indicates that the uplink amplify-and-forward function on the first time domain resource unit is to be in the on state, control the amplification unit to turn on the uplink amplify-and-forward function on the at least one first time domain resource subunit.

30. The apparatus according to any one of claims 26 to 29, wherein the first time domain resource unit comprises at least one first time domain resource subunit and at least one second time domain resource subunit, the first time domain resource subunit is configured for uplink

~~transmission, and the second time domain resource subunit is configured for downlink transmission; and~~

~~the processing unit is specifically configured to:~~

~~if the first information indicates that the downlink amplify-and-forward function on the first time domain resource unit is to be in the off state, control the amplification unit to turn off the downlink amplify-and-forward function on the at least one second time domain resource subunit; or~~

~~if the first information indicates that the downlink amplify-and-forward function on the first time domain resource unit is to be in the on state, control the amplification unit to amplify a downlink signal from the host device and forward the amplified downlink signal to a terminal device on the at least one second time domain resource subunit.~~

~~31. The apparatus according to any one of claims 23 to 30, wherein the processing unit is specifically configured to:~~

~~when the first information indicates that the amplify-and-forward function on the first time domain resource unit is to be in the off state, control the amplification unit to turn on the amplify-and-forward function on a time domain resource of a specific signal, wherein the first time domain resource unit comprises the time domain resource of the specific signal.~~

~~32. The apparatus according to claim 31, wherein the specific signal comprises at least one of the following signals: a synchronization signal/physical broadcast channel block SSB, a system information block 1 SIB1-physical downlink control channel PDCCH, a SIB1-physical downlink shared channel PDSCH, a channel state information reference signal CSI-RS, a tracking reference signal TRS, a physical random access channel PRACH, and a sounding reference signal SRS.~~

~~33~~17. The apparatus according to ~~any one of~~ claims ~~23~~ 12 ~~to 32~~or 13, wherein the transceiver unit is further configured to:

before the processing unit controls, based on the first information, whether the amplification unit turns on the amplify-and-forward function on the first time domain resource unit in the first time domain resource set, receive second information, wherein the second information indicates at least one of the following information: a start position of uplink transmission in a first periodicity, an end position of uplink transmission in the first periodicity, a start position of downlink transmission in the first periodicity, and an end position of downlink transmission in the first periodicity; and

the processing unit is further configured to:

determine, based on the second information, a time domain resource used for uplink forwarding and a time domain resource used for downlink forwarding in the first time domain resource set, wherein the first time domain resource set comprises one or more time domain resources in the first periodicity.

18. The apparatus according to any one of claims 12 to 17, wherein a downlink forwarding timing of the relay device is the same as a downlink reception timing of the relay device.

19. The apparatus according to any one of claims 12 to 18, wherein an uplink forwarding timing of the relay device is the same as an uplink timing of a control link of the relay device.

~~34. The apparatus according to any one of claims 23 to 33, wherein the transceiver unit is further configured to:~~

~~before the processing unit controls, based on the first information, whether the amplification unit turns on the amplify-and-forward function on the first time domain resource unit in the first time domain resource set, receive an uplink forwarding timing advance sent by the host device.~~

~~35. The apparatus according to any one of claims 23 to 33, wherein the processing unit is further configured to:~~

~~before controlling, based on the first information, whether the amplification unit turns on the amplify-and-forward function on the first time domain resource unit in the first time domain resource set, determine an uplink forwarding timing advance based on an initial advance.~~

~~36. The apparatus according to any one of claims 23 to 33, wherein the processing unit is further configured to:~~

~~before controlling, based on the first information, whether the amplification unit turns on the amplify-and-forward function on the first time domain resource unit in the first time domain resource set, determine an uplink forwarding timing advance based on an interval of switching from downlink forwarding to uplink forwarding and a guard period between a time domain resource used for downlink transmission and a time domain resource used for uplink transmission.~~

~~37. The apparatus according to any one of claims 23 to 33, wherein the processing unit is further configured to:~~

~~before controlling, based on the first information, whether the amplification unit turns on the amplify-and-forward function on the first time domain resource unit in the first time domain~~

~~resource set, for a start position of uplink transmission, determine an uplink forwarding timing advance based on an interval of switching from downlink forwarding to uplink forwarding and a guard period between a time domain resource used for downlink transmission and a time domain resource used for uplink transmission; and~~

~~for an end position of the uplink transmission, determine an uplink forwarding timing advance based on an initial advance.~~

~~38~~20. A relay communication apparatus, comprising:

a processing unit, configured to determine first information, wherein the first information indicates to turn on~~is used to determine whether a relay device turns on~~ an amplify-and-forward function on a first time domain resource unit in a first time domain resource set, the first time domain resource set comprises one or more time domain resource units, and the first time domain resource unit is any time domain resource unit in the first time domain resource set; and

a transceiver unit, configured to send the first information to the relay device.

21. The apparatus according to claim 20, wherein the transceiver unit is further configured to:

send a common TDD configuration; or

receive a dedicated TDD configuration.

~~39. The apparatus according to claim 38, wherein the first information indicates to turn off the amplify-and-forward function of the relay device on the first time domain resource unit, or the first information indicates to turn on the amplify-and-forward function of the relay device on the first time domain resource unit.~~

~~40. The apparatus according to claim 39, wherein the first information indicates at least one of the following information: a status of an uplink amplify-and-forward function on the first time domain resource unit, and a status of a downlink amplify-and-forward function on the first time domain resource unit.~~

~~41. The apparatus according to claim 40, wherein the first information comprises at least one of the following information: first sub information and second sub information, wherein the first sub information indicates the status of the uplink amplify-and-forward function on the first time domain resource unit, and the second sub information indicates the status of the downlink amplify-and-forward function on the first time domain resource unit.~~

~~42. The apparatus according to claim 40, wherein the first information comprises at least one of a first indication state, a second indication state, a third indication state, and a fourth indication~~

~~state;~~

~~the first indication state indicates that both the uplink amplify-and-forward function and the downlink amplify-and-forward function on the first time domain resource unit are in an on state;~~

~~the second indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in an off state, and the downlink amplify-and-forward function is in the on state;~~

~~the third indication state indicates that the uplink amplify-and-forward function on the first time domain resource unit is in the on state, and the downlink amplify-and-forward function is in the off state; and~~

~~the fourth indication state indicates that both the uplink amplify-and-forward function and the downlink amplify-and-forward function on the first time domain resource unit are in the off state.~~

~~43~~22. The apparatus according to ~~any one of~~ claim~~s 38 to 41~~20, wherein the transceiver unit is further configured to:

send second information to the relay device, wherein the second information indicates at least one of the following information: a start position of uplink transmission in a first periodicity, an end position of uplink transmission in the first periodicity, a start position of downlink transmission in the first periodicity, and an end position of downlink transmission in the first periodicity, wherein the first time domain resource set comprises one or more time domain resources in the first periodicity.

~~44. The apparatus according to any one of claims 38 to 42, wherein the transceiver unit is further configured to:~~

~~send an uplink forwarding timing advance to the relay device.~~

~~45~~23. A communication device, wherein the communication device comprises a transceiver, a processor, an amplifier, and a memory; the memory stores program instructions; and when the program instructions are executed, the communication device is enabled to perform the method according to any one of claims 1 to ~~15~~8.

~~46~~24. A communication device, wherein the communication device comprises a transceiver, a processor, and a memory; the memory stores program instructions; and when the program instructions are executed, the communication device is enabled to perform the method according to any one of claims ~~16~~ 9 to ~~22~~11.

~~47~~25. A chip, wherein the chip is coupled to a memory in an electronic device, so that when

running, the chip invokes program instructions stored in the memory, to implement the method according to any one of claims 1 to ~~15~~8, or implement the method according to any one of claims ~~16~~ 9 to ~~22~~11.

~~48~~26. A computer-readable storage medium, wherein the computer-readable storage medium comprises program instructions, and when the program instructions are run on a device, the device is enabled to perform the method according to any one of claims 1 to ~~22~~11.

~~49~~27. A communication system, comprising the relay communication apparatus according to any one of claims ~~23~~ 12 to ~~37~~ 19 and the relay communication apparatus according to any one of claims ~~38~~ 20 to ~~44~~22.